MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION (Autonomous)

(ISO/IEC - 27001 - 2005 Certified) WINTER- 2022 EXAMINATION MODEL ANSWER

### Subject Title: PHARMACEUTICS- THEORY

#### Important Instructions to examiners:

- 1) The answers should be examined by key words and not as word-to-word as given in the model answer scheme.
- 2) The model answer and the answer written by the candidate may vary but the examiner may try to assess the understanding level of the candidate.
- 3) The language errors such as grammatical, spelling errors should not be given more Importance (Not applicable for subject English and Communication Skills.
- 4) While assessing figures, the examiner may give credit for principal components indicated in the figure. The figures drawn by candidate and model answer may vary. The examiner may give credit for any equivalent figure drawn.
- 5) Credits may be given step-wise for numerical problems. In some cases, the assumed constant values may vary and there may be some difference in the candidate's answers and model answer.
- 6) In case of some questions, credit may be given by judgement on part of the examiner of relevant answer based on the candidate's understanding.
- 7) For programming language papers, credit may be given to any other program based on an equivalent concept.
- 8) As per the policy decision of Maharashtra State Government, teaching in English/Marathi and Bilingual (English + Marathi) medium is introduced at first year of AICTE diploma Programme from academic year 2021-2022. Hence if the students in first year (first and second semesters) write answers in Marathi or bilingual language (English +Marathi), the Examiner shall consider the same and assess the answer based on matching of concepts with model answer.

Q.	Sub	Answers	Marking
No.	No.		Scheme
1		Answer any <u>SIX</u> of the following:	<b>30M</b>
1	a	Discuss various job opportunities in pharmacy.	5 M
		Marking Scheme: 1 mark for each point of job opportunities (Any five points)	(1M for
		Answer:	each
		Job opportunities in pharmacy.	Any five
		1. <b>Community pharmacy</b> is a hybrid requiring well-developed professional skills and, in many cases, management abilities. In addition to dispensing pharmaceuticals, pharmacists in community pharmacies answer questions about prescription and over the counter (OTC) drugs and give advice about home health care supplies and durable medical equipment. Of an estimated pharmacists now in practice, the majority are in community pharmacy practice.	5M)
		2. <b>Hospital Pharmacy</b> - is the practice of pharmacy in private and government owned hospitals, clinics, walk-in health centers, and nursing homes. In these settings, pharmacies dispense medication, prepare sterile solutions, advise other professionals and patients on the use of drugs, monitor drug regimens, and evaluate drug use. They advise other professionals on the selection and effects of drugs and, in some cases, make patient rounds with them or provide direct patient care.	
		3. <b>Central and State Governments</b> : Pharmacists are employed within the central and state government departments such as Health Protection Branch of the Department of Health and Welfare, the Pest Control Division of Agriculture, the Department of National Defense, Provincial Research Councils, and the Provincial Departments of	

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Q.	Sub	Answers	Marking
No.	No.	Agriculture or the Environment and Armed forces at various positions based on educational qualifications and experience. The Central and State Governments appoints Drugs Inspectors. Pharmacists have job opportunities in Government organizations such as CDRI Lucknow, NCL Pune, CSIR, IICT, RRL, AIIMS, CDSCO, and IMPCL. A Pharmacist has positions in FDA at state and central level. Pharmacists can even find jobs in railways, hospitals, navy and military, etc.	Scheme
		4. <b>Pharmaceutical Industry</b> : Some of the major positions in pharmaceutical industries where pharmacists are employed include production and manufacturing, research and development, quality control, quality assurance, pharmacovigilance, regulatory affairs, business operations, sales, and administration, etc.	
		5. <b>Pharmaceutical Sales</b> : Registered pharmacists can sell bulk drugs as a bulk drug distributor or supplier and pharmaceutical products as distributor, wholesaler, and retailer.	
		6. <b>Pharmaceutical Marketing</b> : The pharmaceutical industries for marketing of their products and services offer excellent opportunities for the pharmacy students, as they have a good knowledge about the drug molecules, their therapeutic effects, manufacturing, and stability of drug products as well as drug-excipient and drug- drug interactions. The positions include Global Manager at higher level to Medical Representative at lower level.	
		7. Academics: Pharmacist degree holders are employed in the Universities and colleges of pharmacy in India. He/she gets engaged in research work in collaboration with industries and other pharmacy practice settings and plays an active role in professional organizations such as APTI, IPA and FIP for overall development and promotion of pharmacy. Teacher is a link between pharmaceutical industries and educational institutes for the purpose of development of a student's skill. Pharmacy academic research and development helps to create skilled manpower for the pharmaceutical industry to ensure the community quality and safe medicines. Also, diploma pharmacists can work as lab technicians/storekeepers in academic institutes.	
		8. <b>Pharmaceutical Journalism:</b> Pharmaceutical journalism is another opportunity for pharmacists which have great potential.	
		9. <b>Consultancy:</b> Pharmacists can offer his services as a consultant pharmacist for local, state, national, and international private and government organizations which include fields such as regulatory affairs, manufacturing, analytical services, documentation, approvals, research, marketing policies, etc.	
		10. <b>Clinical Research:</b> In clinical research organization (CRO) pharmacists are employed as Clinical Research Associate, Regulatory Affairs Associate, Clinical Data Manager, Clinical Development and Project Manager.	
		11. <b>Organizational Management:</b> Organizational management offers pharmacists on national and state associations and on boards of pharmacy. There is career for pharmacists in the insurance sector too. They can work at managerial positions with health and welfare agencies.	
		12. <b>Opportunities Abroad:</b> There are lots of higher education and research opportunities in the developed countries. Pharmacists have placement opportunities in education, sales, and manufacturing and in hospitals as counsellor and as clinical pharmacist	

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Subj	ect Titl	e: PHARMACEUTICS- THEORY Subject Cod	e: <b>20111</b>
Q. No.	Sub No.	Answers	Marking Scheme
		13. <b>Medical Transcription</b> : A pharmacist can work with physicians as a medical transcriptor to maintain the patient treatment history, the drug to which patients are allergic etc.	
1	b	Write principle, construction, working and applications of cyclone separator.	5 M
		Marking Scheme: Principle: 1M, Construction: 1M, Working: 1M Applications of cyclone separator 0.5 M for each point, Any two points = 1M Diagram 1M Answer:	
		Principle: (1M)	
		In a cyclone separator the centrifugal force is used to separate solids from fluids. The separation depends on particle size and density of particles.	
		<ul> <li>Construction: (1M)</li> <li>It consists of a cylindrical vessel with a conical base.</li> <li>In upper part of separator, the vessel is fitted with a tangential inlet and fluid outlet.</li> <li>At the base it is fitted with a solid outlet.</li> </ul>	
		<ul> <li>Working: (1M)</li> <li>The suspension of solid in gas is introduced tangentially at a very high velocity.</li> <li>The rotary movement takes place within the vessels.</li> <li>The fluid is removed from the outlet at the top.</li> <li>The rotatory flow within the cyclone separator causes the particle to be acted on by centrifugal force.</li> <li>The solids are thrown out to the wall and fall to the conical base for discharge.</li> </ul>	
		Diagram (1M)	
		Tangentical Toilet Toil	
		<ul> <li>Applications of Cyclone Separator:</li> <li>1. Cyclone separator is used to separate the suspensions of a solid in a gas or air. It can be used with the liquid suspensions of solids.</li> </ul>	



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		MODEL ANSWER	
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Q. No.	Sub No.	Allswers	Scheme
		<ol> <li>General applications in pharmaceutical industries is for separation of coarse and fine particles.</li> <li>They are used in array driver.</li> </ol>	
1	C	5. They are used in spray dryer. Explain any five manufacturing defects in tablets with reasons and remedies.	5 M
I		Marking Scheme: Definition, Reasons and Remedy of each Defect = 1M Any five defects = 5M	
		Answer:	
		1) <b>Capping and lamination</b> -There is partial or complete removal of top or bottom portion of the tablet. The reasons are Excessive fines, defective punches and dies, high speed of the machine, too dry granules, or high degree of compaction.	
		These defects can be removed by setting dies and punches properly, reduce percentage of fine, maintain desired moisture in the granules, regulate speed of machine, punches should be buffed or polished.	
		2) <b>Picking and sticking:</b> In picking, the material is removed or picked up by the upper punch from the upper surface of the tablet. In sticking, the material sticks to the wall of the die.	
		These defects appear due to worn out dies and punches, small quantity of lubricants, presence of moisture in granules, excess powder in granules, scratches on the surface of face of punch or defects in the formulation.	
		These defects can be removed by using new set of dies and punches, proper quantity of lubricants or dry granules.	
		3) <b>Mottling.</b> Mottling means an unequal distribution of colour on the surface of colored tablets.	
		This defect occurs due to following reasons: migration of dye in the granules during drying, use of different colour of medicament and excipients.	
		These defects can be avoided by drying the granules at a low temperature, using dye which can mask the colour of all ingredients of tablet formulation.	
		4) Weight variation: During compression of granules in a tablet machine, the tablets do not have a uniform weight.	
		The reasons include Granules not uniform in size, excess powder in granules, no proper mixing of lubricants, no uniform flow of granules from hopper to die, variation in speed of machine.	



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			ACEUTICS-THEORY	Subject Cod	Marking
No.	No.		Allswei	5	Scheme
		The	ese defects can be avoided by corrents.	cting and checking the above-mentioned	2
		5) <b>Ha</b> wei If a	rdness variation: Causes same as wight of material and space between upp ny of these varies the hardness will variable	weight variation Hardness depends upon ber and lower punches during compression. ry.	
		The	ese defects can be avoided by beeping v l lower punches constant during comp	weight of material and space between upper ression.	
		6) <b>Do</b>	<b>uble impression:</b> This defect occurs when other engraving on it.	when the lower punch has a monogram or	
		Dun in t and	ring compression, the tablet receives an he machine, the lower punch moves a l gives a second though light imprint o	n imprint on the punch. Due to some defect slightly upward before ejection of a tablet in the tablet.	
		Thi pur	s defect can be removed by controllin	ng the undesirable movement of the lower	
1	d	Differentia Explain in	ate between hard gelatin and soft ge	latin capsules. (Any four points).	5 M
		Marking S Difference = (4 X 0.5= Manufactu	Scheme: between hard gelatin and soft gelatin =2M) ring of soft gelatin capsules 2.5M. and	capsules. (Any four points) l Diagram 0.5 M	
		Answer:			
		Difference	between hard gelatin and soft gelatin	capsules	
		Sr. No.	Hard gelatin capsules	Soft gelatin capsules	<b>2M</b>
		1	The hard gelatin capsule shell consists of two parts: Body and cap.	The soft gelatin capsule shell becomes a single unit.	
		2	They are cylindrical in shape.	They are available in round, oval and tube-like shapes.	
		3	The contents usually consist of medicaments in the form of powder, beads, or granules.	The contents usually consist of liquids or semisolids.	
		4	These are prepared from gelatin, titanium dioxide, colouring agent, and plasticizer.	These are prepared from gelatin, more amount of plasticizer (sorbitol or Glycerin) and preservative.	
		5	Filling and sealing take place in different steps.	Filling and sealing are done in a combined operation of machines	
		6	Shell is perfectly dry.	Shell is not perfectly dry.	
		7	These capsules can be adulterated.	These capsules cannot be adulterated.	
		8	Eg: Amoxycillin Capsule.	Eg: Pudin Hara Capsule.	



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		le: 20111
Q. Sub No. No.	Answers	Marking Scheme
Q. Sub No. No.	Answers          Manufacturing of soft gelatin capsules: (2.5M)         1. Fluid gelatin from an overhead tank is converted into continuous gelatin sheets which are brought together between the two die rolls.         2. The die rolls have several matching dies & rotate at the same speed in the opposite direction to each other, as gelatin sheet comes in between the rollers.         3. The material to be capsulated is forced volumetrically through a metering device into half sealed capsule pockets.         4. The heat & pressure exerted by die roll seals & cuts out the well filled capsules.         5. The finished capsules are then passed through a series of naptha baths to remove lubricants & then dried.         Diagram: 0.5M         OR         Fill material         Vedge         OR         Fill material         Die roll	le: 20111 Marking Scheme



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Subje	ect Titl	e: PHARMACEUTICS- THEORY Subject Cod	le: 20111
Q.	Sub	Answers	Marking
<u>No.</u> 1	No.	Define syrups, Cive its advantages and Disadvantages, Evplain in brief formulation	Scheme 5 M
1	C	of syrups	5 11
		Marking Scheme:	
		Definition-1M; Advantages (0.5M each x $2 = 1M$ ); Disadvantages (0.5M each x $2 = 1M$ ) Formulation of syrups-(0.5M each x $4 = 2M$ )	
		Answer:	
		Definition of Syrup	
		Syrups are the saturated aqueous solutions of sucrose or other sugars in water or other aqueous liquid.	
		Advantages of syrup	
		<ol> <li>Act as Antioxidant- Retard oxidation because sugar partly hydrolyzed into dextrose &amp; levulose (reducing sugars). So, prevent decomposition of many substances – No preservative needed.</li> </ol>	
		<ol> <li>Act as preservative- Exert high osmotic pressure and prevent the growth of microorganisms.</li> <li>Good patient compliance especially pediatric patients as syrups are sweet taste.</li> <li>Act as Palatable – a vehicle for bitter / nauseous substances.</li> </ol>	
		5) Prevent decomposition of many vegetable drugs.	
		Disadvantages of syrup	
		<ol> <li>Crystallization of sugars takes place if the container is left open.</li> <li>Syrups are not suitable for diabetic patients.</li> </ol>	
		Formulation of syrup:	
		<ol> <li>Vehicle: Syrups are prepared by using purified water</li> <li>Chemical stabilizers: Glycerine, sorbitol and propylene glycol added in small quantity to the syrup to prevent crystallization of sucrose.</li> <li>Colouring agents: Many syrups are attractively coloured with coal tar dyes such as amaranth and tartrazine.</li> <li>Elayouring agents: The flavouring agents in syrup include lemon tincture, ginger</li> </ol>	
		tincture, vanilla, orange etc.	
		5) Preservatives: The concentration 66.66% of sucrose does not require the preservative because in such preparations sucrose itself acts as a preservative.	
1	f	Enlist the quality control tests to be performed on injections. Explain sterility test or pyrogen test.	5 M
		Marking Scheme: Enlisting any 4 quality control tests: <b>2M</b> and	



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#### WINTER-2022 EXAMINATION

### MODEL ANSWER

a			1 20111
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No.	No.	AllSweiß	Scheme
		Description of either sterility test or pyrogen test: <b>3M</b>	
		Answer:	
		Ouality control tests to be performed on injections	
		1) Sterility test	
		a. Membrane filter method	
		b. Direct inoculation method	
		2) Pyrogen test	
		a. LAL Test	
		b. In vivo Rabbit test	
		3) Clarity test/Foreign particulate matter test	
		4) Leakage test	
		5) Isotonicity	
		6) Content uniformity & Weight	
		7) pH	
		8) Viscosity	
		9) Extractable Volume	
		1. Test for Sterility:	
		<b>Principle:</b> These tests are based on the principle that if bacteria or fungi are placed in medium provided favorable conditions like nutritive material, moisture, temperature, the organism will grow, and their presence can be indicated by the turbidity in clear solution.	
		This test should be carried out in strictly aseptic conditions.	
		Method of testing: Test of sterility may be carried out by	
		1) Membrane filtration method	
		2) Direct inoculation method	
		1. <b>Direct inoculation method:</b> The substance to be tested is aseptically drawn from	
		the container by a suitable device and transferred to the final culture medium in the	
		test tube.	
		The inoculated medium (test tubes) is incubated at 20-25°C for fungi and 30-37°C	
		for bacteria for the period of seven days. Observe the growth of micro-organism in	
		the medium.	
		2. Membrane filtration method: This method is preferred in the following cases- An	
		oil or oily preparations, ointment, a non-bacteriostatic solid, soluble powder or a	
		liquid that possesses bacteriostatic and fungistatic properties, liquid products where	
		volume in a container is 100 ml or more.	
		Carry out filtration of sample under test through membrane filter having pore size of	
		$0.45 \mu$ and diameter of about 47 mm. After the filtration, the membrane is removed	
		aseptically from the metallic holder and divided into two halves. The first half is	

transferred into 100 ml of culture media meant for fungi and incubated at 20 to 25°C

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Q. No	Sub No	Answers	Marking Scheme
110.	110.	for not less than 7 days. The other half is transferred into 100 ml of fluid thioglycolate	Benefite
		medium meant for bacteria and incubated at 30 to 35°C for not less than 7 days.	
		Observe the growth of the media.	
		<b>Results:</b> If no growth of micro-organism is found in any of the tubes, the sample is	
		declared to have pass the test and the same test is repeated for two times.	
		OR	
		2. Pyrogen test.	
		1. LAL Test: It is used for the detection and quantification of bacterial endotoxins:	
		Limulus amebocyte lysate (LAL) is an aqueous extract of blood cells (amoebocytes)	
		from the horseshoe crab, Limulus polyphemus. LAL reacts with bacterial endotoxin	
		or lipopolysaccharide (LPS), which is a membrane component of Gram-negative bacteria.	
		The solution of endotoxins containing preparation is added to the lysate derived from	
		heamolymph cells of horseshoe crab (limulus polyphemus). The result of the	
		reaction is turbidity or precipitation or gelation of the mixture. This is used as a	
		quantitative measure to estimate the endotoxin content. The rate of reaction depends	
		upon conc. of endotoxins, pH, temperature and presence of clotting enzyme system	
		and clottable proteins from lysate.	
		2. Sham Test:(Rabbit Test)	
		a. <b>Principle:</b> The test involves the measurement of the rise in the body temperature of	
		rabbit following i.v. injection of a sterile solution of a substance being	
		examined. Rabbits are used to perform this test because they are more sensitive to	
		b Mathad of testing: Puragen testing done on rabbit: The test involves the	
		measurement of rise in body temp of rabbit following intravenous injection of a	
		sterile solution of a substance being examined. Three healthy rabbits, each weighing	
		not less than 1.5 kg are selected. They are kept on a balanced diet and are not	
		showing any loss in body weight. The solution under test is injected slowly through	
		ear vein in a volume of 0.5 to 10 ml/body weight	
		Record the temperature of each rabbit in an interval of 30 mins for three hrs after	
		the injection. The difference between initial temp & the maximum is recorded as	
		response. If no rabbit shows an individual rise in temperature of $0.6$ °C or more	
		above its respective control temperature, and if the sum of the 3 temperature rises	
		does not exceed 1.4 °C, the tested material meets the requirements for the absence	
		of pyrogen. If 1 or 2 rabbits show a temperature rise of 0.6 °C or more, or if the sum	
		of the temperature rises exceeds $1.4$ °C continue the test using 5 other rabbits. If not	
		more than 3 of the 8 rabbits show individual rise in temperature of 0.6 $^{\circ}$ C or and sum	
		of group maximum temp, rises doesn't exceed 3.7°c, then the sample passes the test.	



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Q.	Sub	Answers	
No.	No.		Scheme
I	g	Explain the general method of production of vaccines.	5 11
		Marking Scheme:	
		For Production of Vaccine -5 M (Each step- 1mark)	
		Answer:	
		Preparations of Vaccines	
		The following general steps are involved in the production of vaccines:	
		1. Growth of microorganism and viruses	
		The microorganisms are grown by various methods. Bacteria are grown either by batch or continuous culture method. Viruses are grown by the cell culture method, bird embryo method and live animal inoculation method.	
		2. Separation	
		The bacterial cells or viruses are separated from the medium or other reacting fluid by centrifugation or any other method.	
		3. Attenuation/Inactivation	
		Attenuation is the process of elimination or reducing the virulence of pathogens. This is achieved by either heat or chemical treatment or any other suitable agent. Inactivated bacteria or viruses are used as dead or inactivated for the vaccine preparations. The inactivated or detoxified bacterial cells or viruses are separated as a suspension using centrifugation.	
		4. Purification	
		The isolated suspensions of the bacterial cells or viruses are purified	
		5. Formulation and Drying	
		The purified fluid suspension containing attenuated viruses or bacterial cells are dried using a technique of freeze drying by a lyophilizer. The concentrated fluid suspension containing attenuated viruses or bacterial cells mixed with the suitable adjuvants or excipients to supply in a suitable dosage form. In case of viral vaccine, if necessary, freeze drying is performed after packing in final container.	
		OR	
		Marking Scheme:	
		1) For Production of Bacterial Vaccine -2.5 M	
		2) For Production of Viral Vaccine -2.5 M	
		Answer	
		Preparations of Vaccines	
		1) Bacterial vaccines:	



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Q.	Sub	Ans	wers	Marking
190,	110.	a. Bacterial vaccines: (Living Bacteria	a or Dead Bacteria)	Scheme
		These are most commonly suspension	ons of bacteria cultivated on suitab	ole medium
		and killed in such a manner as to pre	serve their antigenic activity while	destroying
		the pathogenicity. Sterilization is c	arried out using minimal heat tre	eatment or
		chemical inactivation. Vaccines co	ntaining living bacteria are prep	ared from
		attenuated strains which are non-pa	thogenic to man but stimulate in	nmunity to
		pathogenic strains of the organism. e.	g., Bacillus Calmette Guerin vaccir	ne, (B.C.G.
		Vaccine)		
		b. Mixed vaccines:		
		Mixed vaccines are used to produce si	multaneous immunization against tv	wo or more
		infective diseases. They may consi	st of mixtures of simple bacterial	l vaccines,
		bacterial vaccines mixed with bacteri	al toxoids or mixtures of bacterial t	oxoids, the
		component vaccines or toxoids be	ing prepared separately before m	nixing. eg.
		Diphtheria, Tetanus and Pertussis va	ccine, (Diphtheria-Tetanus Whoop	ving Cough
		prophylactic).		
		2) Viral and rickettsial vaccines:		
		Immunization against effective dise	ase caused by viruses and ricke	ettsia is of
		particular importance in the control	of these diseases since they are	generally
		resistant to treatment with antibiotics	and chemotherapeutic agents.	
		Both viruses and rickettsia multiply	only in actively growing host cel	lls and the
		production of vaccines containing the	m is, therefore, technically more example.	acting than
		the production of bacterial vaccines.	The vaccines may be prepared fro	m selected
		infected tissues from suitable animal	s, which have been deliberately inf	fected with
		the viruses or rickettsia (e.g. rabies, sr	nallpox and typhus). More common	ly, they are
		prepared from cultures of the organi	sms in fertile eggs (e.g. influenza,	, smallpox,
		typhus and yellow fever) or from isol	ated tissues or cell cultures (e.g. po	liomyelitis
		and smallpox).		
		During the preparation of the vaccines	s, the cultures are usually purified by	y removing
		much of the non-specific reactions in	the patient. The viruses and ricke	ttsia in the
		vaccines may be living or they may	be inactivated during the prepara	tion of the
		vaccine. Living vaccines are prepa	red with attenuated strains of the	e normally



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110.	110.	pathogenic organisms (e.g. poliomyelitis and yellow fever) or with non-pathogenic	Seneme
		organisms antigenically related to the pathogen (e.g. small pox). Inactivation of the	
		organism, when required, is carried out by treatment with formaldehyde or some	
		other chemical or physical agent (e.g. heat), which will preserve the antigenic	
		efficiency of the organisms.	
		e.g. Poliomyelitis vaccine, Smallpox vaccine (vaccinum variola), Influenza vaccine (Inactivated influenza vaccine)	20.14
2		Answer any <u>TEN</u> of the following:	30 M
2	a	advantages and disadvantages of any one material.	03111
		Marking Scheme:	
		List of Material used for making containers-1M.	
		Advantages-1M, Disadvantages-1M (Any one Material)	
		Answer:	<b>1M</b>
		Materials used for making containers for pharmaceutical packaging:	
		1. Glass	
		2. Plastic	
		3. Metal	
		4. Paper and board	
		Advantages of Glass as packaging material: (Any Two)	1M (Any Two
		1. They are transparent.	Advantag
		2. Available in various shape and sizes.	es)
		3. They can withstand the variation in temperature and pressure during sterilization.	
		4. Economical and readily available.	
		5. Protect photosensitive material from light during their storage.	
		6. They are neutral after proper treatment.	
		7. Impermeable to moisture and atmospheric gases.	
		8. They have good protection power.	
		9. They do not deteriorate with age.	
		10. Easily labelled.	
		Disadvantages of Glass as packaging material: (Any Two)	1M
		1. Glass is a fragile and relatively heavy hence increase the cost of transportation.	(Any Two
		2. Glass containers are expensive.	110



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110.	110.	3. Glass containers may release alkali to aqueous preparations.	disadva
		Advantages of Plastic as packaging material: (Any Two)	ntages)
		1. They are chemically inert and resistant to corrosion.	
		2. They are non-breakable.	
		3. They are light in weight and resistant to leakage.	
		4. They have sufficient mechanical strength.	
		5. They are poor conductor of heat.	
		6. They are collapsible.	
		Disadvantages of Plastic as packaging material: (Any Two)	
		1. They are heat sensitive and undergo stress cracking and distortion upon contact with certain chemicals.	
		2. They are permeable to water vapour and atmospheric gases.	
		3. Plastic may leach out its content into the product leading to instability of the product.	
		Advantages of Metal as packaging material: (Any Two)	
		1) They are sturdy.	
		2) They are impermeable to light, moisture, and gases.	
		3) They can be made into rigid unbreakable containers by impact extrusion.	
		4) They are light in weight as compared to glass containers.	
		5) Label can be printed directly on their surface.	
		Disadvantages of Metal as packaging material: (Any Two)	
		1) They are expensive.	
		2) They react with certain chemicals.	
		3) They shed metal particles into the product.	
		4) They cannot be used for packing extemporaneous preparations.	
		Advantages of Paper and Board as packaging material: (Any Two)	
		1) Good rigidity	
		2) Easily available.	
		3) Disposable and biodegradable.	
		4) Cheap as compared to other material.	
		Disadvantages of Paper and Board as packaging material: (Any Two)	
		1) They are moisture sensitive.	
		2) Porous in nature.	
		3) Unable to form barriers.	



