



SUMMER– 2023 EXAMINATION

MODEL ANSWER - ONLY FOR THE USE OF RAC ASSESSORS

Subject Title: SOCIAL PHARMACY- THEORY

Subject Code: 20115

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 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, 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 examiner of relevant answer based on candidate's understanding.
- 7) For programming language papers, credit may be given to any other program based on 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 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. No.	Sub No.	Answers	Marking Scheme
1		Answer any <u>SIX</u> of the following:	30M
1	a	Give the definition and scope of Social Pharmacy. What is the role of pharmacist in public health? Marking Scheme: Definition - 1M; Explanation of Scope of social pharmacy - 2M (Any 4 Points); Explanation of role of pharmacist in public health - 2M (Any 4 Points) Answer: Definition: Social pharmacy can be defined as the branch of science that deals with the scientific studies of treatment, monitoring tools, patient behavior and its impact on patient health. OR Social pharmacy may be defined as the discipline dealing with the role of medicines from the social, scientific, and humanistic perspectives OR Social pharmacy is a science which deals with social aspects of the profession of pharmacy. Scope of Social Pharmacy: 1. Social Pharmacy is the multidisciplinary field of education and research that focuses on the role, provision, regulation, and use of medicines in society. 2. The scope is broad, covering medicines' social, psycho-social, economic, and organizational aspects. 3. Social pharmacy has played an important role in training programs for community-based pharmacists essential for a hyper-aged society, for community pharmacies' health	5M 1M 2M (Any 4)



Q. No.	Sub No.	Answers	Marking Scheme
		<p>management programs aimed at promoting the health of residents, and educational programs for elementary and middle school children.</p> <p>4. The primary pursuit of social pharmacy research is to investigate questions and themes concerning pharmacy practice and medicine use.</p> <p>5. It is a hybrid field that uses theories and methods from numerous humanistic and social scientific disciplines in order to explore all aspects of pharmacy practice.</p> <p>6. Research in social pharmacy can help to study the important opportunities and challenges facing clinical pharmacy within healthcare. If this understanding is lacking, it makes research of clinical pharmacy services within healthcare difficult.</p> <p>Role of Pharmacist in Public Health:</p> <p>Pharmacists play an important role in promoting public health and improving patient outcomes. Some of the key responsibilities of pharmacists in public health include:</p> <ol style="list-style-type: none">1. Pharmacists work with patients to ensure that they are taking their medications safely and effectively.2. They also help to manage drug interactions and side effects, and work with patients to optimize their medication regimen.3. Pharmacists are trained to help patients manage chronic conditions, such as diabetes, heart disease, and hypertension.4. They can provide education on healthy lifestyle habits, such as diet and exercise and monitor patients' progress.5. Pharmacists can play an important role in promoting immunization and increasing vaccination rates.6. They can educate patients about the importance of vaccines and administer vaccines in a safe and effective manner.7. Pharmacists can screen patients for various health conditions, such as high blood pressure and high cholesterol, and provide education on ways to prevent these conditions.8. Pharmacists can participate in public health initiatives, such as health fairs and disease screening programs, to improve the health of the community.9. Pharmacists work closely with other healthcare professionals, such as doctors and nurses, to provide comprehensive care to patients.10. They also collaborate with public health agencies and other organizations to address public health concerns.	<p>2M (Any 4)</p>