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### WINTER-2022 EXAMINATION

### **MODEL ANSWER** Subject Code: 20111 Subject Title: PHARMACEUTICS- THEORY Q. Sub Answers Marking No. No. Scheme 2 b Explain construction and working of double cone blender. **3**M Marking Scheme: Construction-1M, Diagram: 1M, Working: 1M **Answer: Construction:** It consists of a huge conical vessel in which the two cones are mounted. The feeding inlet is attached at the opening of the top of the blender cone vessel. A lid is attached to the inlet to cover it when the blender is in operation. The helical blades or baffles are attached inside 1Mthe blending vessel. The actuating unit controls the moving system of the blender. This controls the opening and closing of the discharge valve. The entire set-up of this is based firmly on ground. The heavy base supports the whole system especially when the blender is operated. The blender has polished surface inside for easy cleaning and no dead space for stagnating the samples. Filter Seal seat Tank Rotating Frame connector 1MVacuum valve Heat source -Rotating connector Condensate water OR 1MFeeding inlet Operating syste Hes / Bla Actuatin unit Discharge (outlet) Fig. Double cone blender



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### WINTER-2022 EXAMINATION

Subje	ect Titl	e: PHARMACEUTICS- THEORY Subject Cod	le: 20111
Q.	Sub	Answers	Marking
INO.	INO.	Working:	Scheme
		1) The sample to be mixed is introduced into the blender.	
		<ul> <li>2) 2/3<sup>rd</sup> of the volume of the blender is filled with sample. More than this is considered as overload</li> </ul>	
		3) The blender is rotated using a motor to have 30 to 100 rotations per minute	
		4) The mixing process starts when the blender rotates	
		<ul><li>5) The sample undergoes tumbling on rotation so that the samples are uniformly moved up and down inside the blender.</li></ul>	
		<ul><li>6) When a mixing process completes, the mixed samples are discharged from the blender by tilting the blender at an angle of 0 to 360 degree.</li></ul>	
		7) The mixed samples are collected.	
2	c	Describe moist granulation method for tablets with a flow chart.	3M
		Marking Scheme: Flow Chart-1.5M, Method -1.5M	
		Answer:	
		Steps in the moist granulation method:	1.5M
		1) Weighing: This step involves the weighing, sifting and introduction of specified quantities of drug substances, diluents, and disintegrants into the powder mixer.	
		2) <b>Mixing</b> : The weighed ingredients are mixed using a mixer until a uniform powder mix is achieved. The main objective of mixing the medicaments and excipients is to prepare a homogeneous mass, so that uniform tablets can be manufactured.	
		3) Granulation or screening the damp mass: The binder solution is mixed with the powder mix to form a damp and coherent mass. The wet mass is passed through a sieve (sieve mesh size 8-10) to prepare wet granules.	
		<ol> <li>Drying: The granules formed are spread evenly on trays and dried in a hot air oven at a controlled temperature not exceeding 60°C.</li> </ol>	
		5) <b>Dry screening</b> : The dried granules are passed through a sieve of smaller size than that used to prepare the moist granules. Sieves of 14 to 20 mesh size are generally used for this purpose.	
		6) <b>Lubrication</b> : The dried and screened granules are separated into coarse and fine granules by sieving using a sieve of 120 mesh size. Appropriate quantity of lubricant is added. The quantity of lubricant used varies from about 0.1% to 5% of the weight of the granulation.	



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### WINTER-2022 EXAMINATION

Subje	ect Titl	e: PHARMACEUTICS- THEORY Subject Cod	e: <b>20111</b>
Q.	Sub No	Answers	Marking Seheme
NO.	190.	<ul> <li>7) Compression: The prepared granules are compressed into tablets using a single punch or multi station tablet press fitted with the appropriate punches and dies.</li> <li>Diagram / Flow Chart:</li> </ul>	1.5M
		Grind Blend Agglomerate Pellet	
		Compress Tablet	
		Fig. Moist granulation flow chart	
2	d	Define gels. Write its advantages and disadvantages.	3M
		Marking Scheme: Definition-1M, Advantages-1M and Disadvantages-1M	
		Answer:	
		Definition:	
		Gels are transparent semi solid dosage forms containing one or more ingredients converted into a condensed mass using a gelling agent.	1M
		Advantages: (Any Two)	
		1. Bypass the problems related to gastrointestinal absorption of drug.	1 <b>M</b>
		2. Best sustainable route for oral delivery.	
		<ol> <li>Gels avoid the inactivation due to hepatic enzymes since liver is bypassed.</li> <li>They can exert an afficient local action without much side affects.</li> </ol>	
		4. They can exert an efficient local action without much side effects.	
		1. The epidermal enzymes might denature the active constituents present in the gel	
		2. If gels contain particles with larger size, then the skin absorption is not possible.	1 <b>M</b>



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с <b>1</b> .	4 (7)*41	MODEL A	ANSWER	0 1 20111
Subje Q.	Sub	e: PHARMACEUTICS- THEORY Ans	swers	Ct Code: 20111 Marking
No.	No.	2 The selection of the site of application	n may affect drug absorption	Scheme
		4. Sometimes cele course shire alleration	n may affect drug absorption.	
-		4. Sometimes gels cause skin allergies a	ind irritations.	
2	e	Differentiate between liniments and lotion	s.	3111
		Marking Scheme: Any Six Difference- 3M		
		Answer:		
		Liniments	Lotion	
		1) They are used for counter irritant, rubefacient, soothing or stimulating purposes	1) They are used for topical effects such as local cooling, soothing protective & emolligent effect	
		sumulating purposes.	protective & emoment effect.	
		2) Applied with friction.	2) Applied without friction.	
		<ol> <li>Vehicle is mostly oily or alcoholic.</li> </ol>	3) Vehicle is mostly aqueous.	
		<ol> <li>These are used for application to the unbroken skin.</li> </ol>	4) Lotions can be applied on broken skin.	
		5) Applied directly.	5) Applied with cotton gauze.	
		6) alcohol is added to improve penetration power.	6) Alcohol is added for cooling action.	
		7) These are semi-liquid preparations.	7) These are liquid preparations.	
		8) Example: Turpentine liniment	8) Example: Sulphur lotion.	
2	f	Describe the method of preparation of effe	ervescent granules.	3M
		Marking Scheme: Any Two Methods -1.5M	1 each	
		Answer:		
		1) Heat method:		
		1. A large porcelain dish is placed on a v	vater bath, with as much of the dish as pos	<sup>351ble</sup> <b>1.5M</b>
		exposed to the water or steam.	iboration of water of emotallization from	aitria
		2. The dish must be not to ensure rapid i	the powder which is added to it will be	
		slowly and the liberated water	of crystallisation will go on evanor	rating
		simultaneously.	or erystamsation win go on evapor	uning
		3. As a result, sufficient water will not b	be available to make coherent mass. Gene	erally
		heating takes 1 to 5 minutes.		
		4. The damp mass is then passed through $60^{\circ}$ C.	ough sieve dried in an oven temperatur	e not



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### WINTER-2022 EXAMINATION

Subje	ect Titl	e: PHARMACEUTICS- THEORY Subject Cod	le: <b>20111</b>
Q. No.	Sub No.	Answers	Marking Scheme
		<ol> <li>Wet method:         <ol> <li>The mixed ingredients are moistened with non-aqueous liquids (e.g., alcohol) to prepare a coherent mass.</li> <li>It is then passed through a sieve no.8 &amp; dried in an oven at temperature not exceeding 60°C.</li> <li>The dried granules then passed through the sieve to break the lumps which may be formed during drying.</li> <li>Then packed in airtight containers.</li> </ol> </li> </ol>	1.5M
2	g	<ul> <li>Define eye drops. Name the various excipients used in the formulation of eye drop with example of each.</li> <li>Marking Scheme: Definition-1M, Name of various excipients with Ex 2M for Any four excipients; each excipients = 0.5 M</li> </ul>	3M
		Answer: Definition: Eye drops:	1M
		Eye drops are sterile aqueous or oily suspension of drugs, that are instilled into the eye with the dropper they usually contain drugs having antiseptic, anaesthetic, anti-inflammatory, mydriatic or meiotic properties.	
		<ol> <li>Excipients used in the formulation of eye drop with example of each:         <ol> <li>Vehicle: The aqueous or oily vehicle is used. In preparation of eye drops. The aqueous vehicle may support bacterial growth or fungal growth, so one of the following bactericides may be used to preserve the eye drops: Benzalkonium chloride 0.002% and Phenylmercuric nitrate/acetate 0.01%.</li> <li>Thickening agent: It helps to prolong the contact time. e.g., Methyl cellulose, carboxymethyl cellulose, Polyvinyl alcohol. etc.</li> <li>Buffers: To maintain the pH. e.g., Boric acid, sodium acid phosphate, etc.</li> <li>Antioxidants: To prevent oxidation. e.g., Sodium metabisulphite.</li> <li>Wetting agents: Used for proper penetration of the eye drop into the cornea of the eye.</li> <li>Iso-tonicity adjusting agents: They are made isotonic with lachrymal secretion with the help of various buffers and other solutions. e.g., Sodium chloride.</li> </ol> </li> </ol>	2М
2	h	What do you mean by Quality Assurance? Give its objectives. Marking Scheme: Definition-1 M, Objectives -2 M for any four objectives	3M
		Answer:	



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WINTER-2022 EXAMINATION

Subj	ect Titl	e: PHARMACEUTICS- THEORY Subject Cod	le: <b>20111</b>
Q.	Sub No	Answers	Marking Scheme
110.	110.	Definition:	Scheme
		<ul> <li>Definition:</li> <li>The pharmaceutical quality assurance is to ensure that the medication being manufactured will provide the desired effect to the patient. Quality assurance also guarantees that there are no contaminants present and that the medications will meet quality requirements and all relevant regulations.</li> <li>Objectives: <ol> <li>Product design and development is by requirements of cGMP.</li> <li>All operations in production and control steps are specified.</li> <li>Correct starting materials and packaging materials are used to manufacture drug products.</li> <li>Appropriate controls such as in-process checks, calibrations, and validations exist to ensure the quality of raw materials, intermediate products, and finished products.</li> <li>Finished products are appropriately checked by pre-determined procedures.</li> <li>Every production batch is certified by authorized persons before it is released for acle and surply.</li> </ol> </li> </ul>	1M 2M (For any four objectiv es)
		<ul> <li>sale and supply.</li> <li>7. There are satisfactory measures adopted to ensure the quality of the product is maintained throughout its shelf life.</li> <li>8. Procedures exist for regular self-inspection or quality audits to assess the effectiveness of the QA system.</li> <li>9. The quality of products is regularly evaluated to verify that the process is consistently providing quality products.</li> </ul>	
2	i	Discuss Good Manufacturing Practices presented in schedule M.	3M
		Marking Scheme: Definition of schedule M and GMP-1M, GMP components- 2M (Any four points) OR GMP Requirements – 2M (Any four points) Answer:	
		Schedule M:	1M
		It prescribes the good manufacturing practices (GMP) and the requirements of factory premises, plant, equipment's, etc for manufacture of drugs. Schedule M is divided in two parts: Part-I: Good manufacturing practices of premises and materials. Part-II: Good manufacturing practices for specific requirements of plant and materials. GMP: GMP is a set of principles and procedures which, when followed by manufacturers for therapeutic goods, helps ensure that the products manufactured will have the required	
		quality.	



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Subje	ct Titl	e: PHARMACEUTICS- THEORY Subject Cod	le: <b>20111</b>
Q.	Sub	Answers	Marking
N0.	No.	Five main components of GMP	Scheme 2M
		<ul> <li>It is paramount to the manufacturing industry to regulate GMP in the workplace to ensure consistent quality and safety of products. Focusing on the following 5 P's of GMP helps comply with strict standards throughout the entire production process.</li> <li>1. People - All employees are expected to strictly adhere to manufacturing processes and regulations. A current GMP training must be undertaken by all employees to fully understand their roles and responsibilities. Assessing their performance helps boost their productivity, efficiency, and competency.</li> </ul>	(Any four points)
		2. <b>Products</b> - All products must undergo constant testing, comparison, and quality assurance before distributing to consumers. Manufacturers should ensure that primary materials including raw products and other components have clear specifications at every phase of production. The standard method must be observed for packing, testing, and allocating sample products.	
		3. <b>Processes</b> - Processes should be properly documented, clear, consistent, and distributed to all employees. Regular evaluation should be conducted to ensure all employees are complying with the current processes and are meeting the required standards of the organization.	
		4. <b>Procedures</b> - A procedure is a set of guidelines for undertaking a critical process or part of a process to achieve a consistent result. It must be laid out to all employees and followed consistently. Any deviation from the standard procedure should be reported immediately and investigated.	
		5. <b>Premises</b> - Premises should always promote cleanliness to avoid cross-contamination, accidents, or even fatalities. All equipment should be placed or stored properly and calibrated regularly to ensure they are fit for the purpose of producing consistent results to prevent the risk of equipment failure.	OP
		UK GMP Requirement:	
		<ol> <li>General Requirements         <ul> <li>Good location and surroundings, well designed and constructed buildings suitable for manufacturing, proper water system and proper disposal of waste</li> </ul> </li> <li>Warehousing Area         <ul> <li>Area shall be designed and adapted to ensure good storage conditions</li> <li>Clean, dry and maintain within acceptable temperature limits</li> </ul> </li> <li>Ancillary area         <ul> <li>Rest and refreshment rooms, washroom and toilets etc shall be separate from other areas</li> </ul> </li> </ol>	2M (Any four points)



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Subi	oct Titl	WODEL ANS WER Subject Cod	e. 20111
Q.	Sub	Answers	Marking Scheme
1101	1100	Shall not lead directly to the manufacturing and storage areas	Scheme
		4. Sterile Products	
		Separate enclosed area with air locks; air supply through HEPA filters.	
		Routine microbial counts: laminar flow cabinets availability and access restricted only to authorized persons.	
		5. Production area	
		Adequate space for orderly placement of equipment and material; and separate storage area for raw material "under test", "approved" and "rejected".	
		6. Health, Clothing and Sanitation of Workers	
		> The workers should be free from contagious diseases. It covers regular medical	
		check-up facilities; personal cupboards, First-aid facility and change room for workers.	
		7. Personnel	
		> Manufacture under direct supervision of competent technical staff; separate	
		Head for Q.C. laboratory; qualified and experienced personnel for Quality	
		Assurance and Quality Control Operations; written duties assigned; adequate	
		number of personnel; good laboratory practices and proper training of technical	
		staff members.	
		8. Sanitation in Manufacturing Premises	
		> No accumulated waste; no dust particles as far as possible; proper disinfection	
		and cleaning of premises and no stagnant water.	
		9. Equipment	
		Properly installed to achieve operational efficiency; good quality equipment to	
		be used. The equipment used should be such to facilitate through cleaning;	
		prevent physical and chemical change through contact and minimize	
		contamination. The written instructions for utilization of equipment be	
		provided and accuracy, precision should be maintained.	
		10. Raw Materials	
		> Properly identified; analysed; containers of raw materials inspected for any	
		damage; stored at optimum temperature; labeled properly; systematically sampled by quality control personnel; tested for compliance of required	
		standards; released from quarantine by quality control personnel through	
		written instructions; and rejected materials destroyed or returned back to the	
		supplier.	
		11. Master Formula Records (MFR)	
		<ul> <li>Licensee should maintain records relating to all manufacturing procedures for</li> </ul>	
		each product and batch size to be manufactured. It also includes patent or	
		proprietary status; name of formulation along with generic name if any; name,	
		quantity, and reference number of starting materials; strength; dosage form;	
		description; identification; composition; statement of processing location; step-	1



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MODEL ANSWER			
Subje	ect Title	e: PHARMACEUTICS- THEORY Subject Cod	le: <b>20111</b>
Q.	Sub	Answers	Marking
No.	No.		Scheme
		wise processing instructions; in-process control; requirements for storage	
		conditions; packaging details, etc.	
		12. Batch Packaging and processing Records	
		> Transcription errors to be avoided; packaging equipment clean; planned	
		packaging operations and proper maintenance of packaging records.	
		Batch processing records for each product; clean equipment; name of product;	
		number and batch being manufactured; dates and time of commencement of	
		operation	
		13. Standard Operating Procedures (SOPs) and Records	
		> SOP and records for receipts of each delivery of raw, primary and printed	
		packing material: sampling: instrument and equipment: internal labeling:	
		quarantine and storage: batch numbering: testing records of analysis:	
		quarantine and storage, baten numbering, testing, records of analysis,	
		equipment assembly and cambration, mannenance, cleaning and samation,	
		personnel; pest control; complaints, and recalls made, and returns received.	
		14. Quality Control System	
		Detailed instructions for quality control of raw materials and finished product;	
		quality control for packaging and labelling; adequacy of storage, quality control	
		procedure revised as and when possible and qualitative examination of returned	
		products.	
2	j	Give advantages and disadvantages of NDDS.	<b>3M</b>
		Marking Scheme: Advantages-1.5M, Disadvantages-1.5M (each point carries 0.5M)	
		Answer:	
		Advantages:	
		1) Controlled delivery by maintaining desired drug concentration and controlled rate	
		<ul><li>2) Accurate dosing.</li></ul>	<b>1.5M</b>
		3) Required therapeutic concentration of the drug can be maintained for a longer period.	
		4) It protects drug from degradation and increase the solubility of the drug there by	
		increasing bioavailability	
		5) Site specific delivery of the drug	
		<ul> <li>6) Decreased toxicity or side offects</li> </ul>	
		7) Improves patient compliance	
		7) Improves patient compliance.	
		Disadvantages:	
		1) Delay in onset of action and decrease in systematic availability of the drug.	
		2) Possibility of dose dumping resulting in increased risk of toxicity.	1 <i>5</i> 1/
		3) Higher cost of formulation.	1.3111
		4) Poor in-vitro in-vivo corelation.	
		5) All types of drugs cannot be formulated in NDDS.	



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### WINTER-2022 EXAMINATION

Subie	et Titl	PHARMACEUTICS. THEORY Subject Cod	e <sup>.</sup> 20111
Q.	Sub	Answers	Marking
No.	No.		Scheme
2	k	Define NDDS. Give its pharmaceutical applications.	<b>3M</b>
		Marking Scheme: Definition-1M, Applications - 2M for any two applications	
		Answer:	
		Definition:	
		Novel drug delivery system is an advanced drug delivery system to improve therapeutic effect and control the release of drugs.	1M
		Applications of NDDS:	
		1) Sustained and controlled drug delivery:	2M (Each
		Controlled and sustain release of drug can be achieved via NDDS, hence improving	applicati
		the pharmacokinetics and pharmacodynamic of drug, thereby reducing dosing frequency and side effects of the drugs.	on = 1M)
		2) Improving biograilability:	
		The application of NDDS in various formulation leads to an enhancement of	
		bioavailability of drugs and various phytoconstituents.	
		3) Site specific delivery:	
		NDDS leads to delivery of drug only at the site of action or target site, hence the off-	
		target side effects of drugs can be minimized.	
3		Attempt any <u>FOUR</u> of the following	12 M
3	a	Define pharmacopoeia.	1M
		Marking Scheme: Definition-1M,	
		Answer:	
		The word pharmacopeia was derived from Greek word 'Pharmakon' means 'drug' and	
		'Poiein' means 'make'. Pharmacopoeia is defined as any recipe or formula, or other standard	
		required to make or prepare a drug.	
		OR	
		It is the official book published by government of that country which contains the list of	
		drugs, their standards, formulae, and detailed information for medicinal preparations used	
		in that country or region.	
3	b	Define elixirs.	<b>1</b> M
		Marking Scheme: Definition-1M	
		Answer:	
		Elixirs are sweet aromatic preparations and are usually coloured. The main ingredients of	
		elixirs are ethyl alcohol (4-40%), water and glycerine or propylene glycol, flavouring agent,	
		syrup, and suitable preservatives.	



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### WINTER-2022 EXAMINATION

Subject Title: PHARMACEUTICS- THEORY Subject Code: 2011			
Q.	Sub	Answers	Marking
No.	No.	OP	Scheme
		UK Elivirs are clear flavoured sweetened hydro-alcoholic preparations containing potent or	
		unpleasant tasting drugs intended for oral administration	
3	c	Define ointments.	1M
		Marking Scheme: Definition-1M	
		Answer.	
		Ointments are semi-solid oily preparation containing medicament or medicaments	
		dissolved suspended or emulsified in the suitable base intended for application to the skin	
		or mucus membrane.	
3	d	Name any two superdisintegrants used in fast dissolving tablets.	1M
		<b>Marking Scheme:</b> Names of any two superdisintegrants – 1M each	
		Answer:	
		Superdisintegrants (Any two)	
		1) Sodium starch glycolate (Primoiel and Explotab)	
		<ul> <li>2) Croscarmellose sodium (Ac-Di-Sol) / Sodium carboxymethylcellulose</li> </ul>	
		3) Crosspovidone (Polyplasdone XL)	
		4) Alginic Acid	
		5) Guar gum	
3	e	Write any two limitations of continuous hot percolation process.	1M
		Marking Scheme: For each limitation $-0.5$ M	
		Answer:	
		Limitations of continuous hot percolation process (Any two)	
		1. The process cannot be used for the extraction of drugs having a physical	
		characteristic such that it would block the Soxhlet apparatus. E.g., opium, gum, resin,	
		orange peel, etc.	
		2. Only pure solvents or constant boiling mixtures can be used for this process.	
		3. The process is unsuitable for drugs having thermolabile active constituents. E.g.,	
3	f	Cochineal is a gent	1M
5		Modeling Schemer 1M	1141
		Marking Scheme: 1M	
		Answer:	
-		Cochineal is a <u>colouring</u> agent.	43.6
3	g	Flavouring agents are added intablets.	IM
		Marking Scheme: 1M	
		Answer:	
		Flavouring agents are added in <u>chewable</u> tablets.	



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### WINTER-2022 EXAMINATION

Subje	ect Titl	e: PHARMACEUTICS- THEORY Subject Code	de: 20111
Q.	Sub	Answers	Marking
No. 3	No. h	The chairman of the first edition of Indian pharmacopoeia was	Scheme 1M
		Marking Scheme: Name of chairman - 1M	
		Answer	
		i) Dr. B. N. Chosh	
3	i	Alembic Chemical works at Baroda was established by	1M
5		Morling Schemer 1M	
		Marking Scheme: 1M	
		Answer:	
2	•	1) Prol. 1. K. Gujjar Wikish in the meant maintenet time of all and	114
3	J	which is the most resistant type of glass?	11/1
		Marking Scheme: 1M	
		Answer:	
		i) Type I	
3	k	Which of the following is used as vulcanising agent in the manufacture of rubber	1M
		closures?	
		Marking Scheme: 1M	
		Answer:	
		ii) Sulphur	
3	l	Identify the artificial sweetener among the following:	1M
		Marking Scheme: 1M	
		Answer:	
		iii) Sucralose	
3	m	Freeze drying is not known as	1M
		Marking Scheme: 1 M	
		Answer:	
		iv) Fluidised bed drying	
3	n	A powder all the particles of which pass through sieve no. 10 and not more than 40% pass through sieve no 44 is	1 M
		Marking Scheme: 1M Answer:	
		i) Coarse powder	
3	0	The disintegration time limit for film-coated tablets is	1M
		Marking Scheme: 1M	
		Answer:	
		i) 15 minutes	



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### WINTER-2022 EXAMINATION

Subject Title: PHARMACEUTICS- THEORY Subject Code: 201				
	Sub	Answers	Marking	
No.	No.		Scheme	
3	p	Which of the following is used as a glidant in tablet formation?	1M	
		Marking Scheme: 1M		
		Answer:		
		ii) Talc		
3	q	Identity the wrong statement about suppositories.	1M	
		Marking Scheme: 1M		
		Answer:		
		iv) They should be pleasant in taste.		
3	r	The most common vehicle for nasal preparations is:	1M	
		Marking Scheme: 1M		
		Answer:		
		i) Water		
3	S	Sera contains	1M	
		Marking Scheme: 1M		
		Answer:		
		iii) Antibodies		
3	t	The solvent used for extraction is	1M	
		Marking Scheme: 1M		
		Answer:		
		i) Menstruum		



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#### WINTER-2022 EXAMINATION

### **MODEL ANSWER**

Subject Title: PHARMACEUTICAL CHEMSISTRY- THEORY

#### Important Instructions to examiners:

- 1) The answers should be examined by key words and not as word-to-word as given in the model answer scheme.
- 2) The model answer and the answer written by the candidate may vary but the examiner may try to assess the understanding level of the candidate.
- 3) The language errors such as grammatical, spelling errors should not be given more Importance (Not applicable for subject English and Communication Skills.
- 4) While assessing figures, the examiner may give credit for principal components indicated in the figure. The figures drawn by candidate and model answer may vary. The examiner may give credit for any equivalent figure drawn.
- 5) Credits may be given step-wise for numerical problems. In some cases, the assumed constant values may vary and there may be some difference in the candidate's answers and model answer.
- 6) In case of some questions, credit may be given by judgement on part of the examiner of relevant answer based on the candidate's understanding.
- 7) For programming language papers, credit may be given to any other program based on an equivalent concept.
- 8) As per the policy decision of Maharashtra State Government, teaching in English/Marathi and Bilingual (English + Marathi) medium is introduced at first year of AICTE diploma Programme from academic year 2021-2022. Hence if the students in first year (first and second semesters) write answers in Marathi or bilingual language (English +Marathi), the Examiner shall consider the same and assess the answer based on matching of concepts with model answer.

Q.	Sub	Answers	Marking
No.	No.		Scheme
1		Answer any <u>SIX</u> of the following:	<b>30M</b>
1	a	Explain the principle and procedure involved in the limit test for arsenic.	5M
		Marking Scheme: Principle - 3M (Explanation 2M + Reaction 1M); Procedure – 2M (1M for test solution & 1M for standard solution)	
		Answer:	
		Limit Test for Arsenic –	
		Principle:	Principle - 3M
		1. It is also called as Gutzeit test and requires special apparatus called Gutzeit	0111
		apparatus.	
		2. Limit test of Arsenic is based on the reaction of arsenic gas with hydrogen ion to	
		form yellow stain on mercuric chloride paper in presence of reducing agents like	
		stannous acid, potassium iodide.	
		3. The sample dissolved in stannated acid, which converts the arsenic impurities to	
		arsenious acid to arsenic acid depending upon valency state of arsenic impurity	
		present in the test sample.	

Subject Code: 20112



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Subje	ect Title	e: PHARMACEUTICAL CHEMSISTRY- T	HEORY Subject Cod	le: 20112
Q. No.	Sub No.	Ansv	wers	Marking Scheme
110	1101	11. Lead acetate pledger or papers are used	d to trap any hydrogen sulphide which may be	
		evolved along with arsine.		
		Procedure:		2M
		Take two 50 ml of Arsenic LT apparatus "Standard".	bottles. Label one "Test" and the other as	
		Standard Solution	Test Solution	
		1. A known amount of dilute arsenic solution is kept in the wide-mouthed bottle of the apparatus.	<ol> <li>Dissolving a specific amount of sample in water and stannate HCl (as free) and kept in the wide-mouthed bottle of the apparatus.</li> </ol>	
		2. To this solution, 1 gm of KI, 5 ml of stannous chloride, and 10 gm of zinc are added (all these reagents should be arsenic-free).	2. To this solution, 1 gm of KI, 5 ml of stannous chloride, and 10 gm of zinc are added (all these reagents should be arsenic-free).	
		3. Keep the solution aside for 40 minutes.	3. Keep the solution aside for 40 minutes.	
		4. Compare the stain obtained on the mercuric chloride paper with that in the apparatus containing the test solution.	4. Compare the stain obtained on the mercuric chloride paper with that in the apparatus containing standard solution.	
		<b>Observation:</b> The colour produce in sample solution. If colour produces in sample solution will pass the limit test of heavy metals and vio	solution should not be greater than standard n is less than the standard solution, the sample ce versa.	
1	b	Define and classify Antibiotics giving suital class.	ble example of compounds under each	5M
		Marking Scheme: Definition- 1M; Classific	ation with correct examples – 4M	
		Answer:		
		Antibiotics:		
		Antibiotics are chemical substances produce	d by certain species of microorganisms and	1M
		their synthetic analogues having the property of	of inhibiting the growth of or destroying other	
		microorganisms in high dilutions or low conce	entration	
		OR		
				1



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MODEL ANSWER			20112
Q. No	Sub	Answers	Marking Scheme
110.	110.	Chemical compounds derived from living organism and capable to inhibit the growth of	Benefite
		micro-organism or kill the micro-organism.	
		OR	
		The substances which produced by micro-organism and have capacity to inhibit the growth	
		or destroy the microorganism.	
		Chemical classification of antibiotics	
		1. Beta-lactam antibiotics:	4M classification
		a. Penicillin - Phenoxymethylpenicillin, flucloxacillin, amoxicillin.	
		b. Cephalosporins - Cefaclor, cefadroxil and cephalexin.	
		2. Tetracyclines: Doxycycline and Minocycline.	
		3. Aminoglycosides: Streptomycin	
		4. Macrolides: Erythromycin, azithromycin	
		5. Polypeptides: Bacitracin,	
		6. Polyenes Antifungal antibiotics: Amphotericin, Nystatin and Candicidin	
		7. Ansamycins: Rifamycins (Rifampin, Rifampicin, Rifabutin)	
		8. Lincomycins: Clindamycin.	
		9. Quinolones: Ciprofloxacin, levofloxacin and norfloxacin	
		10. Antibiotics derived from single aminoacid: s-Cycloserine & Chloramphenicol	
		11. Miscellaneous: s-fusidic acid, griseofulvin, novobiocin etc	
		(Classification of antibiotics based on chemical structure is expected however if students	
		write classification of antibiotics-based Mode of action or Spectrum of activity; the same	
		should be considered for 2M)	
		Classification of antibiotics according to Mode of Action	
		1. Inhibitors of bacterial cell wall synthesis: Penicillin, Cephelosporins	
		2. Inhibitors of Protein synthesis: Tetracyclines, Chloramphenicol, Macrolide,	
		Aminoglycoside	
		3. Inhibitors of Nucleic acids metabolism (DNA/RNA): Griseofulvin, Actinomycin	
		Classification of antibiotics depending on spectrum of activity	
		1. Narrow Spectrum: Bacitracin	
		2. Broad Spectrum: Cephalosporin	



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Subje	ect Title	e: PHARMACEUTICAL CHEMSISTRY- THEORY Subject Cod	e: 20112
Q.	Sub No	Answers	Marking
<u>1</u>	C	Give a brief account of: i) Precipitation titration ii) Acid- base titration	5M
		Marking Scheme:	
		2.5 marks each type of Titration	
		Answer:	
		i) Precipitation titration-	
		• Precipitation titration is a type of titration which involves the formation of precipitate	
		during the titration technique.	
		• In precipitation titration, the titrant reacts with analyte and forms an insoluble	
		substance called precipitate.	
		• It continues till the last amount of analyte is consumed.	
		• In this titration, a substance that precipitates from solution in a clearly visible form	
		at the end point is used as an indicator, e.g. Potassium Chromate in Mohr's method,	
		Ferric ammonium sulphate in Volhard's method etc.	
		Argontomotry Titration	
		• The titration in which silver nitrate (AgNO3) is used as a precipitating agent is	
		named as argentometric titration.	
		• End point can be determined using a suitable indicator which forms a coloured	
		precipitate at the end point. For example	
		• Mohr's method- Potassium chromate indicator;	
		• Volhard's method - Ferric ammonium sulphate	
		• The titration is used to determine halides like Cl-, Br-, and I-	
		$AgNO_3 + X^- \rightarrow AgX + NO_3$	
		(silver nitrate) (halides) (silver halides	
		white coloured precipitate)	
		AgNO <sub>3</sub> + indicator $\rightarrow$ indicator complex	
		(coloured) at the end point	
		Types of argentometric titrations:	
		• Mohr's method	
		Volhard's method	
		• Fajan's method	
		• Gay-lussac method	



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#### WINTER-2022 EXAMINATION

### MODEL ANSWER

#### Subject Title: PHARMACEUTICAL CHEMSISTRY- THEORY Subject Code: 20112 Sub Marking **Q**. Answers Scheme No. No. ii) Acid- Base titration-An acid–base titration is a method of quantitative analysis for determining the concentration of an acid or base by exactly neutralizing it with a standard solution of base or acid having known concentration. Thus, these are neutralization reactions with formation of salt and water as the end products. A pH indicator is used to indicate the end point of acid-base neutralization reaction. Four Basic Types of Acid-Base Titrations The below Table shows the four types of titrations, and you note that the titrant (compound in the burette that is added to the analyte) is always strong, while the analyte can be strong or weak. Type Titrant Analyte SA/SB Strong Acid Strong Base Weak Acid WA/SB Strong Base SB/SA Strong Base Strong Acid WB/SA Weak Base Strong Acid In acid- base titration, a solution of known concentration (the titrant) is added to a solution of the substance being studied (the analyte). In an acid-base titration, the titrant is a strong base or a strong acid, and the analyte is an acid or a base, respectively. For example, hydrochloric acid and sodium hydroxide form sodium chloride and water: HCl(aq) NaOH(aq) $H_2O$ NaCl(aq) ++Neutralization is the basis of titration. A pH indicator shows the equivalence point — the point at which the equivalent

- number of moles of a base have been added to an acid & a sharp colour change is observed.
- Examples of acid- base titration are Assay of Sodium bicarbonate, Assay of Ibuprofen, Assay of Boric acid etc.



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		MODEL ANSWER	
Subje	ect Title	e: PHARMACEUTICAL CHEMSISTRY- THEORY Subject Cod	le: 20112
Q. No.	Sub No.	Answers	Marking Scheme
1	d	Draw the structure of Phenytoin and give its chemical name, Therapeutic uses,	5M
		Formulations, Stability-storage conditions and Popular Brand Names.	
		Marking Scheme:	
		Structure – 1M; Chemical name – 1M; Therapeutic uses – 1M; Stability-storage conditions – 1M; Brand names- 0.5M; Formulation – 0.5M	
		Answer: Structure of Phenytoin-	1M
		Chemical name of Phenytoin-	1M
		5, 5-diphenylimidazolindine-2,4-dione or 5, 5-diphenyl-2,4-imidazolindinedione	1111
		<ul> <li>Therapeutic uses of Phenytoin-</li> <li>1. Phenytoin, formerly known as diphenylhydantoin, is a potent anticonvulsant used to treat and prevent generalized grand mal seizures, complex partial seizures and status epilepticus.</li> </ul>	1M
		2. Used as Anticonvulsant and Hypnotics	
		3. Used in Cardiac arrhythmias	
		Stability-storage of Phenytoin-	1M
		Store at room temperature between $68^{\circ} - 77^{\circ}$ F (20 <sup>o</sup> - 25 <sup>o</sup> C) away from light and moisture. Do not freeze.	
			0.5M
		Brand names of Phenytoin- Dilantin, Spentoin, Eptoin	
		Formulations of Phenytoin – Injection, Capsule	0.5M
1	e	Write storage condition and uses of: i) Carbon Dioxide ii) Hydrogen Peroxide	5M
		Marking Scheme:	
		Storage condition – 1M for each drug; Uses – 1.5M for each drug (Any three uses/drug)	



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MODEL ANSWER				
Subject Title: PHARMACEUTICAL CHEMSISTRY- THEORY         Subject Code: 2011				
Q. No.	Sub No.	Answers	Marking Scheme	
		Answer:		
		Storage condition of Carbon dioxide:		
		• Carbon Dioxide is supplied in metal cylinders at a temperature not exceeding 31°C.		
		• The shoulder of the cylinder is painted grey and has the name and symbol of $CO_2$		
		stencilled on it.		
		Uses of Carbon dioxide:		
		1. Carbon dioxide is important for regulating the acid-base balance of the blood &		
		tissues.		
		2. Carbon dioxide has been used as a respiratory stimulant.		
		3. Carbon dioxide 5 to 7 % in oxygen has been used in the treatment of carbon		
		monoxide poisoning.		
		4. Carbon dioxide, when given by mouth in solution form or as carbonates or		
		bicarbonates, promotes the absorption of liquids by the mucous membrane.		
		Therefore, aerated waters rapidly relieve thirst, hasten the action of alcohol & soon		
		cause diuresis.		
		5. The frozen form of carbon dioxide, dry ice, has been used in the treatment of skin		
		disorders like acne, angiomas, corns, eczema, moles, warts, etc.		
		Storage condition of Hydrogen peroxide:		
		• It is stored in containers protected from light, in bottles closed with glass stoppers or		
		plastic caps provided with a vent for the escape of oxygen. It is kept in a cool place.		
		The label of the container should indicate whether it contains a stabilizing agent or		
		not.		
		Uses of Hydrogen peroxide:		
		• Hydrogen peroxide solution is primarily used for its antiseptic action.		
		• The antiseptic action is associated with mechanical cleansing provided by rapid		
		foaming release of oxygen. This helps in removal of dirt, bacteria from cuts and		
		wounds and acts as cleaning-antiseptic.		
		• Hydrogen peroxide is effective against many pathogenic bacteria including		
		anaerobic bacteria.		
		• The diluted solution (1:1 with water) is used for gargle, mouthwash or for treatment		
		of infections of the throat.		



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MODEL ANSWER				
<u>Subje</u> Q.	ect Title Sub	e: PHARMACEUTICAL CHEMSISTRY- THEORY Subject Cod Answers	le: 20112 Marking	
No.	No.	• It is also used for treatment as ear wash and vaginal douche	Scheme	
		<ul> <li>It is also used for treatment as car wash and vaginar douche.</li> <li>Hydrogen perovide solution is an effective antidote for phosphorus and evenide.</li> </ul>		
		• Hydrogen peroxide solution is an effective anddote for phosphorus and cyanide		
1	Г	Define and elegify Advancergia drugs giving suitable evenues of compounds under	5M	
1	ſ	each class.	511	
		Marking Scheme:		
		Definition – 1M, Classification – 4M. (Consider any one classification method)		
		Answer:		
		Adrenergic Agents:	1M	
		An adrenergic agent is a drug, or other substance, which has effects like, or the same as, epinephrine (adrenaline). Thus, it is a kind of sympathomimetic agent. Alternatively, it may refer to something which is susceptible to epinephrine, or similar substances, such as a biological receptor (specifically, the adrenergic receptors).		
		<ul> <li>Classification of Adrenergic Drugs:</li> <li>The adrenergic drugs can be classified based on their chemical structure.</li> <li>1. Catecholamines – Adrenaline, Nor-adrenaline, Isoprenaline</li> <li>2. Non-Catecholamines – phenylephrine, Salbutamol, Terbutaline, Ephedrine, Pseudoephedrine.</li> <li>3. Imidazoline derivatives – Naphazoline, Tetrahydrozolium.</li> </ul>	<b>4</b> M	
		<ul> <li>Alternatively, these agents classified as-</li> <li><b>Directly acting (act directly on α or β receptors):</b> Direct stimulation of the α- and β-adrenergic receptors can produce sympathomimetic effects. e.g. Epinephrine, Norepinephrine, Dopamine, Salbutamol, Phenylephrine, Terbutaline, Naphazoline, Tetrahydrozoline.</li> <li><b>Indirectly acting (act by providing more norepinephrine to act on α or β receptors):</b> work by causing the release of dopamine and norepinephrine, along with (in some cases) blocking the reuptake of these neurotransmitters. e.g. Amphetamine, hydroxyamphetamine, and propylhexedrine, pseudoephedrine</li> <li><b>Mixed acting (act by both mechanisms)</b>: ephedrine, Metaraminol</li> </ul>		
		Many sympathomimetics alternatively, also classified as-		
		1. alpha-adrenoceptor agonists (α-agonists): Phenylephrine		
		2. <b>beta-adrenoceptor agonists (β-agonists):</b> Terbutaline, Salbutamol		
		3. Both alpha and beta agonist: Adrenaline, Noradrenaline		



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### WINTER-2022 EXAMINATION

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Subje	ect Title	e: PHARMACEUTICAL CHEMSISTRY- THEORY Subject Cod	le: 20112
Q. No	Sub No	Answers	Marking
1	G	Give the structure, Chemical name, Therapeutic uses, Stability-storage conditions and Popular Brand names of Chloroquine Phosphate.	5M
		Marking Scheme:	
		Structure – 1M; Chemical name – 1M; Therapeutic uses – 1M (for two uses); Stability-storage conditions – 1M; Brand names – 1M (for two names).	
		Answer:	
		Structure of Chloroquine phosphate-	
			1M
		· 2H <sub>3</sub> PO <sub>4</sub>	
		OR	
		CH <sub>2</sub> CH <sub>3</sub>	
		CI	
		Chemical name of Chloroquine phosphate:	
		7-chloro-4-(4'-diethylamino-1'-methyl butyl amino)-quinoline phosphate <b>OR</b>	1M
		$N^4$ -(7-chloroquinolin-4-yl)- $N^1$ , $N^1$ -diethylpentane-1,4-diamine	
		Therapeutic uses of Chloroquine phosphate:	1M
		Chloroquine is used to prevent and treat malaria.	
		• It is also used to treat liver infection caused by protozoa (extraintestinal amebiasis).	
		• Chloroquine may also be used to treat coronavirus (COVID-19) in certain	
		hospitalized patients.	11/
		• To treat graduasis, medinatoid artifitis, systemic erymematosus. Stability-storage of Chloroquine phosphate:	1111
		<ul> <li>Store in a cool, dry place, protected from light &amp; heat.</li> </ul>	
		Brand names of Chloroquine phosphate:	
		Ciplaquin, Nivaquine P, Lariago, Aralen,	1M
			1


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## WINTER-2022 EXAMINATION

Subje	ct Title	e: PHARMACEUTICAL CHEMSISTRY- THEORY Subject Cod	e: 20112
Q.	Sub	Answers	Marking
No. 2	No.	Answer any TEN of the following:	Scheme 30 M
2	a	What is meant by 'Impurity'? Enlist different sources of impurities. Explain any two.	3M
		Marking Scheme: Definition: 0.5 M; Enlist: 0.5 M; Explanation (any two): 1 M each	
		Answer:	
		Impurity: Undesirable matter which may or may not be toxic but present in the	0.5M
		pharmaceutical products.	
		Sources of Impurities	
		1) Raw materials used in manufacture	
		2) Processes used in manufacture	0.5M
		3) Material of the plant	
		4) During storage	
		5) Accidental substitution or deliberate adulteration	
		6) Manufacturing hazards	
		1) Raw materials used in manufacture: Traces of impurities in raw materials may be	1M for each for
		carried to contaminate the final product.	two
		• E.g. common salt (NaCl) prepared from rock salt will almost certainly contain traces of calcium (Ca) and magnesium (Mg) compounds.	sources
		• Metallic zinc may be present as an impurity in zinc oxide (ZnO) sample as it	
		is prepared by heating metallic zinc.	
		2) Processes used in manufacture: Some impurities are incorporated during the	
		manufacturing process. This may occur due to	
		Reagents used in process	
		• Reagents added to remove other impurities	
		• Solvents - water is the cheapest solvent widely available. Tap water contains	
		many ion impurities in small amounts like Cl-, Ca++, Mg++, Na+ etc	
		• The intermediate products may come along the process in the final product	
		as impurity	
		3) Material of the plant: The vessels used in the manufacturing process are generally	
		made up of metals like iron, copper, zinc, nickel, aluminium, and stainless steel. Due	
		to the solvent action on the plant material the traces of metals i.e., impurities come	



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# **MODEL ANSWER** Subject Code: 20112 Subject Title: PHARMACEUTICAL CHEMSISTRY- THEORY Sub Answers Marking **Q**. Scheme No. No. in the product. Similarly, glass of an unsatisfactory standard and plastic containers used for handling liquid and semisolid products may yield traces of alkalies and antioxidants respectively. 4) During storage: Filth - stored product may become contaminated with dust, insect, or insect excreta. Decomposition of the product during storage - many chemical substances undergo changes or decomposition due to careless storage e.g., ferrous sulphate is slowly converted into insoluble ferric oxide by air and moisture Ether and chloroform decompose in the presence of light and air. Chloroform on decomposition gives carbonyl chloride (phosgene gas) so it should be stored in well filled, well-closed amber coloured bottle. 5) Accidental substitution or deliberate adulteration: Accidental substitution can take place if toxic substances are stocked with other substances or compounds. Some pharmaceutical products may be adulterated with cheaper substitutes. E.g., Honey may be adulterated with inverted sugar, potassium bromide with sodium bromide. 6) Manufacturing hazards: Particulate contamination - accidental inclusion of dirt, glass, porcelain, metallic or plastic fragments from sieves, granulating, tableting, and filling machines or even from product containers is possible. Process error - gross errors arising from incomplete solution of solute in a liquid preparation must be detected by normal analytical procedures. Special care is required for highly potent medicaments of low dose (5 mg or less) **Cross contamination** - the handling of powders, granules and tablets in large quantities creates considerable amount of air-borne dust and may lead to cross-contamination Microbial contamination - liquid preparations and creams for topical application are prone to bacterial and fungal contamination. Special care should be taken in parenteral and ophthalmic preparations to avoid microbial contamination



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MODEL ANSWER Subject Title: DIA DMA CELITICAL CHEMSISTERY THEORY Subject Codes 20112			
Q.	Sub No	Answers	Marking Scheme
110.	110.	• Packing errors - products of similar appearance as tablets of same size,	Benefite
		colour and shape packed in similar containers may lead to mislabelling	
2	b	Classify different types of Titrimetric Analysis and explain Redox type of titration.	3M
		Marking Scheme:	
		Classification – 1 M; Explanation – 2 M.	
		Answer:	
		Classification	
		1) Acid-base Titrations	
		2) Non-aqueous Titrations	11/1
		3) precipitation Titrations	1111
		4) Complexometric Titrations	
		5) Redox Titrations	
		Redox Titrations	
		In redox reaction, Oxidation and reduction usually occur simultaneously. Oxidation reaction	
		is the reaction where addition of oxygen or removal of hydrogen takes place, while in	2M
		reduction, there will be addition of hydrogen or removal of oxygen.	
		OR	
		Redox Titration reaction involves the transfer of electron between the reactant (titrant) and	
		titrate takes place.	
		OR	
		A redox titration is the same as an acid-base titration except it involves a redox reaction and	
		generally does not require an indicator.	
		Various oxidising agents are employed in the reactions, and depending upon the agents	
		used, they are classified into	
		1) <b>Permanganate Titrations:</b> Potassium permanganate is used as an oxidant it is also	
		self-indicator.	
		2) <b>Dichromate Titrations:</b> Potassium dichromate is used as an oxidant.	
		3) <b>Iodine Titrations:</b> Iodine is used as an oxidising agent.	
		4) Cerimetry: Ceric salts are used as oxidants.	
2	c	Give the Structure and Chemical name and uses of Diazepam.	<b>3M</b>
		Marking Scheme: Structure 1M; Chemical name – 1 M; Uses (any two) –1 M	



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#### WINTER-2022 EXAMINATION

MODEL ANSWER Subject Title: DHADMACEUTICAL CHEMSISTRY THEORY Subject Code: 2011			
Q.	Sub	Answers	Marking
No.	No.		Scheme
		Answer:	
			1M
		Chemical name:	1M
		7-Chloro-1,3-dihydro-1-methyl-5-phenyl-3H-1,4-benzodiazepin-2-one	
		<ul> <li>Uses (any two):</li> <li>Diazepam is used to treat anxiety disorders, alcohol withdrawal symptoms, or muscle spasms.</li> <li>Diazepam is sometimes used with other medications to treat seizures.</li> <li>Sedatives &amp; Hypnotics</li> </ul>	1M
		Used in treatment of insomnia.	
2	d	Give the Structure, Uses and Storage condition of Atenolol. Marking Scheme: Structure-1M; Uses (any two) – 1 M; Storage condition –1 M Answer:	31/1
		NH <sub>2</sub> C C C C C C C H <sub>2</sub> H <sub>2</sub> H <sub>2</sub> C H <sub>2</sub> C H <sub>2</sub> C H <sub>2</sub> C H <sub>3</sub> C H <sub>3</sub> C C H <sub>3</sub> C H <sub>3</sub> C C C C C C C C C C C C C C C	1M



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## WINTER-2022 EXAMINATION

### MODEL ANSWER

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Subje	ct Title	e: PHARMACEUTICAL CHEMSISTRY- THEORY Subject Cod	le: 20112
Q.	Sub No	Answers	Marking
110.	110.	Uses (any two):	1M
		It is 8-blocker used for	
		1) Management of hypertension,	
		2) Management of angina pectoris,	
		3) Management of acute myocardial infarction,	
		4) Management of heart failure,	
		5) Management of atrial fibrillation,	
		6) Management of supraventricular tachycardia,	
		7) Management of ventricular arrhythmias,	
		8) Management of symptomatic thyrotoxicosis,	
		9) Prophylaxis of migraine headaches,	
		10) Management of alcohol withdrawal.	1M
		Storage: Store at a room temperature 20-25°C, in a dry place.	
2	e	Define and Classify Antihypertensive agents with suitable examples.	3M
		Marking Scheme:	
		Definition - 1M; Classification – 2M.	
		Answer:	
		Definition:	
		An agent that reduces elevated blood pressure is called as an antihypertensive agent.	1M
		OR	
		The drugs which are useful for treatment of hypertension are called as antihypertensive	
		agents.	
		Classification	
		1) ACE inhibitors: Captopril, Enalapril, Ramipril	
		2) Angiotensin antagonist: Losartan, Candesartan	2M
		3) Calcium channel blockers: Verapamil, Nifedipine,	
		4) Diuretics:	
		a. Thiazides: hydrochlorothiazide	
		b. High ceiling: furosemide	
		c. Potassium sparing: spironolactone	
		5) Beta-adrenergic blockers: Propranolol, Metoprolol, Atenolol	
		6) Alpha-adrenergic blockers: Prazosin, Terazosin	
	1		1