Q. No.	Sub No.	Answers	Marking Scheme
1	b	<p>Define Family Planning. Write in brief about various contraceptive methods.</p> <p>Marking Scheme: Definition -1M; Various contraceptive methods - 4M</p> <p>Answer:</p> <p>Definition:</p> <p>Family planning (according to WHO in 1971) is defined as “the way of living and thinking that is adopted voluntarily, upon the basis of knowledge, attitudes and responsible decisions by individuals and couples in order to promote the health and welfare of the family and thus contributes effectively to the social development of a country.”</p> <p style="text-align: center;">OR</p> <p>Family planning is the way to decide the number and timings of children in the family. So, it is the way of life adopted by married couples to promote the health and welfare of their families.</p> <p>Methods of contraception:</p> <p>Following are the methods of contraception available at present</p> <p>A) Temporary Methods</p> <p>a. Barrier methods:</p> <ol style="list-style-type: none">i. Physical methods: i) Condom ii) Diaphragm iii) Vaginal spongeii. Chemical methods: i) Foams ii) Creams iii) Suppositories iv) Soluble films <p>b. Intra – uterine device (IUDs):</p> <ol style="list-style-type: none">i. First generation Non-medicated IUDs: Loops as Lippes loopii. Second generation Medicated IUDs: Metal containing IUDs: Copper- 7, Copper T – 200, T. Cu- 380 A or Agiii. Third Generation Hormone containing IUDs: Progestasert <p>c. Hormonal methods:</p> <ol style="list-style-type: none">i. Hormonal pills: Combined pill: Mala –N, Mala –D Progestogen only pill (POP) Post coital pill: Tab. Unwanted 72, Tab. I pill 72 Once a month pill Male pill Saheli (Centchroman)ii. Slow-release preparations:	<p>5M</p> <p>1M</p> <p>4M</p>



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		<p>Injectable: DMPA (Depot – medroxyprogesterone acetate) and NET-EN (norethisterone enanthate)</p> <p>Subcutaneous implants: Norplant</p> <p>Vaginal rings</p> <p>d. Post conceptional methods</p> <ol style="list-style-type: none">Menstrual regulationMenstrual inductionAbortion (MTP) <p>B) Permanent Methods:</p> <ol style="list-style-type: none">Male sterilization (Vasectomy)Female Sterilization (Tubectomy). <p>C) Miscellaneous methods</p> <p>a. Behavioural methods</p> <ol style="list-style-type: none">AbstinenceCoitus interruptusSafe period use methodVaginal washing method <p>b. Natural family planning method</p> <ol style="list-style-type: none">Basal body temperatureCervical mucus method / Billing’s methodProlonged Lactation method / LAM Method (lactational amenorrhea)Symptothermal method. <p>Each of the contraceptive methods have their own advantages and disadvantages, so the adoption of a particular method amongst the given is purely a matter of individual couples preference.</p>	
1	c	<p>Define the term Epidemiology. Enlist and explain different types of Epidemiology.</p> <p>Marking Scheme: Definition - 1M; Enlisting Types – 1M; Explanation - 3M (1M each)</p> <p>Answer:</p> <p>Definition:</p> <p>Epidemiology is the study of the distribution and determinants of health-related events and diseases in the population and the application of knowledge to control health problems.</p>	<p>5M</p> <p>1M</p>



Q. No.	Sub No.	Answers	Marking Scheme
		<p>The different epidemiological methods are as follows:</p> <ol style="list-style-type: none">1. Descriptive epidemiology2. Analytical epidemiology3. Experimental epidemiology.	1M
		<p>1. Descriptive epidemiology:</p> <p>Descriptive studies are concerned with the distribution of disease or health related characteristics in human populations and identifying the characteristics with which the disease in question appears to be associated i.e., Time of the disease occurrence, place where the disease is occurring and who is affected by the disease (population). The time distribution means the study of, "when does the disease occur? For example, water borne gastrointestinal infections occur more frequently during summer season. In place distribution we can study the occurrence of diseases in a particular geographical area. There may be difference in occurrence between villages, cities, states, countries. Guinea worms are more common in Rajasthan than in Jammu and Kashmir. Person distribution indicates the persons who get the disease more frequently. e.g., whooping cough is common in children.</p>	1M
		<p>2. The analytical studies:</p> <p>These comprise of two distinct types of observational studies.</p> <ol style="list-style-type: none">A. Case control studyB. Cohort study <p>A. Case Control Study</p> <ul style="list-style-type: none">• Retrospective study• From effect to the cause• Studying the disease and see if you can associate risk factors to it. <p>B. Cohort Study</p> <ul style="list-style-type: none">• Prospective study• From cause to the effect• Studying the risk factor to see if disease is associated with it. <p>From both these study designs one can determine whether a statistically significant association exists between, a disease and a suspected factor and if one exists, the strength of association.</p>	1M