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#### WINTER-2022 EXAMINATION

		MODEL ANSWER	[]
Subje	ect Title	e: PHARMACEUTICAL CHEMSISTRY- THEORY Subject Cod	le: 20112
Q.	Sub	Answers	Marking
INO.	NO.	7) Alpha + beta adrenergic blockers: Labetalol Carvedilol	Scheme
		<ul> <li>2) Control sympothelytic: Cloniding, Mathyldong</li> </ul>	
		(0) $(1)$	
		9) Vasodilators: Hydralazine, Minoxidil sodium	
2	f	Give the Structure and Chemistry of Frusemide.	<b>3M</b>
		Marking Scheme: Structure - 1M; Chemistry – 2M (Chemical name – 1M; Chemical nature – 1M)	
		Answer:	
		CI $CH_2$ CH	1M
		Name: 4 chloro 2 ((furan 2 yl methyl) amino) 5 sulfamoylbenzoic acid	
		• Hame, +-emoto-2-((furan-2-yr meuryr) ammo)-5-sunamoyroenzoie aeid.	IM
		• Formula: $C_{12}H_{11}CIN_2O_5S$	
		• Mol weight: 330.74 g/mol	1M
		• It is anthranilic acid derivative containing furan as heterocyclic ring and sulphonamide as functional group.	
2	g	Define and classify hypoglycaemic agents giving suitable example of compounds	3M
	0	under each class.	
		Marking Scheme:	
		Definition -1M; Classification with examples – 2M.	
		Answer	
		Drugs used in diabetes treat diabetes mellitus by altering the glucose level in the blood. Anti-	
		diabetic drugs administered orally are called Oral Hypoglycaemic Agents.	1M
		Classification	
		1) Hormonog Lagulia and its ana anti-	
		1) Hormones: Insulin and its preparations	2M
		2) Oral hypoglycemic agents	
		a. Sulfonylureas: Tolbutamide, Chlorpropamide, Tolazamide,	
		Acetohexamide, Glipizide, Glyburide, Glimepiride, Glicazide	



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		WINTER- 2022 EXAMINATION MODEL ANSWER	
Subje	ect Titl	e: PHARMACEUTICAL CHEMSISTRY- THEORY Subject Cod	le: 20112
Q. No	Sub No	Answers	Marking Scheme
110.	110.	b. Thiazolindiones: Rosiglitazone, Pioglitazone	benefite
		c. Biguanidines: Metformin, Phenformin	
		d. Nonsulfonylureas: Metaglinides, Repaglinides, Nateglinides	
		e. <i>α-glucosidase inhibitor</i> : Acarbose, Miglitol.	
		3) Plant based products eg. Guar gum	
2	h	Write the uses and Popular Brand Names of Piroxicam or Diclofenac Sodium	3M
		Marking Scheme:	
		Uses (any two) -2 M; Brand names (Any two) – 1 M. Consider any one drug	
		Answer:	
		Piroxicam	
		Uses: Anti-inflammatory drug used in the treatment of Osteoarthritis, Rheumatoid arthritis,	2M
		Ankylosing spondylitis.	
		Brand Names: Dolonex, Ugesic, Suganril, Doloforce, Doloxicam, Feldex, Dupox,	
		Medicam, Prixicam, Rexicam, Pirox.	1M
		OR	
		Diclofenac Sodium	
		Uses: Anti-inflammatory drug used in the treatment of Osteoarthritis, Rheumatoid arthritis,	
		Ankylosing spondylitis, Ocular Pain, Toothache, Dysmenorrhoea, renal colic.	
		Brand Names: Voltaren, Voltaflam, cataflam, Diclonac	
2	i	Define and classify sulphonamides giving suitable examples.	3M
		Marking Scheme:	
		Definition -1 M; Classification – 2 M.	
		Answer:	
		Definition: Sulphonamides are the group of synthetic antimicrobial agents that are	
		structural analogues of para-amino benzoic acid (PABA).	1M
		Classification: Any one type of classification can be considered.	
		Chemical classification	2M
		1. N <sup>1</sup> - substituted sulphonamides	
		a. With acyclic substituents: Sulphacetamide, sulphaguanidine	

sulphamethoxazole, **b.** With heterocyclic substituents: Sulphadiazine, sulphadimethoxine, sulphamethoxypyridazine.



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Subje	ct Title	e: PHARMACEUTICAL CHEMSISTRY- THEORY Subject Cod	e: <b>20112</b>
Q. No.	Sub No.	Answers	Marking Scheme
		2. N <sup>4</sup> - substituted sulphonamides e.g. Sulphasalazine.	
		3. Sulphonamides with both $N^1$ and $N^4$ substituents e.g. Phthalylsulphathiazole, succinylsulphathiazole.	
		On the basis of duration of action	
		1. Short-acting sulphonamide (plasma half-life less than 10 hours)	
		a. Poorly absorbed and locally acting - succinyl sulphathiazole, Sulphaguanidine, phthalylsulphathiazole.	
		b. absorbed and excreted rapidly - Sulphacetamide.	
		2. <b>Medium-acting sulphonamides</b> (plasma half-life is between 10-24 hours) Sulphamethoxazole, sulphadiazine.	
		3. Long-acting sulphonamides (plasma half-life is more than 24 hours): Sulphadimethoxine, sulphamethoxypyridazine.	
		4. Ultra-long-acting sulphonamides - Sulphamethoxine, Sulphamethoxypyrazine	
		Depending upon their therapeutic uses	
		<ol> <li>Sulphonamides are used for systemic infections:</li> <li>a. Urinary tract infections: Sulphamethoxazole, Sulphacetamide.</li> </ol>	
		b. <b>Respiratory tract infections:</b> Cotrimoxazole, Sulphadiazine.	
		c. Meningeal infections: Sulphadiazine.	
		2. Sulphonamides are used for local infections:	
		a. Intestinal infections: Sulphaguanidine, Phthalylsulphathiazole, Succinyl	
		sulphathiazole.	
		b. <b>Ophthalmic infections:</b> Sulphacetamide.	
		c. Burn therapy: Mefenide, Silver sulphadiazine.	
2	j	Give the Structure, Storage condition and official preparations of any one beta- lactam antibiotics	3M
		Marking Scheme: Structure-1 M; Storage condition- 1 M, Official preperations-1 M.	
		Answer:	
		Consider any one penicillin or cephalosporin for the answer according to textbook.	



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## WINTER-2022 EXAMINATION

		MODEL ANSWER	
Subje	ect Title	e: PHARMACEUTICAL CHEMSISTRY- THEORY Subject Cod	e: <b>20112</b>
Q.	Sub	Answers	Marking
N0.	No.	Amovicillin	Scheme
		Structure	
		NHa	
		HO V U N	
		0	
		НО	
		Storage conditions:	
		• Capsules and tablets are stored at room temperature (20-25°C) away from heat,	
		light and moisture.	
		• Syrups and injections are stored in air tight containers in refrigerator (2-8°C) but	
		do not freeze.	
		Official preparations:	
		• Oral tablet /capsules 125, 250, 500 mg per tablet or capsule	
		• Syrup: 125 mg/5 mL, 30 mL bottle	
		• Injection: 125, 250, 500 mg per vial for I.M. / I. V. use	
		Brand names:	
		Mox, Novamox, Synomox, Amoxil etc.	
2	k	Define and Classify Antineoplastic agents with suitable examples Marking Scheme:	3M
		Definition -1 M; Classification – 2 M.	
		Answer:	
		<b>Definition:</b> Antineoplastic drugs are medications used to treat cancer. Drugs that are	1M
		effective in the treatment of malignant, or cancerous, disease.	1141
		Classification:	
		1. Alkylating Agents.	
		a. Nitrogen mustard drugs: Mustine, Chormabucil, cyclophosphamide	<b>2M</b>
		b. Aziridines: Thiotepa	
		c. Alkyl sulphonate: Busulphan	
		d. Nitrosourea group compound: Lomustine	
		2. Antimetabolites: Methotrexate, Mercaptopurine, Azathioprine, Fluorouracil	
		3. Antibiotics: Actinomycin, Daunorubicin, Doxorubicin	
		4. <b>Fiant Products</b> : Sulphates of vinblastine and vincristine.	
		5. Hormones and related drugs: Glucocorticolds, Lamoxilen	
		o. Iviiscenaneous agents: Hydroxyurea, Cispiatin	



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#### WINTER-2022 EXAMINATION

#### **MODEL ANSWER**

#### CHEMCICTON THEODY 4 70.41

Subje	ct Title	e: PHARMACEUTICAL CHEMSISTRY- THEORY Subject Code	de: 20112
Q.	Sub No	Answers	Marking
<u>No.</u> 3	INO.	Solve the following Multiple-Choice Ouestions:	20 M
-			
3	1.	Organic Chemistry is the Chemistry of	1M
		Answer:	
		c) Carbon compounds	
3	2.	The substance being titrated is called as	1M
		Answer:	
		c) Titrate	
3	3.	Name of the group -CH=CH2	1M
		Answer:	
		b) Vinyl	
3	4.	Following is not a topical agent.	1M
		Answer:	
		c) Oxygen	
3	5.	Calcium carbonate is used for	1M
		Answer:	
		c) Dental products	
3	6.	The order of preference in numbering the heteroatom's follows:	1M
		Answer:	
		d) O-S-N	
3	7.	The name of five membered heterocyclic ring containing two double bonds ends with	1M
		Answer:	
		c) Ole	
3	8.	Example of piperidine heterocyclic ring is	1M
		Answer:	
		a) Pethidine	
3	9.	Chlorpromazine contains following heterocycle	1M
		Answer:	
		c) Phenothiazine	
3	10.	Nicotinic action of acetylcholine is	1M
		Answer:	
		d) Stimulation of skeletal muscle	



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#### WINTER-2022 EXAMINATION

#### **MODEL ANSWER**

#### IEMCICTEDY THEODY

Subje	ect Title	e: PHARMACEUTICAL CHEMSISTRY- THEORY Subject C	code: 20112
Q.	Sub	Answers	Marking
<u>No.</u> 3	<b>No.</b> 11.	Following is the example of adrenergic antagonists	Scheme 1M
•			
		Answer.	
3	12	b) Totazonne Six membered beterocyclic ring containing three double bond & 1 & 3 position	1M
5	12.	nitrogen atom is called	1171
		Answer:	
		d) Pyrimidine	
3	13.	Cardiac arrhythmia means disturbance in	1M
		Answer:	
		b) Heart rate	
3	14.	Example of calcium channel blocker is	1M
		Answer:	
		a) Nifedipine	
3	15.	Brand name of urea:	1M
		Answer:	
		c) Cotaryl-H	
3	16.	NSAIDS stands for	1M
		Answer:	
		c) Non-Steroidal Anti-Inflammatory Drugs	
3	17.	Brand name of acetyl salicylic acid is	1M
		Answer:	
		a) Anacin	
3	18.	Name of drug used in treatment of dental caries.	1M
		Answer:	
		b) Sodium fluoride	
3	19.	Synonym of ferrous sulphate.	1M
		Answer:	
		a) Green vitriol	
3	20.	Cotrimoxazole is a combination of	1M
		Answer:	
		b) Sulphamethoxazole & trimethoprim	

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#### WINTER-2022 EXAMINATION

#### MODEL ANSWER

#### Subject Title: PHARMACOGNOSY- THEORY

#### **Important Instructions to examiners:**

- 1) The answers should be examined by key words and not as word-to-word as given in the model answer scheme.
- 2) The model answer and the answer written by the candidate may vary but the examiner may try to assess the understanding level of the candidate.
- 3) The language errors such as grammatical, spelling errors should not be given more Importance (Not applicable for subject English and Communication Skills.
- 4) While assessing figures, the examiner may give credit for principal components indicated in the figure. The figures drawn by candidate and model answer may vary. The examiner may give credit for any equivalent figure drawn.
- 5) Credits may be given step-wise for numerical problems. In some cases, the assumed constant values may vary and there may be some difference in the candidate's answers and model answer.
- 6) In case of some questions, credit may be given by judgement on part of the examiner of relevant answer based on the candidate's understanding.
- 7) For programming language papers, credit may be given to any other program based on an equivalent concept.
- 8) As per the policy decision of Maharashtra State Government, teaching in English/Marathi and Bilingual (English + Marathi) medium is introduced at first year of AICTE diploma Programme from academic year 2021-2022. Hence if the students in first year (first and second semesters) write answers in Marathi or bilingual language (English +Marathi), the Examiner shall consider the same and assess the answer based on matching of concepts with model answer.

Q.	Sub	Answers	Marking
N0.	No.	Answer on SIV of the following:	Scheme 20M
1		Answer any <u>SIX</u> of the following:	<b>30</b> 1VI
1	a	Explain the Pharmacological Classification of Crude Drugs with Examples.	5M
		Marking Scheme:	
		(Classification: 3M; Examples of each class: 2M)	
		Answer:	
		This system of classification involves the grouping of crude drugs according to the	
		pharmacological action of their active constituents or their therapeutic uses, regardless of	
		their morphology, taxonomical status, or chemical relationship. The drugs differing in	
		mechanism of action but having same pharmacological effects are also grouped together,	
		e.g., bulk purgatives, irritant purgatives, emollient purgatives etc. This classification is more	
		relevant and is mostly followed method. Drugs like digitalis, squill and strophanthus having	
		cardiotonic action are grouped together irrespective of their parts used or phylogenetic	
		relationship or the nature of Phyto-constituents they contain.	
		1. Drugs acting on gastro intestinal tract:	
		Bitter-Gentian, Quassia, Cinchona	
		Carminative-Dill, Mentha, Cardamom	
		Emetics-Ipecacuanha	

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# WINTER-2022 EXAMINATION

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Q. No.	Sub No.	Answers	Marking Scheme
		Anti-amoebic-Kurchi, Ipecacuanha	
		Bulk Laxative-Agar, Ispaghula, Banana	
		Purgatives-Senna, Castor oil	
		Peptic ulcer treatment- Liqourice	
		2. Drugs acting on respiratory system:	
		Expectorant-Vasaka, Liqourice, Ipecacunha	
		Antitussive-Opium,	
		Bronchodilator-Ephedra, Tea,	
		3. Drugs Acting on Cardio vascular System:	
		Cardiotonic-Digitalis, squill	
		Cardiac Depressants-Cinchona	
		Vaso Constrictor-Ergot	
		Antihypertensive-Rauwolfia	
		4. Drugs acting on Autonomic nervous system:	
		Adrenergic-Ephedra	
		Cholinergic-Pilocarpine, Physostigmine	
		Anticholinergics-Belladonna, datura	
		5. Drugs acting on CNS:	
		Central Analgesic-Opium	
		CNS Stimulants-Coffee	
		Hallucinogenic-Cannabis, poppy latex	
		6. Antispasmodic:	
		Smooth Muscle Relaxants-Opium, Datura, Hyoscyamus	
		Skeletal Muscle Relaxants-Curare	
		7. Anticancer: Vinca, Podophyllum,	
		8. Antirheumatics-Aconite, Colchicum, Guggul	
		9. Astringents-Myrobalan, Black catechu	
1	b	Define adulteration of drugs and types of adulteration in details.	5M
		Marking Scheme:	
		Definition: 1M; Types of adulteration with examples: 4M	
		Answer:	
		Adulteration is defined as debasement of an article or substituting original drugs partially	
		or fully with other similar looking substance. The substance which are mixed is free from	



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Q. No	Sub No	Answers	Marking Scheme
110.	110.	or inferior in chemical and therapeutic and chemical properties or addition of low grade or	Benefite
		spoiled drugs or entirely different drugs similar to that of original drugs substituted with an	1M
		intention of enhancement of profit.	
		Types of Adulteration:	
		Adulteration can be broadly classified into two types:	
		1) <b>Intentional adulteration</b> is mainly encouraged by traders because these original	
		crude drugs are highly costly. So hence they use cheaper variety to reduce the cost burden and to gain profit.	1M
		2) Accidental adulteration: Accidental adulteration occurs without bad intention of	
		the manufacturers or suppliers mainly it occurs during collection of drugs because	
		of same morphological features between two plants.	
		A. Replacement by exhausted drugs:	
		1) Exhausted saffron is coloured artificially	
		2) Exhausted Ginger is mixed with starch	<b>3M</b>
		<b>B</b> Substitution with superficially similar but inferior drugs: Examples	
		1) Adulteration of cloves by mother cloves	
		2) Saffron with dried flower of Carthamus tinctorius	
		C. Substitution by artificially manufactured substituent: Examples	
		1) Paraffin wax is tinged yellow & substituted for yellow bee's wax.	
		2) Artificial invert sugar is mixed with honey.	
		<b>D.</b> Substitution by sub- standard commercial varieties: Examples	
		1) Capsicum frutescens (capsicum minimum), substituted by Capsicum annum.	
		2) Alexandrian senna with Arabian senna.	
		F Presence of organic matter obtained from the same plant.	
		1) Clove is mixed with clove stalks	
		<ul><li>2) Caraway &amp; Anethum fruits are mixed with other parts of inflorescence</li></ul>	
		F. Synthetic chemical:	
		1) Benzyl benzoate to balsam of Peru.	
		2) Citral to oil of lemon grass.	
		G. Waste from market:	
		1) Limestone in Asafoetida.	
		2) Pieces of amber coloured glass in colophony.	
	1		1



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Subj	ect Titl	e: PHARMACOGNOSY- THEORY Subject Cod	de: 20113
Q.	Sub	Answers	Marking
<u>No.</u> 1	NO. C	Name antihypertensive drug. Give biological source and chemical constituents of	Scheme 5M
		Rauwolfia and Vinca.	
		Making Scheme:	
		Name antihypertensive drug: 1M; Biological Source: 2M (1M for each); Chemical constitutes: 2M (1M for each).	
		Answer:	
		Antihypertensive drug: Rauwolfia	1M
		Biological source and Chemical Constituents of Rauwolfia	
		Biological source:	1M
		• It consists of dried roots of the plant <i>Rauwolfia serpentine</i> belongs to	
		family – Apocynaceae	1M
		Chemical constituents-	
		• Main arkaloid – Reserptie	
		• Other alkaloids – ajmalicine, ajmaline, rauwolfinine, rescinnamine,	
		<ul> <li>Also contains oleo-resin, phytosterol, fatty acids, unsaturated alcohol &amp; sugars.</li> </ul>	
		Biological source and Chemical Constituents of Vinca:	
		Biological Source:	1M
		• It is dried whole plant of <i>Catharanthus roseus</i>	
		• Family: Apocynaceae	
		Chemical Constituents:	1M
		• Alkaloids are present in entire herb but leaves and roots contain more alkaloids.	
		About 90 alkaloids are isolated from vinca from which some like ajmalicine,	
		Apocynaceae.	
		• Vincristine and vinblastine contain anticancer activity. It also contains	
		sesquiterpene, indole and indoline glycoside.	



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Subje	ect Title	e: PHARMACOGNOSY- THEORY Subject Cod	le: 20113
Q.	Sub No	Answers	Marking
<u>1</u>	d	Enlist all and describe in brief about Traditional Indian System of Medicine (any two)	5M
		Marking Scheme:	
		List of Traditional System of Medicines: 1M;	
		Description of any two system: 4M (2M for each System).	
		Answer:	
		Various Indigenous system of medicine are as follows-	
		1. Avurveda	1M
		2. Siddha	
		3. Unani	
		4. Homoeopathy	
		5. Naturopathy	
		6. Yoga	
		1. Ayurvedic system of medicine:	
		It is the oldest system of medicine in India. In Ayurveda there is a supposition that	2M for
		everything in universe is made up of 5 basic elements (Panchamahabhuta) like solid, liquid,	each system
		air, space, and energy. These 5 elements exist in the body in combined form like Vata, Pitta,	system
		Kapha. These three forms are together called as "Tri-dosh".	
		1. Vata = space + air	
		2. Pitta = energy + liquid	
		3. Kapha = solid + liquid	
		The seven forms of Tri dosh are called as 'SAPTADHATU'. These saptadhatu under goes	
		wear and tear processes and form excretory material or mala.	
		When this tri dosh, saptadhatu and mala are in balanced form, the condition is healthy. But	
		if it is in imbalanced form there are pathological disorders. In Ayurveda Charak Samhita	
		and Sushrut Samhita are two well-known treaties. In Charak Samhita descriptions of plants	
		used as medicine are included and in Sushrut Samhita emphasis is given on surgery.	
		2. Siddha System of Medicine:	
		• The terms "Siddha" means achievement and siddhar were saintly personalities who	
		attended proficiency in medicine through practice of bhakti and voga.	
		• This is the system of pre-yedic time identified with Dravidian culture. These systems	
		believe that all object in universe is made up of five basic elements like earth water	
		sky fire and air	
		SKY, 1117, and an.	



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Q. No.	Sub No.	Answers	Marking
1.00	1100	• The identification of causative factors of disease is done through pulse reading,	
		colour of the body, study of voice, urine examination, status of digestive system and	
		examination of tongue.	
		• The literature of siddha system is mostly in Tamil. Few natural drugs which are used	
		in siddha system of medicine are	
		• Abini (Papaver somniferous)	
		• Ethi ( <i>Nux vomica</i> )	
		o Gomethi (Datura)	
		3. Unani system of Medicine:	
		• The root of these system goes deep to the times of well-known Greek Philosopher	
		Hippocrates.	
		• Aristotle made valuable contribution to the unani system of medicine. It is then	
		carried to Persia (Iran) and then it is improved by Arabian Physician.	
		• Unani system of Medicine is based on two Theories:	
		A. Hippocrates Theory of four Humours:	
		a. Blood	
		b. Phylum	
		c. Yellow Bile	
		d. Black Bile.	
		B. Pythagorean theory of four Proximate qualities.	
		a. The state of Human body like hot, cold, moist and dry	
		b. These qualities are represented as earth, water, fire and Air	
		c. The Greek ideas were put by the Arabian physicians as seven working	
		principles, included;	
		i. Temperature	
		ii. Humours	
		iii. Organs	
		iv. Life	
		v. Spirit	
		vi. Energy	
		vii. Action	
		d. These principles are responsible for body constituents and its health as well	
		as disease condition.	