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Q. No.	Sub No.	Answers	Marking Scheme
		<p>3. Experimental epidemiology</p> <p>The aims of experimental studies are as follows:</p> <ul style="list-style-type: none">• To provide scientific proof of etiological or risk factors which may permit the modification or control of those diseases.• To provide a method of measuring the effectiveness and efficiency of health services for the prevention, control and treatment of disease and improve the health of the community.• The experimental studies can be conducted in animals or human beings.	1M
1	d (i)	<p>(i) Discuss various solid waste disposal methods.</p> <p>Marking Scheme: List of solid disposal method – 0.5 M, Explanation of each method: 0.5M; Any four-method explanation – 2M</p> <p>Answer:</p> <p>Solid waste is disposed of by using following methods.</p> <ol style="list-style-type: none">1. Dumping2. Controlled tipping or sanitary landfill3. Burning4. Composting5. Burial <ol style="list-style-type: none">1. Dumping: dry refuse is mainly dumped in low lying areas which help not only in disposal but also in reclamation of land. By the action of bacteria, the volume of the refuse decreases considerably in volume and is converted gradually into humus. It is not an ideal method.2. Controlled tipping or sanitary landfill: this is the most satisfactory method of refuse disposal. In this method a trench is dug. The refuse is compactly dumped in these pits and at the end of each working day is covered with earth, when the trench is full; again, it is covered with earth and is compacted. In this method the chemical and bacteriological processes decompose the refuse into simple substances with generation of heat.3. Burning: Refuse can be disposed of hygienically by burning. Hospital refuse which is particularly dangerous is best disposed of by burning.	2. 5M



Q. No.	Sub No.	Answers	Marking Scheme
		<p>4. Composting: it is a method of combined disposal of refuse and night soil. The basic principle is, when the refuse and night soil (excreta) are dumped in a pit and covered with earth there is anaerobic decomposition. The heat produced during decomposition kills the organisms and ultimately, we get compost, which is used as manure.</p> <p>5. Burial: it is useful for small scale disposal like camps. In a small trench or pit the refuse is collected and at the end of each day it is covered with 20-30 cm of earth. The contents of the pit may be taken out after 4-6 months and used on the fields.</p>	
1	d (i)	<p>What is sewage?</p> <p>Marking scheme: Definition – 1M, Explanation – 1.5 M (Any information about sewage or sewage treatment should be considered)</p> <p>Sewage:</p> <p>Sewage is wastewater which contains decomposable organic matter and pathogenic microorganisms.</p> <p>Sewage Treatment Plant</p> <p>A major component of this wastewater is human excreta. This municipal wastewater is also called sewage. It contains large amounts of organic matter and microbes. Many of which are pathogenic. Before disposal, sewage is treated in sewage treatment plants (STPs) to make it less polluting. Treatment of wastewater is done by the heterotrophic microbes naturally present in the sewage. This treatment is carried out in two stages.</p> <ol style="list-style-type: none">1. Primary treatment These treatment steps basically involve physical removal of particles large and small from the sewage through filtration and sedimentation. Initially, floating debris is removed by sequential filtration. Then the grit (soil and small pebbles) is removed by sedimentation. All solids that settle form the primary sludge, and the supernatant forms the effluent.2. Secondary treatment or biological treatment The primary effluent is passed into large aeration tanks where it is constantly agitated mechanically, and air is pumped into it. This allows vigorous growth of useful aerobic microbes into flocs (masses of bacteria associated with fungal filaments to form mesh like structures). While growing, these microbes consume a	2.5 M



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		<p>major part of the organic matter in the effluent. This significantly reduces the BOD (biochemical oxygen demand) of the effluent.</p> <p>BOD refers to the amount of oxygen that would be consumed if all the organic matter in one liter of water were oxidized by bacteria. The sewage water is treated till the BOD is reduced. The greater the BOD of wastewater, the more is its polluting potential. Once the BOD of sewage or wastewater is reduced significantly, the effluent is then passed into a settling tank where the bacterial 'flocs' are allowed to sediment. This sediment is called activated sludge. A small part of the activated sludge is pumped back into the aeration tank to serve as the inoculum. The remaining major part of the sludge is pumped into large tanks called anaerobic sludge digesters. Here, other kinds of bacteria, which grow anaerobically, digest the bacteria and the fungi in the sludge. The effluent from the secondary treatment plant is generally released into natural water bodies like rivers and streams.</p>	
1	e (i)	<p>Describe any one National Health Program for Mother and Child.</p> <p>Marking scheme: Explanation of any one NHP for mother and child – 2.5 M (If students wrote other NHP for mother and child, should be considered)</p> <p>Answer:</p> <p>Various Program for Mother and Child Care are as follows-</p> <ul style="list-style-type: none">• Janani Shishu Suraksha Karyakram• Janani Suraksha Yojana• Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA) <p>Janani Shishu Suraksha Karyakram:</p> <p>Institutional deliveries in India increased substantially after launched of Janani Suraksha Yojana (JSY). However, 25% women still hesitate to access health facilities for delivery due to out of pocket expenditure during stay at health facilities on drugs, diet, and diagnosis and arrangement blood etc.</p> <p>Building on the progress of this safe motherhood scheme, another major initiative Janani Shishu Suraksha Karyakaram (JSSK) was launched in June 2011 to eliminate out-of-pocket expenses for both pregnant women and sick infants. Essential care is provided to the mother and her neonate within 48 hours. This postnatal period is critical for identification and management of complication of post-delivery.</p>	2.5M



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		<p>In the case of institutional delivery, accessing this care is a little easier. Reasons like high out of pocket expenditure on diagnostics/investigations, blood, drugs, food and user charges institutional delivery JSSK was launched in June 2011 to eliminate out-of-pocket expenses for institutional delivery of pregnant women and treatment of sick infants.</p> <p>In 2014, the programme was extended to all antenatal & post-natal complications of pregnancy and similar entitlements have been put in place for all sick newborns and infants (up to one year of age) accessing public health institutions for treatment.</p> <p>Janani Suraksha Yojana:</p> <p>Janani Suraksha Yojana (JSY) is a safe motherhood intervention under the National Health Mission. It is being implemented with the objective of reducing maternal and neonatal mortality by promoting institutional delivery among poor pregnant women. The scheme, launched on 12th April 2005 by the Hon'ble Prime Minister, is under implementation in all states and Union Territories (UTs), with a special focus on Low Performing States (LPS). JSY is a centrally sponsored scheme, which integrates cash assistance with delivery and post-delivery care.</p> <p>The scheme focuses on poor pregnant woman with a special dispensation for states that have low institutional delivery rates, namely, the states of Uttar Pradesh, Uttarakhand, Bihar, Jharkhand, Madhya Pradesh, Chhattisgarh, Assam, Rajasthan, Orissa, and Jammu and Kashmir. While these states have been named Low Performing States (LPS), the remaining states have been named High Performing states (HPS).</p> <p>Pradhan Mantri Surakshit Matritva Abhiyan:</p> <p>Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA) was launched to provide fixed day assured, comprehensive and quality antenatal care universally to all pregnant women (in 2nd and 3rd trimester) on the 9th of every month. While antenatal care is routinely provided to pregnant women, special ANC services are provided by OBGY specialists/ Radiologist/ Physicians at government health facilities under PMSMA.</p> <p>As part of the campaign, a minimum package of antenatal care services are provided to pregnant women in their 2nd/3rd trimesters of at Government health facilities (PHCs/ CHCs, DHs/ urban health facilities etc) in both urban and rural areas.</p>	