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Q. No.	Sub No.	Answers	Marking Scheme
		e. In Unani system of medicine, treatment of disease is carried out by treating	
		the cause of disease and not to its symptoms. For this purpose, the History of	
		patient is recorded along with his pulse, urine and stool examination.	
		f. The disease condition is due to imbalance in Humours and as per this	
		treatment is given.	
		g. Generally, in Unani system of medicine the Polyherbal formulation. are used	
		as a drug. This system is also called as Arab Medicine, Islamic Medicine and	
		oriental medicine.	
		• Example of Unani Medicines: - Madar Fufal, kabab chini sana, etc.	
		4. Homeopathic System of Medicine	
		• As compare to other Traditional System of medicines, Homeopathy System of	
		medicine is a new system of medicine and which are developed by German	
		Physician chemical Samuel Hahnemann in 18th century.	
		• According to this system of medicine it is proposed that the cause of the disease itself	
		can be used for its treatment. German Physician shown that cinchona bark can	
		produce the symptom of malaria. In homeopathic system of medicine, the drug	
		treatment is not specified" but the choice of the drug is depending on symptoms and	
		clinical condition of the patient.	
		• During the treatment drug extract are so diluted which believe that it increases the	
		curative effect of the drug.	
		• The drugs an extracted in the form of mother tincture. which is further diluted in	
		terms of decimal.	
1	e	Define Antioxidant and explain its role as nutraceuticals.	5M
		Marking Scheme:	
		Definition:1M; Role: 4M	
		Answer:	
		Antioxidants:	
		Antioxidants are the agent which prevent the oxidation or prolong the life of oxidizable	1M
		matter in the body.	
		In general oxygen molecules circulating in the body which react with electrons of other	
		molecules and also affect various enzyme system and damage which cause a condition	
		such as cancer, aging, respiratory distress, rheumatoid arthritis	



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Subje	ct Titl	e: PHARMACOGNOSY- THEORY Subject Cod	e: <b>20113</b>
Q.	Sub No	Answers	Marking
110.	INU.	Antioxidants play vital role in life of living system.	Scheme
		<ul> <li>Antioxidants are abundant in fruits and vegetables and other foods including nuts, grains and some meats, poultry and fish.</li> <li>Common antioxidants include: Green leafy vegetables, including collard green, spinach etc. beta-carotene is found sweet potatoes, pumpkins, mangoes etc.</li> <li>Lycopene is a potential antioxidant found in tomatoes, watermelons, guava etc.</li> <li>Some natural antioxidants like Ascorbic acid, tocopherol, Superoxide, adenosine transferrin is used therapeutically.</li> <li>Vitamin E (Tocopherol) is major radical trapper in lipid membrane and clinically useful in cardiac damage.</li> <li>Selenium is important dietary anticarcinogen corn oil, wheat germ oil is rich Source of vitamin.</li> <li>Various plant material like Amla, lemon myrobalan Contain Antioxidant in the form</li> </ul>	4M for any four role as a nutrace uticals
		of Ascorbic acid (Vitamin-C) it prevents formation of oxygen free radical.	
1	f	Give source, chemical constituents, commercial preparation, therapeutic uses and cosmetic uses of Almond oil.	5M
		Marking scheme: Biological source:1M; Chemical constituents:1M; Commercial preparation:1M; Therapeutic uses: 1M; Cosmetic uses of Almond oil: 1M. Answer: Almond Oil	
		1. Biological Source:	
		Almond oil is a fixed oil obtained by expression from the seeds of <i>Prunus amygdalus</i> (sweet almonds) or <i>P. amygdalus</i> var, amara (bitter almonds). Family: Rosaceae	1M
		2. Chemical Constituents:	11/
		<ul> <li>Both varieties of almond contain 40-55% of fixed oil, about 20% of proteins, mucilage and emulsion.</li> <li>The bitter almonds contain in addition 2.5-4.0% of the colourless, crystalline, cyanogenelic glycoside amygdalin.</li> <li>Almond oil consists of a mixture of glycerides of oleic (62-86%), linoleic (17%), palmitic (5%), myristic (1%), palmitoleic, margaric, stearic and linolenic acid.</li> </ul>	1.1/1



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WODEL ANSWER				
Q. No.	Sub No.	Answers	Marking Scheme	
		<ul> <li>3. Commercial preparation: It is one of the ingredients of the preparation known as Baidyanath lal tail (Baidyanath Company), Himcolin gel, Mantat, Tentex Royal (Himalaya Drug Company) and Sage badam Roghan (Sage Herbals)</li> </ul>	1M	
		<ul> <li>4. Therapeutic uses:</li> <li>Almond oil is used as a laxative, emollient, in the preparation of toilet articles and as a vehicle for oily injections.</li> <li>The volatile almond oils are used as flavouring agents.</li> </ul>	1M	
		<ul> <li>5. Cosmetic uses:</li> <li>Expressed almond oil is an emollient and an ingredient in cosmetics.</li> <li>Sweet almond oil may be applied directly to the skin and hair. It may also be easily incorporated an active ingredient or an excellent carrier in skin and hair care products as it offers deep penetration and significant moisture retention together with high nourishing properties.</li> <li>It can also be used directly as massage oil.</li> </ul>	1M	
1	g	<ul> <li>Describe method of cultivation, collection and preparation of Opium for market.</li> <li>Marking Scheme:</li> <li>Cultivation: 2.5M; Collection: 2.5M.</li> <li>Answer:</li> <li>Cultivation and Collection of Opium: <ul> <li>Opium is cultivated under license from the government. Its seeds are sown in October or March in alluvial soil.</li> <li>The poppy of first crop blossoms in April or May and the capsule mature in June or July. When the capsules are about 4 cm in diameter, the colour changes from green to yellow; they are incised with a knife about 1 mm deep around the circumference between midday and evening.</li> <li>The knife, known as a 'nushtur' bears narrow iron spikes which are drawn down the capsule to produce several longitudinal cuts.</li> </ul> </li> </ul>	5M	



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Subje	ect Titl	e: PHARMACOGNOSY- THEORY Subject Cod	le: 20113
Q.	Sub No	Answers	Marking
INU.	110.	• The latex tube opens into one another. The latex, which is white in the beginning,	scheme
		immediately coagulates and turns brown. Next morning it is removed by scrapping with	
		a knife and transferred to a poppy leaf.	
		• After collection the latex is placed in a tilted vessel so that the dark fluid which is not	
		required may drain off.	
		• Raw opium is the dried milky exudation obtained by incising the unripe but fully grown	
		capsules of <i>Papaver somniferum</i> Family – Papaveraceae.	
		• The cultivation is done in the months between September and April. A gap of 25 cm	
		should be maintained between two consecutive plants.	
		• Before sowing the seeds, they are mixed with sands properly.	
		• About five to six capsules appear on each plant and it flowers in the month of May-June.	
		• After the petals fall from the poppy, the pod, which is about the size of a golf ball, is	
		lanced, and the opium latex is exuded.	
		• Initially the latex is pink; later it changes to black.	
		• Poppies are lanced in the afternoon and the latex is scraped off the next morning.	
		• Pods ripen (soften) at different times in the field.	
		• Each pod can be lanced from 4 to 7 times.	
		• The lancing takes a great deal of time and attention. Several pods can be scraped before	
		the opium is placed into a container.	
		• So many pods to cut and scrape.	
		• The opium collected is weighed on a daily basis before an officer of the Narcotics	
		Department.	
		• After the latex has been collected, all the peasants from an area take their opium to a	
		weighment centre.	
		• Their opium has been scraped into standard containers of known weight. One-tenth of a	
		hectare produces small amounts of latex.	
2		Answer any <u>TEN</u> of the following:	30 M
2	a	Definition of Pharmacognosy. Who coined the term Pharmacognosy. How it was	3M
		coined?	
		Marking Scheme	
		Definition: 1M.	
		Name of Scientist who coin term: 1M.	
		Description of process of conned – TW	
	1		1



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## WINTER-2022 EXAMINATION

Subje	ect Titl	e: PHARN	MACOGNOSY- THEORY	Subject Cod	ie: 20113	
Q.	Sub		Ansv	vers	Marking	
INO.	INO.				Scheme	
		Answer:				
		Pharma	cognosy:		1M	
		Pharmac	ognosy is defined as the scientific a	and systematic study of structural physical		
		chamical	and biological characters of crude	drugs along with their history method of		
			, and biological characters of clude	market		
		cuntvane	on, confection, and preparation for the	market.		
		Seydler	coined the term Pharmacognosy		1M	
		While s	tudving Sarsaparilla, it was, A	German scientist, who coined the term	1M	
		Pharmac	ognosy in 1815 in his work en	titled. 'Analecta Pharmacognostica' from		
		combinat	tion of two Greek words viz Phan	makon a drug and gignosco to acquire the		
		knowled	re of	nakon, a drug and grgnosco, to acquire the		
		KIIOwied				
2	b	Differen	tiate between fixed oils and volatile	oils.	3M	
		Marking	Scheme: ½ Mark for each Point ((	$0.5 \times 6 = 3M$		
		Answer:				
		Sr.	Volatile oil	Fixed oil		
		No.				
		1.	Evaporated at room temperature.	Does not evaporated at room temperature		
		2.	These do not produce permanent	They produce permanent stain on paper.		
		3	stain on paper They are not saponified by alkali	They are sanonified by alkali		
		4.	Volatile oil do not have food value	Fixed oil has food value.		
		5.	Volatile oil has pleasant odour,	Fixed oil does not have pleasant odour		
			that's why used in perfumery,			
			cosmetics, soaps, incense sticks,			
			food and pharmaceutical industries			
		6.	They do not turn rancid on storage.	They turn rancid on storage due to free		
		7.	e g Orange oil. Lemon oil	e g Arachis oil. Castor oil		
2	с	Define S	tomatal Index, Vein-Islet Number a	and Refractive Index.	3M	
		Marking	Scheme: Each definition 1 M			
		Answer:				
		<b>S4</b> 4	lindon Iti othe second 1111	number of storests former to the total		
		Stomata	<b>i index:</b> It is the percentage which the	number of stomata forms to the total	1M	
1		number (	n epidermai cens, each stomata being	g counted as one cell.		



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# WINTER-2022 EXAMINATION

Subje	ect Title	e: PHARMA	ACOGNOSY- THEORY	Subject Coo	le: 20113
Q.	Sub		Answer	s	Marking
No.	No.				Scheme
		Vein-islet	<b>number:</b> It is defined as the number of	f vein islet per sq.mm of the leaf surface.	1M
		Refractive	<b>Index:</b> Refractive index is defined as	the ratio of the velocity of light in vacuum	1M
		to velocity	in the substance is termed as refractiv	e index of second medium.	
2	d	Define Lay	xatives. Explain "Borntrager's Test'	' for Senna.	3M
		Marking S Definition:	Scheme: 1M; Test: 2M		
		Answer:			
		Laxatives:	Drugs that loosen the bowels (intestir	ne)	1M
		OR			
		The drugs	producing, increasing, and hastening in	ntestinal evacuation.	
		OR			
		The drugs	which promote defecation.		
		Borntrage	r's test for Senna.		
			drug add $5-10$ ml of dilute dilute sul	phuric acid, boil on water bath for 10 min	
		and filter. I	filtrate was extracted with CCl <sub>4</sub> / benze	ene. Separate the organic solvent layer and	<b>2M</b>
		add equal a	mount of ammonia solution to filtrate	and shake. Formation of pink or red colour	
		in ammoni	cal layer due to presence of anthraquir	none moiety.	
2	e	Differentia	ate between organized and unorgani	zed drugs.	3M
		Marking Scheme: <sup>1</sup> / <sub>2</sub> Mark for each Point (0.5 x 6 = 3M)			
		Answer:			
				<b>T</b>	
		<b>Sr.No</b>	Urganized crude drug	Unorganized crude drug	
			anatomic parts of the plants such as	by means of physical process such	
			flowers leaves fruits etc	as drying incision extraction such	
			nowers, reaves, nans etc	as juices, resins.	
		2	It is made up of definite tissue and	It does not have cellular structure	
			cells.		
		3	It is solid in nature	It is solid, semi-solid and liquid in	
				nature.	
		4	Microscopical characters are used	Chemical tests and physical	
				standards are used for identification	
		5	Botanical and zoological	Botanical and zoological	
			terminology can be used to	terminology is inadequate. To	
			describe the drug	describe these drugs, physical	
				characters such as solubility, optical	
				rotation, refractive index are used.	
		6	Ex. Coriander, fennel, datura, etc	Ex. Aloe, bees wax, tragacanth,	
				asafoetida etc.	
2	f	Define Enz	zyme. Give biological source and ap	plication of shark liver oil.	3M



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Subje	ect Title	e: PHARMACOGNOSY- THEORY Subject Cod	le: 20113
Q.	Sub No	Answers	Marking
110.	110.	Marking Scheme: Definition: 1M, Biological source: 1M; Application: 1M (min two applications).	Scheme
		Answer:	
		<b>Enzymes</b> Enzymes are the protein substances which serve a role of catalysing the biochemical reactions.	1M
		Shark Liver Oil	
		• <b>Biological Source</b> Shark liver oil is the fixed oil obtained from the fresh and carefully preserved livers of shark, mainly <i>Hypoprion brevirostris</i> .	1M
		<ul> <li>Application         <ul> <li>Shark liver oil is used to treat xerophthalmia (abnormal dryness of the surface of conjunctiva) occurring due to deficiency of vitamin A.</li> <li>The oil is nutritive and used as a tonic.</li> </ul> </li> </ul>	1M
2	g	Mention drugs, give biological source and chemical constituents of agents used as Anti-tussives.	3M
		Marking Scheme: Name of Anti-tussives Agents: 1M, <u>Biological Source of any of drug: 1M; Chemical</u> <i>Constituents of any one drug: 1M.</i>	
		Answer	
		Anti-tussives Agents: Drugs used as Anti-tussives are	
		1. Vasaka leaves	IM
		2. Tolu Balsam.	
		1. Vasaka leaves:	
		<b>Biological Source</b> – Vasaka consists of dried as well as fresh leaves of <i>Adhatoda vasica</i> belonging to family <i>Acanthaceae</i> .	1M
		<b>Chemical Constituents</b> – Vasaka contains quinazoline alkaloids. They are Vasicine, Vasicinone and Hydroxy vasicine. It also contains Vasakin (Yellow coloring matter), resin, sugar, mucilage, beta sitosterol and vitamin C.	1M



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Subje	ct Titl	e: PHARMACOGNOSY- THEORY Subject Cod	le: 20113
<b>Q</b> .	Sub	Answers	Marking
N0.	No.		OR
		OR 2. Tolu Balsam	ŬŔ
		<b>Biological Source</b> – Balsam of tolu is solid or semi-solid balsam obtained from the branches of <i>Myroxylon balsamum</i> belonging to family Leguminosae.	1M
		<b>Chemical Constituents</b> – It contains balsamic acid mainly Cinnamic acid, Benzoic acid. Oily liquid Cinnamein. Ester is benzyl benzoate and benzyl cinnamate. Main ester is Toluresinotannol. It also contains small quantity of Vanillin.	1M
2	h	Define sutures and ligatures. Write ideal requirements of sutures.	3M
		Marking Scheme: <sup>1</sup> / <sub>2</sub> mark for each definition and 2 marks for any 4 requirements	
		Answer:	
		Sutures:	0.5M
		Sutures are sterile thread like strings or strands specially prepared and sterilized and used in	
		surgery for sewing, stitching tissues like skin, muscles, tendons etc. by a needle.	
		Ligatures: Ligatures are used for tying the tissues.	0.5M
		Requirements	
		<ol> <li>They must be Sterile.</li> <li>They should not cause irritation.</li> <li>They should have finest possible gauze.</li> <li>They should have adequate strength.</li> <li>If absorbable their time of absorption should be known.</li> <li>They are intended to be used for occasion only</li> </ol>	2M for any four requireme nts
2	i	Define and classify herbal formulations.	3M
		Marking Scheme: Definition-1M and Classification-2 M	
		Answer:	
		Define:	
		Herbal formulation is a dosage form consisting of one or more herbs or processed herbs in	1M
		specified quantities to provide specific nutritional, cosmetic benefits meant for use to	
		diagnose, treat, mitigate diseases of human beings of animals, and alter the structure or	
		physiology of human beings or animals	



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## WINTER-2022 EXAMINATION

Subje	ect Titl	e: PHARMACOGNOSY- THEORY Subject Cod	le: 20113
Q.	Sub	Answers	Marking
No.	No.	Types of Harbel Formulations	Scheme
		Types of Herbal Formulations	2M
		1. Traditional Formulations	
		a. Ayurvedic Formulations	
		i. Solid: Vati,Ghutika, Bhasmas	
		ii. Liquid: Taila, Swarasa, Asava	
		iii. Semisolid: Aveleha, Leha	
		b. Unani Formulations	
		i. Solid: Habb, Quars, Safoof	
		ii. Liquid: Joshanda, Arq, Sharabat	
		iii. Semisolid: Majoon, Jawarish, Laooq	
		c. Homeopathic Formulations	
		i. Mother Tinctures	
		<b>ii.</b> Dilution of soluble and insoluble drugs	
		2. Conventional Formulations	
		Tablets, Capsules, Syrup, Suppositories, Ointment, Gel, Eye drops, Ear	
		Drops, Powder, Granules.	
		3. Modern Formulations	
		a. Phytosomes	
		<b>b.</b> Liposomes	
		c. Nanoparticle	
2	j	Give the role of medicinal and aromatic plants in national economy.	3M
		Marking Scheme:	
		Role of MAPs in the national economy: $3M$ (each role = $0.5M$ )	
		Answer:	
		Role of medicinal and aromatic plants in the national economy:	
		1. Medicinal and aromatic plants form a numerically large group of economically	
		important plants which provide basic raw materials for medicines, perfumes.	
		flavours and cosmetics.	
		2. A recent study indicates that the herbal drug market continues to grow at the rate of	
		15% annually	
		3. Several hundred genera are used in herbal remedies and in traditional or folklore	
		medicines throughout the world	
		4 The World Health Organisation (WHO) estimated that 80% of the population of	
		developing countries rely on herbal medicines for their treatment	
		5. Medicinal and aromatic plants and their products not only serve as a valuable source	
		of income for small land holder farmers and entrepreneurs but also earn valuable	
		foreign exchange by way of export	
		resentation exchange of muj of export.	



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Subje	ect Title	e: PHARMACOGNOSY- THEORY Subject Cod	le: 20113
Q. No.	Sub No.	Answers	Marking Scheme
		<ul> <li>6. Medicinal and aromatic plants are a good resource to develop new medicines and treat the body and mind which is known as naturopathy. They are useful for improving health and life.</li> <li>7. Many synthetic medicines are based on plant extracts, which are used to create new modern medicines.</li> </ul>	
2	k	Explain life cycle of ergot in detail with diagram.	3M
		Marking Scheme: Digram-1.5M; Explanation -1.5 M	
		<ul> <li>Answer:</li> <li>Life cycle of Ergot – Ergot is a fungal growth. The life cycle of ergot contains three stages:</li> <li>1. Ascospore stage</li> <li>2. Asexual stage/Honey dew stage</li> <li>3. Sexual stage</li> </ul>	1.5M (0.5M for each stage)
		1. Ascospore stage:	
		The sclerotia produced in late summer and fall on the ground. In damp condition these sclerotia germinate to produce small purple colour stalks(stroma), which on further growth form a flattened spherical head at the top. These head contain several flask shape cavities which are known as perithecia.	
		2. Asexual stage:	
		Each perithecium contains several elongated asci. Each ascus contains eight elongated thread like ascospores. These ascospores dispersed by air current. The dispersed ascospores entangled with the feathery stigmas of host and produce mycelia which penetrate the ovary. The mycelia give rise to conidia, produce from the surface of the ovary. The honey dew is sweet in taste and attract the insects. Along with honey dew, conidia are carried from one place to another by insects.	
		<b>3. Sexual stage:</b> Hyphae penetrate deeply into the ovary and develop into a mass covering the entire	
		ovary which results in the formation of elongated sclerotium. Sclerotium develops further and fall on the ground, and next cycle begins.	



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Subje	ct Titl	e: PHARMACOGNOSY- THEORY Subject Cod	le: 20113
Q.	Sub No	Answers	Marking Schomo
No.	No.	Diagram: Life cycle of Ergot	Scheme 1.5M for diagram
3		Answer all questions.	20 M
		Important Instructions: In case, multiple answer options are observed for the same sub	
		question of question No. 3, the option (Answer) appearing first in the answer book shall	
		be treated as answer and assessed accordingly.	
3	a	Which alkaloidal drug is used as antihypertensive?	1M
		Answer:	
		Rauwolfia OR Reserpine	
3	b	Define avaleha.	1M
		Answer:	
		It is an ayurvedic semisolid preparation of drugs prepared with addition of jaggery or sugar	
		candy and boiled with prescribed drug juice or decoction.	
3	c	Podophyllum is used as a binding agent - True/False.	1 <b>M</b>
		Answer: False	



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Subje	ect Title	e: PHARMACOGNOSY- THEORY Subject Cod	le: 20113
Q. No	Sub No	Answers	Marking
3	d	Define herbal cosmetics with examples.	1M
		Answer:	
		Herbal Cosmetics:	
		Herbal cosmetics are the preparations containing phytochemicals from a variety of herbs	0.5M
		which influences the function of skin and provide nutrients to the body necessary for the	
		healthy skin or hairs.	
		Examples:	0.5M
		Herbal face wash, Herbal conditioner, Herbal soap, Herbal shampoo, Herbal lipstick	17.5
3	e	Mention synonyms of Curcuma, Vinca	1M
		Marking Scheme:	
		<sup>1</sup> / <sub>2</sub> Marks for synonym (any one) of curcuma & <sup>1</sup> / <sub>2</sub> Marks for synonym (any one) of vinca	
		Answer:	
		Synonym of Curcuma:	
		• Indian saffron,	
		• Haldi,	
		• Turmeric	
		Synonym of Vinca:	
		• Catharanthus,	
		• Periwinkle,	
		• Sadaphulli	
3	f	Write two examples of drugs belonging to family: Liliaceae.	1M (0.5M
		Answer:	for each
		o Aloe,	example; 1M for
		• Colchicum,	two
		• European squill	example)
		<ul> <li>Indian Squill,</li> </ul>	
		o Garlic	
-			13.5
3	g	State drug, which is the rich source of Vitamin A.?	IM (Any one
		Answer: Shark liver oil. Cod liver oil	drug)
3	h	State drug, which is used as protein digestant?	1M
·		Answer: Diastase Panava	(Any one
		Allower. Diastase, i apaya	drug)



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Subje	ect Titl	e: PHARMACOGNOSY- THEORY Subject Cod	le: <b>20113</b>
Q.	Sub	Answers	Marking
<u>No.</u> 3	No. i	Define nhytoconstituents	Scheme 1M
0	-	A newor:	
		Answer.	
		Phytoconstituents are the chemical substances of organic nature which are formed in plants	
		through the activity of their individual cells	
		OR	
		Phytoconstituents are chemical compounds that occur naturally in plants.	
3	j	In the preparation of silk, the cocoons are heated at	1M
		Answer: 60 <sup>0</sup> - 80 <sup>0</sup> C	
3	k	Herbal ointments are dosage forms	1M
		Answer: Conventional OR Semisolid	
3	1	Lignified trichomos is the characteristics of	1M
5	1		1111
		Answer: III) Nux-vomica	
3	m	Which is the identification test for cardiac glycosides.	1M
		Answer: iv) All the above	
3	n	Tridosha theory is related	1M
		Answer: iii) Ayurveda	
3	0	Vatika and Gutika available in following dosage.	1M
		Answer: i) Tablet and Pills	
3	р	Lavender oil belongs to which family	1M
	-		
3	a	Answer: IV) Labiate	1M
5	Ч	Chemical test used for identification of Carbonyurates.	
		Answer: ii) Molish	
3	r	Which is not the biological source of Cinchona:	1M
		Answer: iv) Cinchona indica	
3	S	Balsams contain mainly acids:	1M
		Answer: iv) Benzoic acid + Cinnamic cid	
3	t	Which part of Dill fruit contain oil.	1M
		Answer: iii) Vitte	

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#### WINTER-2022 EXAMINATION

## MODEL ANSWER

Subject Code: 20114

## Subject Title: HUMAN ANATOMY & PHYSIOLOGY- THEORY

#### **Important Instructions to examiners:**

- 1) The answers should be examined by key words and not as word-to-word as given in the model answer scheme.
- 2) The model answer and the answer written by the candidate may vary but the examiner may try to assess the understanding level of the candidate.
- 3) The language errors such as grammatical, spelling errors should not be given more Importance (Not applicable for subject English and Communication Skills.)
- 4) While assessing figures, the examiner may give credit for principal components indicated in the figure. The figures drawn by candidate and model answer may vary. The examiner may give credit for any equivalent figure drawn.
- 5) Credits may be given step-wise for numerical problems. In some cases, the assumed constant values may vary and there may be some difference in the candidate's answers and model answer.
- 6) In case of some questions, credit may be given by judgement on part of the examiner of relevant answer based on the candidate's understanding.
- 7) For programming language papers, credit may be given to any other program based on an equivalent concept.
- 8) As per the policy decision of Maharashtra State Government, teaching in English/Marathi and Bilingual (English + Marathi) medium is introduced at first year of AICTE diploma Programme from academic year 2021-2022. Hence if the students in first year (first and second semesters) write answers in Marathi or bilingual language (English +Marathi), the Examiner shall consider the same and assess the answer based on matching of concepts with model answer.

Q.	Sub	Answers	Marking
No.	No.		Scheme
1		Answer any <u>SIX</u> of the following:	<b>30M</b>
1	a	What is CSF? Give composition and functions of CSF.	5M
		Marking Scheme: Definition:1M; Composition:2M, Functions: 2M	
		Answer:	
		Cerebrospinal fluid:	1M
		CSF, cerebrospinal fluid is fluid secreted by choroid plexuses within the four ventricles and	
		moves around the brain and spinal cord.	
		Composition of CSF:	
		• Water,	<b>2M</b>
		• Mineral salts,	
		• Glucose,	
		• Plasma proteins: small amounts of albumin and globulin, c	
		• Urea in small amounts	
		• Few leukocytes.	
		Functions:	214
		• It supports and protects the brain and spinal cord.	<b>Z</b> 1 <b>V1</b>
		• It maintains a uniform pressure around these delicate structures.	