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		<p>Using the principles of a single window system, it is envisaged that a minimum package of investigations and medicines such as IFA and calcium supplements etc would be provided to all pregnant women attending the PMSMA clinics. One of the critical components of the Abhiyan is identification and follow-up of high-risk pregnancies and red stickers are added on to the Mother and Child Protection cards of women with high risk pregnancies.</p>	
1	e (ii)	<p>What is Pradhan Mantri Jan Arogya Yojna (PM- JAY)?</p> <p>Marking scheme: each point – 0.5 M, Consider any five points for 2.5M</p> <p>Answer:</p> <p>Pradhan Mantri Jan Arogya Yojana- PMJAY or Ayushman Bharat</p> <ol style="list-style-type: none">1. Ayushman Bharat PM-JAY is the largest health assurance scheme in the world which aims at providing a health cover of Rs. 5 lakhs per family per year for secondary and tertiary care hospitalization to over 12 crores poor and vulnerable families (approximately 55 crore beneficiaries) that form the bottom 40% of the Indian population.2. PM-JAY provides cashless access to health care services for the beneficiary at the point of service, that is, the hospital.3. It covers up to 3 days of pre-hospitalization and 15 days post-hospitalization expenses such as diagnostics and medicines.4. The scheme aims to target the poor and vulnerable population of the country, based on the Socio Economic and Caste Census 2011 (SECC) database. There will be no cap on family size and age in the scheme.5. There is no restriction on family size, age or gender.6. Benefits of the scheme are portable across the country i.e. a beneficiary can visit any empanelled public or private hospital in India to avail cashless treatment.7. The payment for treatment will be made at a package rate which will be defined by the Government on an advanced basis. The package rates will include all the costs associated with treatment. The States and UTs will have the flexibility to modify these rates within a limited bandwidth.8. The scheme will work in partnership with NITI Aayog to operationalize a robust, modular, and interoperable IT platform which will involve a paperless and cashless transaction.9. The National Health Agency (NHA), the apex body implementing the scheme, has launched a website (mera.pmjay.gov.in).	2.5M



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1	f	<p>Describe causative agent, clinical presentation, and role of pharmacist in prevention of tuberculosis.</p> <p>Marking Scheme: Causative agent - 1M; Clinical Presentation – 1.5M; Role of pharmacist in prevention of tuberculosis: 0.5M for each role (2.5 M for Any 5 Roles)</p> <p>Answer:</p> <p>1. Causative agent: Tuberculosis (TB) is caused by a bacterium called Mycobacterium tuberculosis.</p> <p>2. Clinical Presentation:</p> <ol style="list-style-type: none">Persistent cough for more than two weeksFeverWeaknessUnintentional weight lossLoss of appetite.Chest painBlood in sputum.FatigueNight sweats: Profuse sweating, especially at night.Chills <p>3. Role of Pharmacists in prevention of tuberculosis: (Any 4 roles)</p> <ol style="list-style-type: none">Pharmacists can play an important role in vaccination program by counselling people regarding getting themselves vaccinated with the BCG vaccine and proper follow up.Pharmacists can help public to understand the dangers of tuberculosis and guide them to prevent their occurrence in the community.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 drug resistance development.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 tuberculosis.Provide Drug related information and consulting to patients and health care professionals.Educating the health care professionals like doctors about the issues related to drug use process.Pharmacists can help prevent medical errors by increasing patient health literacy.Pharmacists can also educate the people about the harmful effects of smoking and the increased risk of respiratory diseases in smokers.	<p>5M</p> <p>1M</p> <p>1.5M</p> <p>2.5 M</p>



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1	g	<p>Give causative agent and clinical presentation for following infections (any two)</p> <p>(i) Dengue (ii) Covid-19 (iii) Typhoid</p> <p>Marking Scheme: For one infection: 2.5M including Causative Agent– 0.5M; Clinical Presentation - 2M</p> <p>Answer:</p> <p>i. Dengue:</p> <p>a. Causative Agent: The Dengue viruses (DENV-1,2,3 and 4) are the causative agents of dengue fever that are enveloped single positive stranded RNA viruses belonging to the Flaviviridae family.</p> <p>b. Clinical Presentation:</p> <p>i. Mild Dengue Fever:</p> <ol style="list-style-type: none">1. High fever.2. Body rash.3. Vomiting and feeling nauseous.4. Muscle, bone, or joint pain.5. Pain behind the eyes.6. Headache. <p>ii. Severe Dengue Haemorrhagic Fever (DHF)/ Dengue Shock Syndrome (DSS)</p> <ol style="list-style-type: none">1. Small blood spots under the skin.2. Intense stomach pain.3. Persistent vomiting.4. Internal bleeding, leading to blood vomit, faeces or urine.5. Weak pulse.6. Bleeding from the mouth, gums, or nose. <p>ii. Covid-19:</p> <p>a. Causative Agent: The causative agent for COVID-19 is a novel coronavirus called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).</p> <p>b. Clinical Presentation:</p> <p>i. Most common symptoms:</p> <ol style="list-style-type: none">1. Fever or chills2. Cough3. Muscle or body aches4. Anorexia5. Sore throat6. Nasal congestion or runny nose7. Headache8. Diarrhoea9. Nausea10. Shortness of breath or difficulty breathing11. Loss of smell or taste <p>ii. Serious symptoms:</p> <ol style="list-style-type: none">1. Difficulty breathing or shortness of breath, loss of speech or mobility, or confusion.2. Chest pain.	<p>5M</p> <p>0.5 M</p> <p>2M</p> <p>0.5 M</p> <p>2M</p>