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Subje	ct Title	e: HUMAN ANATOMY & PHYSIOLOGY- THEORY Subject Cod	e: <b>20114</b>
Q. No.	Sub No.	Answers	Marking Scheme
		<ul> <li>The ventricles are thick walled because they have to pump the blood with force. The left ventricle is the chamber of the heart with the thickest wall.</li> <li>The valves between atria and ventricles ensure that the flow of blood is in one direction only. The valve separating the right atrium from right ventricle is called right atrioventricular valve or tricuspid valve and consists of three cusps or flaps. The left atrioventricular valve is called bicuspid or mitral valve and consists of two cusps or flaps.</li> <li>Thick thread-like cords of fibrous tissue which connects the valve flaps to the walls of ventricles with papillary muscles are called chordae tendinae. These prevents valves from opening during ventricular contraction.</li> <li>The pulmonary artery arises from the right ventricle and the aorta arises from the left ventricle. The place where pulmonary artery and aorta leave the ventricles is guarded by semi-lunar valves (pulmonary valve and aortic valve). These valves prevent the backflow of blood.</li> </ul>	
1	c	What is anaemia? Give its type & write its causes.	5M
		<ul> <li>Anaemia:</li> <li>In anaemia, there is not enough haemoglobin available to carry sufficient O<sub>2</sub> from lungs to the tissues.</li> <li>Types (Classification) based on the cause:</li> </ul>	1M
		1. Iron deficiency anaemia – due to deficiency of iron	
		<b>2.</b> Megaloblastic anaemia – Due to deficiency of Vitamin $B_{12}$ or folic acid	2M
		<b>3.</b> Hypo plastic/ aplastic anaemia – Due to reduced/ no bone marrow function.	
		<b>4. Haemolytic anaemia</b> – May be either congenital or acquired.	
		a. Congenital includes sickle cell anaemia or Thalassemia-Major & Minor	2M
		<b>b.</b> Acquired: This is due to chemicals, drugs, autoimmunity or mismatched blood transfusion, malaria, ionising radiation, burns etc.	
		5. Normocytic (Haemorrhagic) anaemia- Due to blood loss	



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## WINTER-2022 EXAMINATION

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<u>Subje</u> Q. No	ct Title Sub No	e: HUMAN ANATOMY & PHYSIOLOGY- THEORY Subject Code Answers	20114 Marking Scheme
1	d	Define and classify joints with suitable examples. Explain any two joint disorders.	5M
_		Marking Sahamat	
		Joint disorders: 2M (Explanation of any two disorders)	
		Answer:	
		Joints:	1M
		A joint is a site at which any two or more bones articulate or come together.	1111
		Classifications of Joints:	
		JOINTS	<b>2M</b>
		FIBROUS OF FIXED JOINTS CARTILAGINOUS OF SYNOVIAL JOINTS	
		These have fibrous tissue between the SLIGHTLY MOVABLE JOINTS These are freely movable ioints.	
		of skull; Joint between Teeth & Maxilla Symphysis Publis; Joints between vertebrae (intervertebral discs)	
		Ball and     Hinge Joint     Gliding Joint     Pivot Joint     Condyloid Joint     Saddle Joint       Socket Joint     Socket Joint     Socket Joint     Saddle Joint     Saddle Joint     Saddle Joint	
		e.g. Shoulder joint, e.g. Elbow joint, e.g. Joint between e.g. Joint between e.g. Joint between e.g. e.g. Joint between e.g. Joint between e.g. Joint between e.g. for trapezium & first metacarpals atlas and axis Temporomandibular, trapezium & first Metacarpophalangeal, metacarpal bone Metatarsophalangeal joints.	
		Disorders of joint:	214
		1. Inflammatory joint diseases:	(For Any
		a) <b>Rheumatoid arthritis:</b> It is a chronic progressive autoimmune disease mainly	Disorders)
		affecting synovial joints. It is a disease which affects heart, blood vessels & skin. it	
		is more common in females, may be post viral infection.	
		b) Other types of poly arthritic. Polyarthritic means inflammation of more than one	
		ioint it is also autoimmune disease like <i>Rheumatoid arthritis</i> but the RA factor is	
		absent. Here joints of axial skeleton are involved.	
		c) <b>Infective arthritis</b> - joint infection due to septicemia or injury.	
		2. Traumatic injury to the joints - enraine strains & dislocations. If a ligament is	
		stretched or torn, the injury is called a sprain. A strain occurs when the muscle tendon	
		unit is stretched or torn. Joint dislocation occurs when bones in a joint are displaced.	



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#### WINTER-2022 EXAMINATION

Subje	ct Title	e: HUMAN ANATOMY & PHYSIOLOGY- THEORY Subject Cod	le: <b>20114</b>
Q. No.	Sub No.	Answers	Marking Scheme
		<ol> <li>Osteo arthritis: It is a degenerative non inflammatory disease that results in pain &amp; restricted movement of affected joints. It is due to age, obesity, hereditary or female gender.</li> <li>Gout This is more common in males. it is caused by deposition of sodium urate crystals in joints &amp; tendons which causes inflammation.</li> </ol>	
1	e	What is oedema. Describe the physiology of urine formation.	5M
		Marking Scheme: Definition:1M; Physiology: 4M	
		Oedema:	
		Oedema is excessive accumulation of tissue fluid causing swelling.	1M
		There are three processes in urine formation:	
		1. Glomerular ultrafiltration	4M
		2. Selective reabsorption	
		3. Tubular secretion	
		1. Ultrafiltration/ glomerular filtration:	
		Filtration takes place through the semi permeable walls of the glomerulus & glomerular capsule or Bowman's capsule. Water and small molecules pass through it. The afferent renal artery brings blood to the glomerulus and the efferent artery carries the blood away from it. As the diameter of afferent artery is more than the efferent artery, a hydrostatic pressure is generated in the glomerulus (55mm Hg). This pressure is opposed by osmotic (30 mmHg) and filtrate hydrostatic pressure in capsule (15mm Hg). The net filtration pressure is $55-(30+15) = 10$ mm of Hg. All constituents of blood are filtered except blood cells and plasma proteins.	
		2. Selective reabsorption:	
		This is the process by which composition and volume of filtrate are changed during its passage through the tubule. The constituents required by the body are reabsorbed. Components like glucose, vitamins, amino acids get completely re- absorbed into the blood. These are called high threshold substances. Low threshold substances like urea, uric acid are absorbed slightly. Some substances like creatinine are not reabsorbed at all.	



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#### WINTER-2022 EXAMINATION

		MODEL ANSWER	
<u>Subje</u> Q. No.	ct Title Sub No.	e: HUMAN ANATOMY & PHYSIOLOGY- THEORY Subject Cod Answers	e: 20114 Marking Scheme
		3. Tubular secretion:	
- 1	£	Substances not required & the foreign material which have not got cleared during filtration due to short time, are secreted into the distal convoluted tubule & excreted in the urine. Tubular secretion of Hydrogen ions is imp. for maintaining PH.H ions are secreted in combination with bicarbonate as carbonic acid, with ammonia as ammonium chloride & with hydrogen phosphate as dihydrogen phosphate.	514
I	1	Give and explain the functions of liver. Marking Scheme: Functions: 5M	5111
		A A A A A A A A A A A A A A A A A A A	
		Answer:	
		<ul> <li>Functions of liver:</li> <li>1) Secretion of bile: Bile salts are helpful in digestion and absorption of fats by its emulsification.</li> </ul>	
		<ol> <li>Glycogenic function: The hepatic cells by the action of enzymes convert glucose into glycogen and it is then stored in the liver.</li> </ol>	
		<ol> <li>Formation of urea: Hepatic cells by the action of the enzyme cause deamination of amino acid, i.e., amine group is set free which forms urea.</li> </ol>	
		<ol> <li>Metabolism of fat: Whenever energy is needed, the saturated stored fat is converted to a form in which it can be used to provide energy.</li> </ol>	
		5) Formation of RBCs in foetal life.	
		6) Destruction of RBCs forming bile pigments and iron.	
		7) Formation of plasma protein.	
		<ul> <li>8) Formation of heparin, a natural anticoagulant in the blood.</li> <li>a) Stars as a firen and vitamin P.</li> </ul>	
		<ul> <li>10) Maintenance of body temperature: As several chemical reactions occur in the liver, heat is generated which is helpful in maintaining body temperature.</li> </ul>	
		11)Excretion of toxic substances: The toxic substances entering the body through alimentary canal are destroyed in liver.	
		OR	
		1) Carbohydrate metabolism: It helps in maintaining plasma glucose level with the help of insulin & glucagon.	
		<ol> <li>Fat metabolism: Stored fat can be converted to a form in which it can be used by the tissue to provide energy.</li> </ol>	
		<ul> <li>3) Protein metabolism: Deamination of amino acids-removes nitrogenous portion from amino acid not required for formation of new protein. Urea is formed from the nitrogenous portion which is excreted in urine. Breakdown of nucleic acids to form uric acid which is excreted in urine. Transamination: Removes the nitrogenous</li> </ul>	


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#### WINTER-2022 EXAMINATION

### MODEL ANSWER

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Subje	ect Title	e: HUMAN ANATOMY & PHYSIOLOGY- THEORY Subject Cod	le: <b>20114</b>
Q.	Sub No	Answers	Marking
<u>No.</u>	No.	<ul> <li>portion of amino acid &amp; attaches it to carbohydrate molecule forming new non- essential amino acid.</li> <li>4) Synthesis of plasma protein &amp; most blood clotting factors from amino acid.</li> <li>5) Breakdown of RBCs &amp; defence against microbes. This is carried out by Kupffer cells.</li> <li>6) Detoxification of drugs &amp; noxious sub.</li> <li>7) Inactivation of hormones</li> <li>8) Production of heat</li> <li>9) Secretion of bile</li> <li>10) Storage of glycogen, iron, copper, &amp; fat-soluble vitamin-A, D, E, K, water soluble vitamin like vit. B<sub>12</sub>.</li> <li>Discuss physiology of hearing. What are auditory ossicles?</li> </ul>	Scheme 5M
		Marking Scheme: Physiology:4M; Definition: 1M. Answer Physiology of hearing- The auricle collects the sound waves & through external acoustic meatus directs them to tympanic membrane. Tympanic membrane vibrations are transmitted & amplified through middle ear by movement of auditory ossicles. The foot plate of stapes rocks to & fro into the oval window, setting the fluid wave in perilymph of scala vestibuli. Most of the pressure of this wave is transmitted to cochlear duct. This causes wave in endolymph resulting in stimulation of the auditory receptors in the hair cells in spiral organ in cochlear duct. The nerve impulses generated pass to the brain through the cochlear portion of the eighth cranial nerves. Auditory ossicles are three very small bones present in tympanic cavity of the ear. They are named according to their shape, namely- a. Malleus (hammer) b. Incus (anvil) c. Stapes (stirrup).	



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## WINTER-2022 EXAMINATION

Subje	ect Title	e: HUMAN ANATOMY & PHYSIOLOGY- THEORY Subject Cod	e: <b>20114</b>
Q. No.	Sub No.	Answers	Marking Scheme
2		Answer any <u>TEN</u> of the following:	30 M
2	a	Define cell. Draw a well labelled diagram of the cell. Marking Scheme: Definition: 1M, Diagram: 2M Answer:	3М
		Definition:	1M
		The cell is defined as the structural and functional unit of body.	1111
		<u>Rough</u> <u>Endoplasmic heticulus</u> <u>Golgi apparatus</u> <u>Lysosomes</u> <u>The Cell</u> <u>Ribosomes</u> <u>Ribosomes</u> <u>Plasma membrane</u> <u>Syloplasm</u>	2M
2	b	What is spleen? Describe its structure and functions.	3M
-		<ul> <li>Marking Scheme: Spleen:1M; Structure:1M; Functions:1M</li> <li>Answer:</li> <li>Spleen: Spleen is the largest lymph organ. It is dark purple in colour and located in the abdominal cavity between the stomach and diaphragm.</li> </ul>	
		Structure	1M
		<ul> <li>It is purplish in colour &amp; weighs about 200 gms.</li> <li>It is oval in shape and has hilum through which passes the splenic artery, splenic vein &amp; efferent lymph vessels.</li> <li>It has fibrous tissue capsule which dips inside forming trabeculae.</li> </ul>	1M
		• It has two different types of tissues known as red pulp which has blood & white pulp which has lymphatic tissue containing lymphocytes and macrophages.	
		Functions of spleen	
		<ul> <li>Phagocytosis: Destruction of old &amp; abnormal RBCs, WBCs, platelets, and microbes.</li> <li>Storage of blood- It stores up to 350 ml of blood.</li> <li>Immunity- It contains T &amp; B lymphocytes which are activated by presence of antigens i.e., infections.</li> <li>Spleen produces lymphocytes, some specific antibodies, and antitoxins.</li> </ul>	1M
		• Erythropoiesis- It is an important site of foetal blood cell production & can do this in adults at the time of need.	



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#### WINTER-2022 EXAMINATION

WIDEL ANSWER Subject Title: HUMAN ANATOMY & DHYSIOLOCY THEODY Subject Code: 2011				
Q.	Sub	Answers	Marking Scheme	
2	c	What is reflex action? Give structure of reflex arc.	3M	
		Marking Scheme: Reflex action:1M, Structure:2M OR Diagram:2M		
		Explanation of structure or well labelled diagram should be considered for 2M.		
		Answer:		
		Reflex action:	1 <b>M</b>	
		It is an involuntary and immediate motor response given by spinal cord to a sensory stimulus. Examples -the sudden withdrawal of hand if fingers touch something hot		
		Structure of reflex arc		
		A simple reflex arc has following points:		
		1) Sense organ	2M	
		<ul> <li>2) Sensory neurons which pass from sensory organ to the spinal cord</li> <li>2) Connector neuron in the gringl cord</li> </ul>		
		<ul><li>4) Motor neuron in the spinal cord</li></ul>		
		5) Effector organ like the muscle.		
		Shim with nerve endings Semsory Posterior root gargion root gargion reurone plates mixed nerve Spinal Cord	OR 2M	
		Striped Motor Amlerion mascle nerve aspect pibre OR		
		Sensory neuron Receptors = Heat/Pain Receptors in skin Relay neuron Effector = Muscle in arm		
		Enector – wuscie in ann		



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## WINTER-2022 EXAMINATION

Subje	ect Title	e: HUMAN ANATOMY & PHYSIOLOGY- THEORY Subject Cod	le: 20114
Q.	Sub No	Answers	Marking
<u>10.</u> 2	d	Define the following terms and give the normal values-	3M
		i) Lung canacity	
		i) Vital capacity	
		Marking Scheme: Each definition 0.5 M, Normal value 0.5 M	
		Answer:	
		<ol> <li>Lung capacity: It is the total amount of air that lungs can hold and equals vital capacity + residual volume.</li> </ol>	1M
		The normal value is 4.5 to 6 lit or 4500 - 6000 ml.	
		2) <b>Vital capacity:</b> This is the maximum volume of air which can be moved into & out	1M
		of the lungs during forceful breathing. Normal value is about 3-5 lif.	
		3) <b>Tidal volume:</b> It is the volume of air moved in & out of lungs during normal	
		breathing. Normal value is 500 ml.	IM
2	e	Describe the composition of blood.	3M
		Marking Scheme: Plasma 1.5 M, Blood cells 1.5 M	
		Answer:	
		<b>Composition of blood</b> : It is composed of liquid matrix plasma (55%) & different cells	1.5M
		suspended in it (45%).	
		1) Plasma consists of water-90-92%, plasma proteins, inorganic salts, nutrients, waste	
		material, hormones & gases.	
		2) Blood cells are of 3 types:	
		a. Red Blood Cells: (Erythrocytes)	1 5N
		b. White Blood Cells: (Leukocytes) – These are of 2 types	1.511
		i. Granulocytes:	
		1. Neutrophils	
		2. Eosinophils	
		3. Basophils	
		ii. Agranulocytes	
		1. Monocytes	
		2. Lymphocytes	
		c. Platelets (Thrombocytes)	



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## WINTER-2022 EXAMINATION

		MODEL ANSWER	[]
Subje	ct Title	e: HUMAN ANATOMY & PHYSIOLOGY- THEORY Subject Cod	e: <b>20114</b>
Q.	Sub No	Answers	Marking
2	f	What is blood pressure? How it is recorded clinically?	3M
		Marking Scheme: Definition: 1M, BP measurement: 2M	
		Answer:	
		Blood pressure:	
		It is defined as the force or pressure exerted by blood on the artery walls. The normal value of blood pressure is $120/80$ mm of Hg	1M
		Clinical recording -	
		The blood pressure is measured clinically by auscultatory method using an instrument called sphygmomanometer. The sphygmomanometer consists of cuff, mercury column, air pump and release button for it. The inflatable cuff of sphygmomanometer is wrapped around the arm. A stethoscope is placed at the anti-cubital fossa over the brachial artery. The cuff is inflated until the pressure is above the expected systolic blood pressure. The brachial artery is occluded by the cuff, no sound is heard by the stethoscope. The pressure in the cuff is then released slowly. The point at which systolic pressure in the artery exceeds the cuff pressure, a spurt of blood passes through. This is heard as a tapping sound. The pressure at which the	2M
		sound is first heard is called systolic blood pressure. As the cuff pressure is further lowered, the sounds become louder then dull and finally stop. The last sound corresponds to the diastolic pressure. The sounds are heard due to the turbulent blood flow in the brachial	
2	a	artery. What is monotonal avala? Describe phases of monotonal avala	2М
2	g	what is mensurual cycle? Describe phases of mensurual cycle.	3111
		Marking Scheme: Definition: IM, Phases: 2M	
		Answer:	
		Menstrual Cycle:	
		Series of events occurring regularly in endometrium of females every 26-30 days, during reproductive years. Consists of series of changes that take place simultaneously in ovaries & uterine walls, stimulated by changes in blood level of hormones. Days of cycle are numbered from beginning of menstruation.	1M
		Phases of menstrual cycle:	
		1) Proliferative phase (10 days)	
		2) Secretory phase (14 days).	
		3) Menstruation (4 days)	
		<ol> <li>Proliferative phase:</li> <li>One of the follicles from both ovaries, develop and become dominant follicle, starts secreting estrogens. This follicle matures into Graafian follicle (diameter more than 20 mm). Estrogens stimulate repair of endometrium. Cells of stratum basalis undergo</li> </ol>	2M



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## WINTER-2022 EXAMINATION

MODEL ANSWER					a <b>2011</b> /	
Q.	Sub			Answers Subject Cod	Marking Schome	
190.	INU.	mi	tosis & produce new stra	atum functionalis Thickness of endometrium doubles:5-	Scheme	
		10	mm LH causes rupture o	f mature follicle & ovulation. That is end of this phase.		
		2) <b>Se</b>	cretory phase			
		Ur	ider influence of LH rup	tured follicle transforms into corpus luteum that secretes		
		pro	ogesterone, estrogens, H	Promotes growth and coiling of endometrial glands.		
		va	scularisation of superfici	al endometrium & thickening of endometrium to 12 -18		
		mr	n. Under influence of p	rogesterone, secretory glands produce large amount of		
		mı	icus There is similar inc	rease in secretion of watery mucus by glands of uterine		
		tuł	bes & cervical glands of	vagina If occyte is not fertilised degeneration of corpus		
		lut	eum within 2 weeks int	to corrus albicans. Levels of progesterone & estrogens		
		de	crease that causes mens	truation & cycle continues. This phase lasts for 14 days		
		ie	from 15 to 28 days	truation & cycle continues. This phase lasts for 14 days		
		1.0	. 11011 15 to 26 days.			
		3) <b>M</b>	enstrual phase:			
		It i	It is characterised by periodic discharge of $25 - 65$ ml of blood, mucus, tissue fluid			
		an	d epithelial cells. This is o	caused by sudden reduction in estrogen and progesterone.		
		Th	is phase lasts for 4- 5 day	ys.		
2	h	Name any "Master g Marking	y two endocrine glands gland"? Scheme: Any two endor	and their location. Why is pituitary gland known as crine glands with location: 2M. Reason: 1M	3M	
		Answer	<b>,</b>			
		Allswel.	CLANDS			
		SR.NO	GLANDS Pituitary Gland	LUCATION Situated in hypophyseal fossa of sphenoid hone at		
			Thunary Oland	the base of brain.	23.4	
		2	Thyroid Gland	Situated in the neck in front of larynx and trachea	211	
				and beside the thyroid cartilage		
		3	Parathyroid Glands	Two on each side of the thyroid gland in the neck		
		4	Pancreas (Islets of	In the curvature of duodenum in the abdominal		
			Langerhans)	cavity.		
		5	Adrenal glands	They are situated on upper pole of each kidney		
		6	Pineal glands	Situated near corpus callosum in the brain		
		7	Testes in male	Present in scrotum		
		8	Ovaries in female	One on each side of the uterus		
		Pituitary	gland known as "Maste	er gland":	1M	
		The secret	ions from all endocrine	glands are controlled by hormones of the pituitary gland,		
		hence pitu	itary gland called as mas	ster gland.		



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WINTER-2022 EXAMINATION			
Subia	ot T:41	WUDEL AND WEK	a. 20114
<u>Subje</u> 2	i	Draw and explain the structure of neuron.	3M
-	_	Marking Scheme: Diagram: 1M Explanation 2M	•
		Marking Scheme. Diagram. 111, Explanation 214	
		Answer:	
		Depending on the structure, neurons are of two types:	
		1. Myelinated or medullated.	
		2. Non-myelinated or non-medullated	
		Structure of Neuron –	
		A typical neuron consists of:	
		1) <b>Dendrites</b> : These are the processes which are short, and they carry impulses towards	<b>2M</b>
		the nerve cell. Each neuron contains several dendrites.	
		2) Axon: The axon is a long process of nerve cell which carries impulse away from	
		neuron. The axon consists of:	
		a. Axolemma or Neurilemma: It maintains the shape of axons.	
		b. Myelin sheath: It is a sheath of fatty material which surrounds most axons	
		and gives white appearance. The myelin sheath is absent at intervals along	
		the length of the axon and near its branched end, these intervals are called	
		'nodes of Ranvier'. They help in rapid transmission of nerve impulse in the	
		myelinated neuron.	
		Luc distance	
		1 T denorates	
		as I Dendrites gyton the Nucleus	
		The cell body	
		A distance (14 distance)	
		Axon Axolemma	
		Newulemma	1M
		A Nucleus of schusann	
		Schwann	
		Nodes of Ranvier Cell	
		Myelin sheath I Myelin Si	
		Repaired Aron ending	
		To Rostenminal,	
		Myelinated Newsong	
		(i) Non - myelinater	



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## WINTER-2022 EXAMINATION

			MODEL ANSWE	ER	[]
Subje	ect Title	e: HUMAN	<b>ANATOMY &amp; PHYSIOLOGY- THEO</b>	<b>RY</b> Subject Cod	e: <b>20114</b>
Q.	Sub		Answers		Marking
<u>No.</u>	No.	D		:4. P	Scheme
2	J	Draw a w	ell labelled diagram of gall bladder. Give	e its functions.	<b>3</b> 1 <b>VI</b>
		Marking	Scheme: Diagram:2M, Functions: 1M		
		A nswer•			
		The gall bl	ladder is a pear- shaped sac attached to the p	osterior surface of liver by connective	
		tissue.		······	
		It consists is similar	of a fundus, body and a neck which is contin to the GIT with additional oblique muscles	The mucus membrane shows small	2M
		rugae whe	n empty.		
			14		
			Comm	2012	
			hepas	tie duct	
				in the second	
			Gall	bloudder	
			To d	uedenuro	
		<b>F</b> (*			1M
		Functions			
		<b>1.</b> It is a	reservoir of bile.		
		<b>2.</b> It con	ncentrates the bile by absorption of water the	rough the wall of gallbladder.	
		3. Secre	etion of mucus into the bile		
	_	4. Rele	ase of the stored bile		
2	k	Give the d	lifferences between endocrine and exocri	ne glands with examples.	3M
		Marking	Scheme: 0.5 M for each difference, 0.5 M	for example	
		Angregore			
		Answer:			
		S. No.	ENDOCRINE GLAND	EXOCRINE GLAND	
			These glands are ductless glands	These glands have ducts	
			directly into the blood	into the lumen of the organs or to	
				the outer surface of the body.	
		3	Secretion of endocrine gland is called	Secretion of exocrine gland is	
			hormone.	called juice or enzyme.	
		4	I ney produce their effect on distant.	I ney produce their effect where	
		5	Their glands are mostly involved in.	Their glands are mostly involved in	
			homeostatic activity.	metabolic activities.	
		6	E.g: adrenal glands, testes, thyroid	E.g. sweat glands, gastric glands,	
				sebceous glands.	



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#### WINTER-2022 EXAMINATION

### **MODEL ANSWER**

### Subject Title: HUMAN ANATOMY & PHYSIOLOGY, THEORY

Subje	ct Title	E: HUMAN ANATOMY & PHYSIOLOGY- THEORY Subject Cod	e: <b>20114</b>
Q.	Sub	Answers	Marking
<u> </u>	INO.	Answer all questions	20M
-		:: Important Instructions ::	
		In case, multiple answer options are observed for the same sub-question of question No.	
		3, the option (Answer) appearing first in the answer book shall be treated as answer and	
		assessed accordingly.	
3	a	Name the muscles of respiration.	1M
		Answer:	
		The respiratory muscles categorized into following type:	
		Diaphragm	
		<ul> <li>Intercostal muscles (External &amp; Internal)</li> </ul>	
			1M
3	Ь	<b>Corobrum</b> is the largest part of brain	IIVI
5	U	<u>Cerebrum</u> is the targest part of brain.	
			1M
3	с	The collar bone is called as <u>Clavicle</u>	
3	d	Define micturition.	1M
		Micturition is the process of expelling or excreting urine from the urinary bladder of human	
		body to the exterior. Micturition is also known as Urination.	
3	e	The cell produced by fusion of male and female gametes is called as <b><u>diploid zygote</u></b>	1M
3	f	Names the bones in the shoulder joint.	1M
		Clavicle, Scapula, Humerus	
3	g	Define systole and diastole.	1M
		Marking Scheme: 0.5M for each definition	
		Systele: Contraction of the heart muscle	
		Systeme. Contraction of the heart muscle.	
		Diastole: Relaxation of the heart muscle.	
3	h	Write the effect sympathetic stimulation on salivary gland.	1M
		Sympathetic stimulation is the secretion of noradrenaline which is responsible for inhibition	
		of secretion of the saliva.	
		OR	
		Inhibition of secretions from the salivary gland.	
3	i	Define Menopause	1M
		Menopause:	
		It is the natural decline in oestrogen and progesterone in women and marks the end of	
		childbearing period. It occurs between the age of 45 to 55 years.	