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		<p>iii. Typhoid:</p> <p>a. Causative agent: <i>Salmonella typhi</i></p> <p>b. Clinical Presentations:</p> <ol style="list-style-type: none"> i. Prolonged high fever. ii. Abdominal pain. iii. Headache. iv. Diarrhoea or constipation. v. Rash. vi. Loss of appetite and weight loss. vii. Nausea. viii. Weakness and fatigue. 	<p>0.5 M</p> <p>2M</p>																																										
2		Answer any <u>TEN</u> of the following:	30 M																																										
2	a	<p>Differentiate between prokaryotic and eukaryotic microorganisms.</p> <p>Marking Scheme: Any 6 points-3M</p> <p>Answer:</p> <table border="1"> <thead> <tr> <th>Parameter</th> <th>Prokaryotic Cells</th> <th>Eukaryotic Cells</th> </tr> </thead> <tbody> <tr> <td>Membrane-bound organelles</td> <td>Absent</td> <td>Present</td> </tr> <tr> <td>Nucleus</td> <td>There is the absence of a well-defined nucleus. Furthermore, there is the presence of nucleoid here which is an open region that contains DNA</td> <td>There is certainly the presence of a well-defined nucleus here. Furthermore, a nuclear membrane encloses it</td> </tr> <tr> <td>Cell size</td> <td>The cell size is smaller (0.1-5 µm)</td> <td>The cell size is larger (10-100 µm) in contrast</td> </tr> <tr> <td>Cell structure</td> <td>Unicellular structure</td> <td>Most eukaryotic cells are multicellular. However, some are unicellular</td> </tr> <tr> <td>DNA Form</td> <td>They have a circular DNA form</td> <td>They have a linear DNA form</td> </tr> <tr> <td>Complexity</td> <td>Simpler</td> <td>More complex in comparison to prokaryotic cells</td> </tr> <tr> <td>Cell wall</td> <td>The cell wall is present here. Furthermore, it comprises of mucopeptide or peptidoglycan</td> <td>Usually, there is an absence of cell wall here. However, in case it is present, it comprises cellulose</td> </tr> <tr> <td>Mitochondria</td> <td>Absent</td> <td>Present</td> </tr> <tr> <td>Ribosome</td> <td>70S</td> <td>80S</td> </tr> <tr> <td>Shape of DNA</td> <td>Double-stranded circular DNA</td> <td>Double-stranded Linear DNA</td> </tr> <tr> <td>Golgi Apparatus</td> <td>Absent</td> <td>Present</td> </tr> <tr> <td>Mode of Reproduction</td> <td>Asexual</td> <td>Sexual reproduction is certainly the most common here</td> </tr> <tr> <td>Endoplasmic Reticulum</td> <td>Absent</td> <td>Present</td> </tr> </tbody> </table>	Parameter	Prokaryotic Cells	Eukaryotic Cells	Membrane-bound organelles	Absent	Present	Nucleus	There is the absence of a well-defined nucleus. Furthermore, there is the presence of nucleoid here which is an open region that contains DNA	There is certainly the presence of a well-defined nucleus here. Furthermore, a nuclear membrane encloses it	Cell size	The cell size is smaller (0.1-5 µm)	The cell size is larger (10-100 µm) in contrast	Cell structure	Unicellular structure	Most eukaryotic cells are multicellular. However, some are unicellular	DNA Form	They have a circular DNA form	They have a linear DNA form	Complexity	Simpler	More complex in comparison to prokaryotic cells	Cell wall	The cell wall is present here. Furthermore, it comprises of mucopeptide or peptidoglycan	Usually, there is an absence of cell wall here. However, in case it is present, it comprises cellulose	Mitochondria	Absent	Present	Ribosome	70S	80S	Shape of DNA	Double-stranded circular DNA	Double-stranded Linear DNA	Golgi Apparatus	Absent	Present	Mode of Reproduction	Asexual	Sexual reproduction is certainly the most common here	Endoplasmic Reticulum	Absent	Present	<p>3M</p> <p>0.5M for each point of diff.</p>
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		Peroxisomes and Lysosomes	Absent	Present	
		Cell Division	Binary fission, transduction, conjugation, and transformation	Mitosis	
		Translation and Transcription	It occurs together	Translation happens in the cytosol. Moreover, transcription happens in the nucleus	
		Number of chromosomes	Only one	More than one	
		Replication	These cells have a single origin of replication	These cells have multiple origins of replication	
		Organelles	The organelles in prokaryotic cells are not membrane-bound	The organelles in eukaryotic cells are certainly specific in function. Most noteworthy, they are membrane-bound	
		Examples	Archea and bacteria	Fungi, protists, animals	
2	b	<p>What are FIP development Goals? When was it launched?</p> <p>Marking Scheme: (Any 5 Goals: 2.5 Marks; Launched year- 0.5M)</p> <p>Answer:</p> <p>FIP Development Goals:</p> <ul style="list-style-type: none"> • International Pharmaceutical Federation (FIP) has set targets to meet national, regional, and global healthcare needs. The FIP Development Goals is a well-designed time bound initiative for pharmacy and its contribution to world health. • The FIP goals aims at – <ul style="list-style-type: none"> ○ Assessing and prioritizing national health situations. ○ Educating and developing the workforce. ○ Ensuring good practices. ○ Promoting pharmaceutical innovations. • 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 “<i>Health For All</i>” through the development of the pharmaceutical workforce. <p>Goal 1: Academic Capacity.</p> <p>Goal 2: Early Career Training Strategy Development.</p> <p>Goal 3: Quality Assurance.</p> <p>Goal 4: Advanced and Specialist Development.</p> <p>Goal 5: Competency Development.</p> <p>Goal 6: Leadership Development.</p> <p>Goal 7: Advancing Integrated Services.</p> <p>Goal 8: Working with others.</p>			3M
					2.5M for any five goals