Answer:

Answer: i) **Calcium** 

iv)

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		WINTER- 2022 EXAMINATION	
		MODEL ANSWER	[]
Subje	ect Titl	e: HUMAN ANATOMY & PHYSIOLOGY- THEORY Subject	ct Code: 20114
Q. No.	Sub No.	Answers	Marking Scheme
3	j	Trachea is also called as windpipe.	1M
3	k	Name the enzyme which is present in tears.	1 <b>M</b>
		Answer:	
		Lysozyme	
3	l	Name the arteries supplying blood to kidney and spleen.	1M
		Answer:	
		Right and left renal arteries, splenic artery.	
3	m	Acetylcholine (Ach) Neurotransmitter causes skeletal muscle contraction	1M
3	n	Name the enzyme which converts fats to fatty acid and glycerol.	1M
		Answer:	
		Lipases	
3	0	Keratinised epithelium is found on dry surfaces like	1M
		Answer: ii) Hair	
3	р	Human body is divided in tocavities.	1M
		Answer: iii) Four	
3	q	is essential for the synthesis of pigment Rhodopsin.	1M
		Answer:	
		ii. Vitamin A	
3	r	Superior Means	1M
		Answer:	
		iii). Nearer to the head	
3	s	Colour pigmentation of the skin is due to	1M

\_is responsible for muscle contraction.

**1M** 

MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION (Autonomous)

(ISO/IEC - 27001 - 2005 Certified) WINTER- 2022 EXAMINATION

### MODEL ANSWER

#### Subject Title: SOCIAL PHARMACY- THEORY

#### Important Instructions to examiners:

- 1) The answers should be examined by key words and not as word-to-word as given in the model answer scheme.
- 2) The model answer and the answer written by the candidate may vary but the examiner may try to assess the understanding level of the candidate.
- 3) The language errors such as grammatical, spelling errors should not be given more Importance (Not applicable for subject English and Communication Skills.)
- 4) While assessing figures, the examiner may give credit for principal components indicated in the figure. The figures drawn by candidate and model answer may vary. The examiner may give credit for any equivalent figure drawn.
- 5) Credits may be given stepwise for numerical problems. In some cases, the assumed constant values may vary and there may be some difference in the candidate's answers and model answer.
- 6) In case of some questions, credit may be given by judgement on part of the examiner of relevant answer based on the candidate's understanding.
- 7) For programming language papers, credit may be given to any other program based on an equivalent concept.
- 8) As per the policy decision of Maharashtra State Government, teaching in English/Marathi and Bilingual (English + Marathi) medium is introduced at first year of AICTE diploma Programme from academic year 2021-2022. Hence if the students in first year (first and second semesters) write answers in Marathi or bilingual language (English +Marathi), the Examiner shall consider the same and assess the answer based on matching of concepts with model answer.

Q.	Sub	Answers	Marking		
No.	No.		Scheme		
1		Answer any <u>SIX</u> of the following:	<b>30M</b>		
1	а	Enlist various National Health Programmes implemented by Government of India. Explain in short Revised National Tuberculosis Contract Programme (RNTCP) and National Programme for Control of Blindness.	5M		
		Marking Scheme:			
		Enlisting National Health Programs: 2M (Any 4), Explanation of RNTCP:1.5M,			
		Explanation of National Programme for Control of Blindness:1.5M			
		Answer:			
		The various National Health Programmes implemented by Government of India are as			
		follows-			
		1. National Programme for Prevention and Control of Cancer, Diabetes,	2M		
		Cardiovascular Diseases & Stroke (NPCDCS).	(Any 4)		
		2. National Programme for the Health Care for the Elderly (NPHCE)			
		3. National Programme for Prevention & Management of Burn Injuries (NPPMBI)			
		4. National AIDS Control Programme (NACP)			
		5. National Leprosy Eradication Programme (NLEP)			
		6. National Tobacco Control Programme (NTCP)			
		7. National Programme on Climate Change & Human Health (NPCCHH)			
		8. National Programme for the Health Care for the Elderly (NPHCE)			

Subject Code: 20115



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#### WINTER-2022 EXAMINATION **MODEL ANSWER**

Subject Title: SOCIAL PHARMACY- THEORY Subject Code: 2011				
Q. No.	Sub No.	Answers	Marking Scheme	
		Revised National Tuberculosis Contract Programme (RNTCP)	1.5M	
		The Government of India launched the National TB Programme (NTP) in 1962. After the		
		declaration of TB as a global emergency by WHO, Government of India re-implemented		
		NTP as Revised National TB Control Programme (RNTCP) in 1993.		
		Objectives: (Any 1 for 0.5M)		
		<ol> <li>To achieve a rapid decline in burden of TB, morbidity and mortality while working towards elimination of TB in India by 2025.</li> <li>Early diagnosis and treatment of TB.</li> <li>Find all Drug Sensitive (DSTB) TB cases and all Drug Resistant (DRTB) TB cases.</li> </ol>		
		Functioning: (Any 1 for 0.5M)		
		<ol> <li>Free diagnosis and treatment of TB patients.</li> <li>Testing of all TB patients for drug resistance and HIV.</li> <li>To improve the compliance of the TB patients to the treatment regimen, customized SMS services to the individual patients on a regular basis reminding them about the time to consume the drugs, started by The Ministry of Health &amp; Family Welfare (MOHFW).</li> </ol>		
		4. Nutritional and financial assistance to TB patients.		
		Outcome: (Any 1 for 0.5M)		
		<ol> <li>Some states and union territories have committed to end TB even before 2025.</li> <li>The availability of rapid molecular tests for patients referred by any private doctor or institute have notified about 24 lakh patients.</li> <li>About 94% of the people living with HIV are being screened for TB symptoms.</li> <li>In the year 2019, more than 3 lakh people living with HIV were initiated on TB preventative therapy.</li> </ol>		
		National Programme for Control of Blindness:	1.5M	
		National Programme for Control of Blindness and Visual Impairment (NPCB & VI) was launched in the year 1976 as a 100% centrally sponsored scheme (now 60:40 in all states and 90:10 in NE States) with the goal of reducing the prevalence of blindness to 0.3% by 2020.		
		Objectives: (Any 1 for 0.5M)		
		<ol> <li>To reduce the backlog of avoidable blindness through identification and treatment of curable blindness.</li> <li>To develop and strengthen the strategy of NPCB for "Eye Health for All" and prevention of visual impairment.</li> </ol>		



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## WINTER-2022 EXAMINATION

<u>Subj</u> e	<u>ct Titl</u>	e: SOCIAL PHARMACY- THEORY Subject Cod	e: <b>20115</b>
Q.	Sub	Answers	Marking
NO.	NO.	3. To enhance community awareness on eve care.	Scheme
		4. Increase and expand research for prevention of blindness and visual impairment.	
		Functioning: (Any 1 for 0.5M)	
		1. Set up of Multipurpose District Mobile Ophthalmic Units in the district hospitals of States and UTs	
		2. Distribute free spectacles to old patients suffering from presbyopia.	
		3. Strengthen the tertiary Eye-care centres by providing funds for purchase of sophisticated modern instruments.	
		Outcome: (Any 1 for 0.5M)	
		1. Successful implementation of School Eye Screening Programmes.	
		2. Eyes for corneal transplantation donated at a number above the set target.	
		3. Treatment of Eye diseases like Glaucoma, diabetic retinopathy, childhood blindness	
		etc, managed successfully.	
1	b	Define 'Immunity' and explain National Immunization Schedule.	5M
		Marking Scheme:	
		Definition of Immunity -1M,	
		National Immunization Schedule Explanation - 4M includes,	
		Schedule for infants: 1.5M,	
		Schedule for children: 1.5M	
		Schedule for pregnant woman: IM.	
		Answer:	
		Immunity:	
		Immunity is defined as any means of host defences to prevent entry of the germ in body	1M
		and\or recognize, destroy, and eliminate any foreign material to protect body against disease.	
		OR	
		The power of the body to resist the effects of invasion of pathogens is known as immunity.	
		National Immunization Schedule:	АМ
		Each country has its own immunization schedule based on their local needs. The Indian	-11/1
		version of National Immunization Schedule is to protect the children against six vaccine	
		preventable diseases -Diphtheria, Whooping Cough, Tetanus, Polio, Tuberculosis, Measles.	
1	1		1



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## WINTER-2022 EXAMINATION

	S. LIUE	• SUCIAL I HANNAU	1 - 1111/UK1 A nowers		Subject Co	Maul-
Q. No	Sub No			Schen		
110.	110.	National Immunizatio	n Schedule (NIS) for Infa	nts. Children and	l Pregnant Women.	Benen
		<b>x</b> 7 •				
		Vaccine	When to Give	Dose	Route	
			For Infants (1.5M for An	y 3 Vaccines)		
		Bacillus Calmette	At birth or as	0.1ml (0.05ml	Intradermal	
		Guerin (BCG)	early as possible	until I month		
			till one year of	age)		
		II. dd D	age	0.5.1	<b>T</b>	
		Hepatitis B –	At birth or as early as	0.5 ml	Intra-	
		Birth dose	possible within 24 hours		muscular	
		Oral Polio	At birth or as early as	2 Drops	Oral	
		Vaccine (OPV)-0	possible within the first			
			15 days			
		OPV 1, 2 & 3	At 6 weeks, 10 weeks &	2 Drops	Oral	
			14 weeks (OPV can be			
			given till 5 years of age)			
		Pentavalent 1, 2	At 6 weeks, 10 weeks &	0.5 ml	Intra-	
		& 3	14 weeks (can be given		muscular	
			till one year of age)			
		Rotavirus (RVV)	At 6 weeks, 10 weeks &	5 drops (liquid	Oral	
			14 weeks (can be given	vaccine) 2.5		
			till one year of age)	ml (lyophilized		
				vaccine)		
		Inactivated Polio	Two fractional doses at	0.1 ml	Intra dermal	
		Vaccine (IPV)	6 and 14 weeks of age		two fractional	
					doses	
		Measles Rubella	9 completed months-12	0.5 ml	Sub-	
		(MR) 1 <sup>st</sup> dose	months. (Measles can		cutaneous	
			be given till 5 years of			
			age)			
		Vitamin A (1 <sup>st</sup>	At 9 completed months	1 ml (1 lakh	Oral	
		dose)	with measles-Rubella	IU)		
		]	For Children (1.5M for A	ny 3 Vaccines)		
		Diphtheria,	16-24 months	0.5 ml	Intra-	

Diphtheria,	16-24 months	0.5 ml	Intra-
Pertussis &			muscular
Tetanus (DPT)			
booster-1			
MR 2nd dose	16-24 months	0.5 ml	Sub-
			cutaneous
OPV Booster	16-24 months	2 Drops	Oral
Vitamin A (2nd	16-18 months. Then one	2 ml ( 2 lakh	Oral
to 9th dose)	dose every 6 months up	IU)	
	to the age of 5 years		
DPT Booster-2	5-6 years	0.5 ml	Intra-
			muscular
Td	10 years & 16 years	0.5 ml	Intra-
			muscular



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## WINTER-2022 EXAMINATION

Subje	ect Title	Fitle: SOCIAL PHARMACY- THEORY         Subject Code:					
Q. No.	Sub No.		Answers			Marking Scheme	
		For	Pregnant Women (1M f	for Any 2 Vaco	cines)		
		Tetanus & adult Diphtheria (Td)-	Early in pregnancy	0.5 ml	Intra- muscular		
		Td-2	4 weeks after Td1	0.5 ml	Intra- muscular		
		Td- Booster	If received 2 TT/Td doses in a pregnancy within the last 3 years.	0.5 ml	Intra- muscular		
			OR				
		Age	V	accines given			
		Birth	Bacillus Calmette G Oral Polio Vaccine ( Hapatitis P birth doc	uerin (BCG), OPV)-0 dose,			
		6 Weeks	OPV-1, Pentavalent Rotavirus Vaccine (	OPV-1, Pentavalent-1, Rotavirus Vaccine (RVV)-1,			
		10 weeks	Fractional dose of Inactivated Polio Vaccine (fIPV)-1, Pneumococcal Conjugate Vaccine (PCV) -1* 10 weeks OPV-2 Pentavalent-2 RVV-2				
		14 weeks	OPV-3, Pentavalent	-3, fIPV-2, RV	V-3, <b>PCV-2</b> *		
		9-12 months	Measles & Rubella ( MR-2 JE-2**	<u>MR)-1, <b>JE-1</b>*</u>	*, PCV-Booster*		
			Diphtheria, Pertussis OPV – Booster	s & Tetanus (D	PT)-Booster-1,		
		5-6 years	DPT-Booster-2				
		10 years	Tetanus & adult Dip	htheria (Td)	(Td)		
		Pregnant Mother	Td-1. Td-2. or Td-B	ooster***			
			,,				
		* PCV in selecte Pradesh (selected	d states/districts: Bihar, H l districts) and Rajasthan;	imachal Prades in Haryana as s	sh, Madhya Pradesh, state initiative	, Uttar	
		** JE in endemic	districts only	2			
		*** One dose if	previously vaccinated with	nin 3 years			
1	с	What are FIP developr	nent goals and elaborate	on National H	lealth Policy.	5M	
		Marking Scheme: FIP	Development Goals - 2M	/I; National He	ealth Policy – 3M.		
		Answer:					
		FIP Development Goals: (Description: 0.5M, Any 3 Goals:1.5M)					
		• International Pharegional, and gl designed time bo	armaceutical Federation obal healthcare needs. T und initiative for pharmac	(FIP) has set The FIP Develory and its contri	targets to meet nat opment Goals is a bution to world hea	tional, <b>2M</b> well- lth.	



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## WINTER-2022 EXAMINATION

<u>Subj</u>	<u>ect Tit</u> l	e: SOCIAL PHARMACY- THEORY Subject Cod	e: <b>20115</b>
Q.	Sub	Answers	Marking
No.	No.		Scheme
		• The FIP goals aims at –	
		• Assessing and prioritizing national health situations.	
		<ul> <li>Educating and developing the workforce.</li> </ul>	
		<ul> <li>Ensuring good practices.</li> </ul>	
		<ul> <li>Promoting pharmaceutical innovations.</li> </ul>	
		• There are 21 goals decided as core dimensions of FIP's mission to ensure and	
		promote practice, science, and education in Pharmacy.	
		• FIP development goals are the systematic and integrated approach to meet support	
		objectives of the UN program "Health For All" through the development of the	
		pharmaceutical workforce.	Any
		Goal 1: Academic Capacity.	three goals =
		Goal 2: Early Career Training Strategy Development.	1.5M
		Goal 3: Quality Assurance.	
		Goal 4: Advanced and Specialist Development.	
		Goal 5: Competency Development.	
		Goal 6: Leadership Development.	
		Goal 7: Advancing Integrated Services.	
		Goal 8: Working with others.	
		Goal 9: Continuing Professional Development Strategies	
		Goal 10: Equity and Equality	
		Goal 11: Impact & Outcomes	
		Goal 12: Pharmacy Intelligence.	
		Goal 13: Policy development	
		Goal 14: Medicines Experts.	
		National Health Policy: (Explanation 2M, Objectives: 1M (Any two))	<b>3M</b>
		The National Health Policy of 1983 and the National Health Policy of 2002 have served	
		well in guiding the approach for the health sector in the Five-Year Plans.	
		Now 20 years after the last health policy, the context has changed in four major ways.	
		• First, health priorities are changing. Although maternal and child mortality has	
		rapidly declined there is a growing burden on account of non-communicable	
		linear and some infortions disease	
		diseases and some infectious diseases.	
		• The second important change is the emergence of a robust health care industry	
		estimated to be growing at double-digit.	



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## WINTER- 2022 EXAMINATION MODEL ANSWER

Subje	ct Title	: SOCIAL PHARMACY- THEORY Subject Cod	e: 20115			
Q.	Sub No	Answers	Marking Scheme			
110.	110.	• The third change is the growing incidences of catastrophic expenditure due to health	Scheme			
		care costs, which are presently estimated to be one of the major contributors to				
		poverty.				
		• Fourth, rising economic growth enables enhanced fiscal capacity. Therefore, a new				
		health policy responsive to these contextual changes is required.				
		The primary aim of the National Health Policy, 2017, is to inform, clarify, strengthen and				
		prioritize the role of the Government in shaping health systems in all its dimensions-				
		investments in health, organization of healthcare services, prevention of diseases and				
		promotion of good health through cross-sectoral actions, access to technologies, developing				
		human resources, encouraging medical pluralism, building a knowledge base, developing				
		better financial protection strategies, strengthening regulation and health assurance.				
		Goal:				
		The attainment of the highest possible level of health and wellbeing for all at all ages, through a				
		preventive and promotive health care orientation in all developmental policies, and universal access				
		to good quality health care services without anyone having to face financial hardship, therefore.				
		This would be achieved through increasing access, improving quality, and lowering the cost of				
		healthcare delivery.				
		Objectives:				
		1) Improvement in health status through preventive, promotive, curative, palliative and				
		rehabilitative services provided through the public health sector with a focus on				
		quality.				
		2) Availability of free primary health care services for all infectious and non-infectious				
		diseases.				
		3) Access to affordable quality secondary and tertiary healthcare services through				
		private-public partnerships in hospitals.				
		4) Reinforce trust in the public health care system.				
		5) Enhance life expectancy and quality of life for the population.				
1	d	Give Causative agent, Clinical presentation, and role of Pharmacist in the following infections (any two).	5M			
		i. AIDS				
		ii. Typhoid				
		iii. Covid -19				



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## WINTER-2022 EXAMINATION

Subje	ect Title	e: SOCIAL PHARMACY- THEORY Subject Cod	le: 20115
Q.	Sub No	Answers	Marking Scheme
110.	110.	Marking Scheme: Each disease / infection – 2.5 M	Scheme
		Causative agent : <sup>1</sup> / <sub>2</sub> M	
		Clinical presentation: 1M (for any two points)	
		Role of Pharmacist: 1M (for any two points)	
		Answer:	
		i) AIDS:	
		<b>Causative agent:</b> Retrovirus known as HIV (Human immunodeficiency virus)	
		Clinical Presentations:	
		i. Breakdown of body's immune system which ultimately leads to life threatening opportunistic infections, neurological disorders, and malignancies.	
		ii. Weight loss	
		month.	
		iv. Persistent cough and shortness of breath.	
		Role of Pharmacists in Education and Prevention:	2.5M
		i. Pharmacists can educate the public about AIDS, its problems and methods of	
		prevention to reduce the risk of infection before exposure.	
		ii. Pharmacists can counsel people about using Post Exposure Prophylaxis (PEP) to	
		reduce risk of HIV infection after exposure.	
		iii. Pharmacists can educate people about the importance of having safe sex to prevent	
		AIDS.	
		iv. Pharmacist can educate the public about getting proper anti-retroviral treatment	
		(ART) to prevent HIV transmission to sexual partners and from mother to child	
		during pregnancy, delivery, and breast feeding.	
		ii) Typhoid.	
		Causative agent: Salmonella typhi	
		Clinical Presentations:	
		i. Prolonged high fever.	
		ii. Abdominal pain.	
		iii. Headache.	
		IV.         Diarrhoea or constipation.	



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Subje	ct Title	: SOCIAL PHARMACY- THEORY Subject Cod	e: <b>20115</b>
Q. No.	Sub No.	Answers	Marking Scheme
1100	1100		
		Kole of Pharmacists in Education and Prevention:	
		1. Pharmacists can educate people for sanitary measures like safe drinking water, food	
		and personal hygiene.	
		11. Pharmacists can promote immunization with TAB vaccine containing S. typni, S.	
		Dharmanista con educate public chevit cottine management with nonceromtihistics	
		such as Azithromycin	
		iv Depresents can make public aware of the importance of using proper senitation	
		iv. Final macists can make public aware of the importance of using proper samation.	
		iii) Covid – 19.	
		Causative Agent: SARS-CoV-2 virus which is a +ssRNA virus having a crown-like	
		appearance because spike glycoproteins are present on its envelope.	
		Clinical Presentations:	
		i. Cough and headache, Tiredness, and fever.	
		ii. Difficulty breathing or shortness of breath loss of speech or mobility, or confusion.	
		iii. Loss of taste or smell.	
		iv. Rash on the skin or discolouration of fingers or toes.	
		Role of Pharmacists in Education and Prevention:	
		i. Pharmacists can encourage the public to get vaccinated and complete their dose	
		schedules as COVID 19 vaccination is the most effective way to prevent the disease.	
		ii. Pharmacists can spread awareness about the importance of regular washing of hands	
		and maintaining good personal hygiene.	
		iii. Pharmacists can educate the public about avoiding close contact with an infected	
		person and self-isolation to prevent the spread of disease.	
		iv. Pharmacists can educate the public on wearing a properly fitted mask and using an	
		alcohol-based sanitizer for their safety.	
1	e	Discuss the stages of demographic cycle and explain the role of pharmacist in Family Planning.	5M
		Marking Scheme:	
		Explaining stages of demographic cycle - 2.5M (0.5M for each stage);	
		Explaining the role of pharmacist in Family Planning – 2.5M (Any 5 Roles)	



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#### WINTER-2022 EXAMINATION MODEL ANSWER

ıb	:: SUUIAL I	ΓΠΑΚΝΊΑυ Υ - ΤΗ	Answers	5	Subject Co
•	Answer: D	emographic Cycle	: It comprises of fo	llowing 5 stage	28 -
	1. First It is rate	at <b>Stage</b> : "High Stationary S and mortality i.e.	Stage". The feature death rate are ver	e of this phase y high. Both o	is both natalities i.e., birth cancel each other keeping
	2. Seco It is sam Sou	ond Stage: "Early Expanding e i.e., higher. As a th Asian countries a	Stage". Here mor result, population are in this phase.	tality starts fall starts increasir	ling but birth rate remain ng. At present African and
	3. This It is decr to ir	rd Stage: "Late Expanding St reasing. But birth ra ncrease. China, Indi	tage". Her mortality ate remains higher a, Singapore is at tl	v continues to fa than death rate his stage.	all but birth rate also started b. So, population continues
	4. Fou It is deat cour	<b>rth Stage:</b> "Low Stationary Stat	tage". It is also call lowered. So net po this stage in last 20	led Zero Growt pulation growt ) years.	h stage as birth rate equals h is zero. Many developed
	5. Fift It is decl facin stag	h Stage: "Negative Growth ine in population si ng problems of pop e.	Stage". Here death ze. Reasons behind ulation increase. G	n rate is higher l are advancem ermany and Hu	than birth rate. So there is ent in medical science and ingary are presently at this
		5 st	tages of Demograj	phic Cycle	
		Stage	Birth rate	Death rate	Example
	First	High Stationary Early	High	High Declining	India till 1920South Asia &
	Third	expanding Late Expanding	Start to Decline	Declining	Africa India, China & Singapore
					61
	Fourth	Low Stationary	Low	Low	UK, Denmark



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## WINTER-2022 EXAMINATION

Subje	ct Title	e: SOCIAL PHARMACY- THEORY Subject Cod	le: <b>20115</b>
Q. No	Sub No	Answers	Marking
110.	110.	Role of Pharmacist in Family Planning:	2.5M
		1. Display posters of various methods of family planning in hospitals and drug stores.	
		2. Aware the patients about benefits and methods of family planning.	
		3. Advice people about the importance of family planning and spacing of children.	
		4. Distribute pamphlets of family planning.	
		5. Explain various techniques of contraception and the use of oral contraceptives.	
		6. Counsel public and conduct educational programmes highlighting the problems	
		associated with high population.	
		7. Educate and convince people about the advantage of small families.	
		8. Refer government authorized family planning centres.	
1	f	Give the classification of communicable diseases and explain the role of pharmacist in prevention of them.	5M
		Marking Scheme	
		Classification of communicable diseases: 2.5 M· (Each class with example: 1/2 M)	
		Role of pharmacists: 2.5M (each role: <sup>1</sup> / <sub>2</sub> M)	
		Answer:	
		Communicable diseases are the diseases that spread from one person to another through	2.5 M
		different ways. They are also called infectious diseases.	
		Classification:	
		Communicable Disease	
		RespiratoryIntestinalArthropod-borneSurfaceSexually transmittedinfectionsinfectionsinfectionsinfectionsinfections	
		Chickenpox     Poliomyelitis     Dengue     Trachoma     HIV/AIDS	
		Measles     Viral hepatitis     Malaria     Idanus     Idanus	
		Mumps • Typhoid • Chikungunya     Influenza • Amebiasis	
		<ul> <li>Diphtheria</li> <li>Worm infestations</li> <li>Food Poisoning</li> </ul>	
		<ul><li>Tuberculosis</li><li>Ebola</li></ul>	
		Role of Pharmacists in prevention of communicable diseases:	2.5 M
		1. Pharmacists can help public to understand the dangers of communicable diseases	
		and guide them to prevent their occurrence in the community.	



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#### WINTER- 2022 EXAMINATION MODEL ANSWER

Subje	ct Title	e: SOCIAL PHARMACY- THEORY Subject Cod	e: <b>20115</b>
Q.	Sub No	Answers	Marking
INO.	INO.	2. Pharmacists can counsel people about antibiotic resistance due to irrational use of	Scheme
		antibiotics.	
		3. Pharmacists can counsel people about the importance of completing the entire course	
		of treatment prescribed by the physician to avoid the reinfection of the disease by	
		the pathogen and antibiotic resistance.	
		4. Pharmacists can create an awareness program for the prevention of arthropod borne	
		diseases and sexually transmitted diseases.	
		5. Pharmacists can play an important role in vaccination program by counselling people	
		regarding getting themselves vaccinated with proper follow up.	
		6. Pharmacists can guide the community regarding the importance of hand washing,	
		sanitation, cough/sneezing etiquettes, personal hygiene, nutrition and thereby help in the prevention of communicable diseases.	
		7. Provide Drug related information and consulting to patients and health care	
		professionals.	
		8. Educating the health care professionals like doctors about the issues related to drug	
		use process.	
		9. Pharmacists can help prevent medical errors by increasing patient health literacy.	
1	g	Define 'Epidemiology" and state the applications of Epidemiology. Explain the terms: Epidemic, Endemic and Pandemic.	5M
		Marking Scheme:	
		Definition of Epidemiology – 1M; Applications of Epidemiology:1M for Any 2	
		applications; Explanation of terms Epidemic:1M; Endemic:1M; Pandemic:1M	
		Answer:	
		Epidemiology:	1M
		Epidemiology is defined as the study of the distribution and determinants of health-related	
		events and diseases in the population and also the application of this knowledge to control	
		health problems.	
		Applications of Epidemiology:	
		1. Emidemiclogical studies provide information shout risk factors, conserve a	1M
		1. Epidemiological studies provide information about fisk factors, causarive agents, a host or carrier, and environmental contributors to the spread of the disease	
		2. It helps in the identification of diseases which regularly occur in a community	
		3. It provides logical data for the choice of drug, duration of exposure and dose to stop	
		the spread of disease.	
		4. It helps to devise strategies to treat and prevent diseases in a population.	



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#### WINTER-2022 EXAMINATION MODEL ANSWER

Subject Title: SOCIAL PHARMACY, THEORY Subject Code: 201					
Q. No.	Sub No.	Answers	Marking Scheme		
		Endemic: (particular area):			
		Endemic means the constant presence and/or usual prevalence of a disease or infectious	1 <b>M</b>		
		agent in a population within a geographic area, restricted to the areas throughout the year.			
		Endemic diseases are amongst the major health problems in a particular country or continent			
		as a whole.			
		Eg. Ebola, river blindness etc			
		Epidemic: (rapid mass spread):	1M		
		Epidemic can be defined as sudden increase of a case of disease which is higher than normal			
		in a specific population. It is the quick and rapid spread of number of cases of a disease			
		above what is normally expected in that population in that area. Epidemics happen when			
		an agent and susceptible hosts are present in adequate numbers, and the agent can be			
		effectively transmitted from a source to the susceptible host.			
		Eg: Cholera outbreak, diarrhea outbreak, chicken pox in school going children etc.			
		Pandemic: (world widespread):	1 <b>M</b>		
		It is an epidemic that affects large geographical region including different countries or even			
		different continents and usually affecting large number of people in a short time or at the			
		same time.			
		Eg : SARS, influenza, Covid 19 which affected millions of people across the globe.			
2		Answer any <u>TEN</u> of the following:	30 M		
2	a	Define Health and explain various Dimensions of Health.	<b>3M</b>		
		<b>Marking Scheme:</b> Definition 1M; Explanation -2M (Enlist-0.5 M & explanation of any 3 dimensions-1.5M)			
		Answer:			
		Definition of Health:	1M		
		"A state of complete physical, mental and social will being and not merely an absence of disease or infirmity".			
		OR			
		"A condition or quality of the human organism expressing the adequate functioning of the organism in given conditions, genetic and environmental'.			
		Dimensions of Health:			
		1. Physical health			
		2. Mental health			
		3. Social health			



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## WINTER-2022 EXAMINATION

Q.	Sub	Answers	Marking
No.	No.	4 Spiritual health	Scheme
		5 Emotional health	
		6 Socioeconomic health	
		7. Environmental health.	
		8. Educational health nutritional health.	
		1. Physical health:	
		It is the perfect functioning of the body i.e., a state in which every cell and every organ is functioning at optimum capacity and in perfect harmony with the rest of body.	
		The signs of physical health are:	
		<ul> <li>Good complexion, clear skin, bright eyes</li> </ul>	
		• Lustrous hair with a body clothed with firm flesh, not too fat.	
		• Sweet breath, sound sleep	
		• Smooth, easy, coordinated body movements.	
		• Good appetite, regular activity of bowel and bladder	
		• All the organs of the body are of unexceptional size and function normally.	
		2. <b>Mental health:</b> It is defined as a state of balance between the individual and surrounding world, a state of harmony between oneself and others, has self-esteem, self-confidence, self-control and has respect for others.	
		Characteristics:	
		• They feel good about themselves.	
		<ul> <li>They do not become overwhelmed by emotions, such as fear, anger, love, iealousy, guilt, or anxiety.</li> </ul>	
		• They have lasting and satisfying personal relationships.	
		<ul> <li>They feel comfortable with other people.</li> </ul>	
		<ul> <li>They can laugh at themselves and with others.</li> </ul>	
		• They should be able to cope up with anxiety and stress and so they are able	
		to face the problems and solve them intelligently.	
		<ul> <li>They can accept life's disappointments.</li> </ul>	
		• They make their own decisions.	
		3. Social health:	
		It is ability of an individual to adjust with the society. It implies harmony and integration within the individual, between each individual and other members of society and between individuals and the world in which they live.	



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## WINTER-2022 EXAMINATION

Subje	ct Title	: SOCIAL PHARMACY- THEORY Subject Code: 2	20115
Q.	Sub No	Answers Ma	arking
110.	INU.	Factors affecting social health are: Economic tension, poverty, illiteracy,	cheme
		unemployment and adverse social relations etc.	
		Characteristics of Social health are:	
		Possession of social skills	
		• Proper social functioning within the community	
		• Ability of oneself to see as a member of the society.	
		<ul> <li>4. Spiritual health: It plays a role in health and disease. It refers to that part of the individual which reaches out and strives for meaning and purpose in life. Spiritual health includes: <ul> <li>Integrity</li> <li>Principles</li> <li>Ethics</li> <li>Commitment to some higher being.</li> </ul> </li> <li>5. Other: emotional health, socioeconomic health, environmental health, educational health nutritional health.</li> </ul>	
		(Explanation of any three dimensions should be considered)	
2	b	Give the long form of the following abbreviations. i) BCG ii) DPT iii) HIV	3M
		Marking Scheme: 1M Each long form	
		Answer:	
		i) BCG Bacillus (of) Calmett (and) Guerin OR Bacillus Calmett Guerin	
		ii) DPT Diptheria Pertussis Tetanus	
		iii) HIV Human Immunodeficiency Virus	
2	c	What is Artificial Ripening? Enlist the chemicals used for artificial ripening give ill- effects of it.	3M
		Marking Scheme: Artificial Ripening-1M; Chemicals-1M; ill effects-1M	
		Answer:	
		Artificial Ripening	
		Ripening is a physiological process that makes the fruit edible, pleasant and nutritious.	
		Normally, fruits release ethylene gas, a plant hormone that causes the fruits to mature, when	
		this natural ripening process is carried out by some artificial means it is known as artificial	
		ripening.	
	I		



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### WINTER-2022 EXAMINATION

Subje	ct Title	e: SOCIAL PHARMACY- THEORY Subject Cod	e: <b>20115</b>
Q. No.	Sub No.	Answers	Marking Scheme
		Chemicals used for artificial ripening.	
		• Calcium Carbide (CaC <sub>2</sub> )	
		• Ethylene	
		• Ethephon	
		• Ethylene glycol.	
		Ill effects of Artificial Ripening:	
		1. Effect of calcium carbide:	
		i. It is explosive in nature, and it breaks the natural structure of vitamins and other micronutrients.	
		ii. It creates only organoleptic changes, but fruit remains unripe from inside.	
		iii. It contains toxic chemicals such as traces of arsenic, lead particles and phosphorus which may lead to vomiting, diarrhoea, burning eyes, ulcers on the skin etc.	
		iv. The acetylene released by Calcium Carbide has been found to be detrimental as it affects the neurological system and reduces oxygen supply to the brain and further induces prolonged hypoxia. It is hazardous to pregnant women and children and may lead to headaches, dizziness, mood disturbances, mental confusion, memory loss, cerebral oedema (swelling in the brain caused by excessive fluids), sleepiness, seizure etc.	
		v. Consuming such artificially ripened mangoes could result in sleeping disorders, mouth ulcers, skin rashes, renal problems and possibly even cancer. Apart from this symptom of poisoning include diarrhoea (with or without blood), burning or tingling sensation in the abdomen and chest difficulty in swallowing, irritation in the eyes/skin, sore throat, cough, shortness in breathing, numbness etc.	
		2. Ethephon, a pesticide can have adverse effects on nervous system. It may lead to cancer, liver, kidney, and lung damage.	
2	d	Enlist various Arthropod- borne infections and give the causative agent and Mode of transmission of Dengue.	<b>3</b> M
		Marking Schome: Enlist 1M: Causative agent 1M: Mode of transmission 1M	
		Answer	
		Arthronod horne diseases.	
		1 Dopguo	
		2 Malaria	
		3. Filariasis	
		4. Chikungunya	
		5. Plague	



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## WINTER-2022 EXAMINATION

Subje	Sub	e: SUCIAL PHAKIVIAC I - I HEUK I Subject Coc	Marking
Q. No.	No.	Allswers	Scheme
		Dengue:	
		Causative agent:	
		Dengue fever is an infection caused by four distinct serotype of dengue viruses	
		(DENV-1, DENV-2, DENV-3 and DENV-4).	
		Mode of transmission of Dengue:	
		Human to mosquito and mosquito to human transmission are the primary modes of transmission for dengue fever.	
		• Through Mosquito Bites: Dengue viruses are spread to people through the	
		bites of infected Aedes species mosquitoes.	
		• From mother to child: A pregnant woman already infected with dengue	
		can pass the virus to her foetus during pregnancy or around the time of birth.	
		• Through infected blood, laboratory, or healthcare setting exposures-	
		Rarely, dengue can be spread through blood transfusion, organ transplant, or	
		through a needle stick injury.	
		Drug Misuse and Abuse. Marking Scheme: Drug Misuse - 0.5 M; Abuse-0.5 M; Prevention and control of Drug Misuse and Abuse-2M (Any 4 Points)	
		Answer:	
		Drug Misuse:	
		Drug misuse refers to the use of a drug for purposes for which it is not intended or	
		using drug in excessive quantities.	
		Drug Abuse:	
		It is a condition when drugs including alcohol, illicit drugs or any psychoactive	
		substances are misused to get high or cause self-harm. Drug abuse causes altered	
		thinking, behaviours, and body functions.	
		OR	
		Excessive use of psychoactive drugs, such as alcohol, pain medications or illegal drugs. It can lead to physical, social, or emotional harm.	
		Prevention and control of Drug Misuse and Abuse:	
		1. Effectively deal with peer pressure:	
		The biggest reason teens start using illicit drugs is because their friends utilize peer	
		pressure. In these cases, you need to either find a better group of friends that won't	
		pressure you into doing harmful things, or you need to find a good way to say no.	



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#### WINTER-2022 EXAMINATION MODEL ANSWER

Subject Title: SOCIAL PHARMACY- THEORY Subject Code: 2011				
Q. No.	Sub No.		Answers	Marking Scheme
		2.	<b>Deal with life pressure:</b> People today are overworked and overwhelmed and often feel like a good break or a reward is deserved. To prevent using drugs as a reward, find other ways to handle stress and unwind.	
		3.	Seek help for mental illness: Mental illness and substance abuse often go together. Those with a mental health illness may turn to drugs to ease the pain. Those suffering from some form of mental health illness, such as anxiety, depression or post-traumatic stress disorder should seek the help of a trained professional for treatment before it leads to substance use.	
		4.	<b>Examine every risk factor:</b> A history of substance abuse in the family, living in a social setting that glorifies drug abuse and/or family life that models drug abuse can be risk factors.	
		5.	Keep a well-balanced life: People take up drugs when something in their life is not working, or when they're unhappy about their lives or where their lives are going. Look at life's big picture and have priorities in order.	
		6.	<b>Education:</b> Drug abuse prevention begins with education, spreading the word regarding the dangers of drugs to oneself and to the community. Drug prevention programs seek to involve the family, community, or workplace in the prevention process. To be effective, communities need to sustain the progress. This often requires continued leadership and financial support.	
		Progr	ams for Drug Prevention	
		1.	<b>Family-Based Drug Prevention</b> . The prevention of drug abuse should start inside the family unit as early as possible. This includes creating an effective system of monitoring their children's activities.	
		2.	School-Based Drug Abuse Prevention Programs. Drug abuse prevention should be addressed as early as preschool. Preschool children can benefit from learning how to handle aggression, solve problems, and communicate better so that they can avoid putting themselves at risk for drug abuse later in life. Middle and high school programs should focus on peer relationships, communication, assertiveness, drug resistance skills and developing anti-drug attitudes. School based prevention programs should be repeated often for the best level of success.	



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2	f	3. <b>Community-Based Drug Abuse Prevention Programs</b> . Communities that try to come together in the fight against drugs are sure to make an	Scheme
2	f	3. Community-Based Drug Abuse Prevention Programs. Communities that try to come together in the fight against drugs are sure to make an	
2	f	Communities that try to come together in the fight against drugs are sure to make an	
2	f	impact in the prevention of drug abuse	
		Explain the role of pharmacist in National Health programmes.	3M
		Marking Scheme: 3M (For any 6 role)	
		Answer:	
		1. Early detection & prompt referral for treatment by; Identifying symptomatic cases,	
		Referring to diagnostic centers, Drug Distribution Centers (DDC), Fever Treatment	
		Depots (FTDs), etc.	
		2. Ensuring rational use of prescribed medicines.	
		3. Sensitizing people about various vector control measures.	
		4. Counselling to the patients, Providing consumer health information.	
		3. In the case of TB easy access for patients to the Government's free anti-TB	
		medicines i.e., DOTS.	
		4. Early identification of TB suspects, avoiding diagnostic delays.	
		5. Pharmacists should be involved in the procurement, storage & distribution of quality medicines.	
		6. They can monitor ARV therapy and ensure the proper use of medicines.	
		7. Pharmacists can get involved in various HIV prevention programs of NACO like;	
		Blood safety, STD control, Condom promotion, IEC & social mobilization, Care,	
		support & treatment of patient living.	
		8. Spreading the message of the small family norm and its advantages.	
		9. Providing a reservoir of knowledge on family planning methods.	
		10. Distributing family planning literature freely so that the customer can carry it home.	
		11. By having access to medicinal records, the pharmacists are in a position to influence	
		the selection of medicines, and dosage regimens, monitor patient compliance and	
		therapeutics, and recognize and report adverse drug reactions (Pharmacovigilance).	
		12. Counselling patient sensitizing and creating awareness among the public through	
		Carrying out seminars, exhibitions, consumer awareness programs, etc. patient	
		information, and counselling on De-addiction services.	



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## WINTER-2022 EXAMINATION

Subje	ct Title	e: SOCIAL PHARMACY- THEORY Subject Cod	e: <b>20115</b>
Q.	Sub	Answers	Marking
NO. 2	NO. g	Define Microbiology and give the classification of Bacteria depending on shape.	Scheme 3M
_	8	2 chine hiter ownorogy and give the classification of Ductoria depending on Shaper	0112
		<b>Marking Scheme:</b> Definition – 1M; Classification – 2M. (½ mark for each class)	
		Angwon	
		Allswei.	
		Microbiology:	
		and useful activities or harms caused.	
		OR	
		Microbiology is the study of microscopic organisms It is derived from three Greek words - mikros ("small"), bios ("life") and logos (science")	
		Classification: Bacteria are classified based on their shapes as	
		1. Cocci – Bacteria spherical or round	
		2. Bacilli – Rod shaped bacteria	
		3. Spirilla – Rigid spiral or spring shaped bacteria	
		4. Vibrios – Comma shaped bacteria	
		5. Spirochaetes – Spirochaetes	
		6. Actinomycetes – Branching filamentous bacteria.	
		7. Mycoplasmas – Round or oval bodies as they lack cell wall. So shape is not fixed.	
2	h	State what is Balanced Diet? Enlist various ill effects of junk foods.	3M
		Marking Scheme: Definition-1M: Ill effects-2M (Any 4 effects)	
		Answer:	
		Balanced Diet:	
		A diet which contains proper amount of calorie, vitamins and minerals needed to keep a	
		person healthy is referred to as balanced diet.	
		OR	
		Balanced diet is such diet that contains different types of foods in correct proportions so that	
		body's demand for amino acids, fats, carbohydrates, minerals, vitamins, other nutrients, and	
		energy is sufficed; so that malnutrition is prevented, and health is maintained.	
		OR	
		Food which contains adequate amounts of all nutrients namely:	
		<ul> <li>Carbohydrates (50%)</li> <li>Brotains (25%)</li> </ul>	
		<ul> <li>Froteins (55%)</li> <li>Fats (12%)</li> </ul>	
		• Minerals (03%)	
		Vitamins and sufficient water.	



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Subje	ect Title	e: SOCIAL PHARMACY- THEORY Subject Cod	e: <b>20115</b>
Q. No	Sub No	Answers	Marking Seheme
110.	110.	Ill offacts of junk food.	Scheme
		1) France commention of implefored look to implement on the device of the second secon	
		1) Excess consumption of junk foods leads to inadequate growth and development of the body	
		2) Junk foods contribute to an increased risk of obesity diabetes, cardiovascular	
		disease, and many other chronic health conditions.	
		3) High intake of junk foods tends to suppress the function of the brain that helps in	
		learning and memory formation.	
		4) One of the bad effects of junk food is overeating. It may lead to loss of appetite and	
		problems in digestion.	
		<ul> <li>5) Junk food has a negative impact on energy level and emotional well-being.</li> <li>() Junk food also has a mental impact which loads to mental depressions.</li> </ul>	
2	i	6) Junk food also has a mental impact which leads to mental depressions.	3M
2		Define the term - 1 har macocconomics .	5111
		Marking Scheme: Definition with proper explanation: 3M	
		Answer:	
		Pharmacoeconomics	
		• Field of study that evaluates the behaviours of individuals, firms and markets	
		relevant to use of pharmaceutical products, services and programs, and which	
		frequently focuses on the costs and consequences of that use.	
		• It is defined as the analysis of the cost of drug therapy to health care system and	
		society.	
		• It is a sub-discipline of health economics.	
		• A Pharmacoeconomics study evaluates the cost (expressed in monetary terms) and	
		effects (expressed in terms of monetary value, efficacy, or enhanced quality of life)	
		of a pharmaceutical product.	
		• Pharmacoeconomics studies serve to guide optimal healthcare resource allocation,	
		in a standardized and scientifically grounded manner.	
		• Pharmacoeconomics refers to the scientific discipline that compares the value of one	
		pharmaceutical drug or drug therapy to another.	
		• Pharmacoeconomics analysis helps in determining the cost impact of innovative	
		treatments and helps in granting more recognition by health care providers, policy	
		makers and public.	



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Subje	ct Title	e: SOCIAL PHARMACY- THEORY Subject Cod	e: <b>20115</b>
Q.	Sub	Answers	Marking
<u>No.</u> 2	No. j	Explain what is Noise Pollution. Give the sources and Control Measures of noise	3M
		Marking Scheme: Definition – 1M; Sources-1M (Any 2); Control Measures-1M (Any 2)	
		Answer:	
		Definition:	1M
		Noise is defined as unwanted sound or wrong sound at wrong place at wrong time.	
		Noise Pollution is an excessive and annoying degree of noise in a particular area.	
		Sources of noise pollution:	
		<ol> <li>The industrial source includes the noise from various industries and big machines working at a very high speed and high noise intensity.</li> </ol>	
		<ol> <li>Noise pollution can come from outdoor sources, such as road traffic, jet planes, garbage trucks, construction equipment.</li> </ol>	IM
		<ol> <li>Some of the main sources of noise in residential areas include loud music, transportation (traffic, rail, airplanes, etc.), lawn care maintenance, construction, electrical generators, wind turbines, explosions etc.</li> </ol>	
		Control Measures of noise pollution:	
		1) Control of noise at source:	
		It can be achieved by segregating noisy machines and by using mufflers or other noise reducers to machines.	1M
		2) Control of transmission:	
		This can be achieved by building enclosures and covering walls with sound absorbing material.	
		3) Protection of exposed persons:	
		It is recommended for all workers who are consistently exposed to noise louder than	
		85 dB in the frequency band above 150 HZ. Periodical audiogram check-ups, use of ear plugs, earmuffs are also essential.	
		4) Education:	
		Education of people through available media is required to highlight the importance	
	-	of noise as a community hazards.	
2	k	State the causative agent and mode of transmission ofi)Whooping Cough	3M
		ii) Poliomyelitis	
		iii) Tetanus	



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## WINTER-2022 EXAMINATION

Subje	ect Titl	e: SOCIAL PHARMACY- THEORY Subject Cod	e: 20115
Q. No.	Sub No.	Answers	Marking Scheme
		Marking Scheme: For each disease-1M (Causative agent-0.5 M & Mode of Transmission-0.5 M)	
		Answer:	
		1) Whooping Cough	
		Causative agent:	
		It is an infectious disease caused by Bordetella Pertussis.	
		Mode of Transmission:	
		The source of infection is infected patient. The disease spreads by droplet infection & through fomites.	
		2) Poliomyelitis	
		Causative agent:	
		Poliomyelitis Virus serotype I or II or III.	
		Modes of Transmission:	
		• Main transmission is through Faeco-oral route.	
		• Another route is the droplet infection, this occurs in the acute phase of disease	
		when the virus occurs in the throat. Close personal contact with an infected	
		person facilitates droplet infection.	
		3) Tetanus	
		Causative Agent:	
		Clostridium tetani	
		Modes of Transmission:	
		• Main transmission is through contamination of wounds by tetanus spores.	
		• The injuries that can cause tetanus are pin prick, abrasion, puncture wound,	
		burn, human bite, animal bite, stings, unsterile injections or surgical	
		instruments, compound fractures, etc	
3		Answer all questions	20M
		:: Important Instructions ::	
		In case, multiple answer options are observed for the same sub-question of question No.	
		3, the option (Answer) appearing first in the answer book shall be treated as answer and	
2		assessed accordingly.	1M
3	a	Answer.	TIM
		iii) 1983	
3	b	is a permanent sterilization surgery meant for men.	1M
		Answer:	
		iv) Vasectomy	



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## WINTER-2022 EXAMINATION

Subje	ct Title	e: SOCIAL PHARMACY- THEORY Subject Co	ode: 20115
Q.	Sub	Answers	Marking
No.	No.	The connective egent of Chicken new is	Scheme 1M
5	C	The causative agent of Chicken pox is	111/1
		Answer:	
		i) Varicella Zoster	
3	d	Kwashiorkor and Marasmus are deficiency disease of	1M
		Answer:	
		ii) Proteins	
3	e	programme was initiated by the Government of India during 7 <sup>th</sup> Five	1M
		Year plan in 1987.	
		Answer:	
		iii) Iodine deficiency	
3	f	The chief reason for using is to define monetary value of a saving	1M
		human life.	
		Answer:	
		ii) Cost-benefits analysis	
3	g	Bacteria that appear violet in colour after the staining process is	
	0	Answer:	1M
		ii) Gram Positive Bacteria	
3	h	The Breast-Feeding Awareness week is celebrated by WHO on	1M
		Answer:	
		i) First Week of August Every year	
3	i	FIP consist of heard	1M
5	•		
		Answer:	
2	;	1) Board of Fharmaceutical Sciences.	1M
5	J	in	IIVI
		Answer	
		ii) New Delki	
3	k	Antibiotic-Tetracycline shows food interaction with	1M
5			
		Answer:	
3	1	Noutral Spirit contains Alcohol by volume	1M
			TIAT
		Answer:	
2		III) 90 - 93%	17.4
3	m	Incubation period of Leprosy is	IVI
		Answer:	
		iv) 2-5 Years	



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## WINTER-2022 EXAMINATION

Subje	ct Title	e: SOCIAL PHARMACY- THEORY Subject Cod	e: <b>20115</b>
Q.	Sub	Answers	Marking
No.	No.		Scheme
3	n	Sustainable Development Goals (SDGS) adopted by the United Nations	<b>1M</b>
		hasnumber of goals.	
		Allswer:	
		1) 1 /	
3	0	NPCDCS stands for: - National Programme for Prevention and Control of	1M
		Answer:	
		i) Cancer, Diabetes, Cardiovascular diseases & Stroke	
3	р	Risk of illness or accidents in the workplace are known ashazards.	1M
		Answer:	
		ii) Occupational	
3	q	IEC stand for	1M
		Answer:	
		i) Information, Education & Communication	
3	r	An ideal health indicator should be	1M
		A newer	
		1V) All of the above	
3	S	The objectives of National Mental Health Programme (NMHP) are	1M
		Answer:	
		ii) To encourage the application of mental health knowledge in general healthcare and in	
		social development	
3	t	Entamoeba histolytica is the causative agent of	1M
		Answer:	
		iv) Amoebiasis	