Q. No.	Sub No.	Answers	Marking Scheme
		<p>Goal 9: Continuing Professional Development Strategies</p> <p>Goal 10: Equity and Equality</p> <p>Goal 11: Impact & Outcomes</p> <p>Goal 12: Pharmacy Intelligence.</p> <p>Goal 13: Policy development</p> <p>Goal 14: Medicines Experts.</p> <p>Goal 15: People-centred care</p> <p>Goal 16: Communicable diseases.</p> <p>Goal 17: Antimicrobial stewardship.</p> <p>Goal 18: Access to medicines, devices & services.</p> <p>Goal 19: Patient safety</p> <p>Goal 20: Digital health.</p> <p>Goal 21: Sustainability in Pharmacy</p>	
		The FIP Development Goals launched in September 2020 .	0.5M
2	c	<p>Define Noise. Write about ill effects of noise pollution on health.</p> <p>Marking Scheme: Definition -1M; Ill effects-2M for any 4 points, (0.5M for each)</p> <p>Answer:</p> <p>Definition:</p> <p>Noise is defined as unwanted sound or wrong sound at wrong place at wrong time.</p> <p>Ill effects of noise:</p> <div style="text-align: center;"> <pre> graph TD A[Effect of noise pollution] --> B[Auditory Effect] A --> C[Non-Auditory Effect] B --> D[Auditory Fatigue] B --> E[Deafness] C --> F[Annoyance] C --> G[Loss of working efficiency] C --> H[Physical disorders like increase in heart beats, BP etc.] H --> I[Interference in speech communications] </pre> </div> <p>1. Auditory Effects:</p> <ol style="list-style-type: none"> a. Auditory fatigue decreased hearing ability. b. Deafness which may be temporary or permanent. 	<p>3M</p> <p>1M</p> <p>2M (Any four points)</p>



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		<p>2. Non-auditory effects:</p> <ul style="list-style-type: none">a. Speech interferences due to noise produced by air traffic, industry etc.b. Anger, irritability which is a psychological response.c. Lack of mental concentration decreased efficiency.d. Physiological changes like rise in blood pressure heart rate, respiratory rate.e. Headache, Giddiness, nausea, fatigue, insomnia	
2	d	<p>Write various causes of pharmaceutical pollution.</p> <p>Marking Scheme: One Cause – 1M; Any 3 causes should be considered for 3M.</p> <p>Answer:</p> <p>1. The Drugs Use and How they are ingested and expelled.</p> <p>Our bodies metabolize only a fraction of most of the drugs we swallow. The remaining part can be sweated out, but the large part is excreted from the body through urine or faecal matter, meaning the excreta will be part of the wastewater and eventually will be in the environment.</p> <p>Some medication can also be applied as creams or lotions and the unabsorbed portions of the medication will be washed off the body and find its way into the environment.</p> <p>2. Healthcare Institutions</p> <p>Hospitals and nursing homes also contribute to pharmaceutical pollution. Hospitals might be less of a problem as they have on-site pharmacies with arrangements to return the unused drugs to the manufacturers for credit or disposal.</p> <p>Nursing homes, on the other hand, are particularly guilty of flushing medications down the toilet or drain, especially if a patient dies or is transferred to another facility, mainly because in most cases, they do not have a similar return policy with drug manufacturers as hospitals.</p> <p>3. Drug Manufacturers</p> <p>Although some factories are bigger than others, they are all guilty of contributing to pharmaceutical pollution. Some will dispose of the drugs in a landfill, and some will flush them, among many other ways of disposing of the drugs.</p> <p>4. Agriculture and Agro products:</p> <p>Like humans, not all the drugs fed to domesticated animals are metabolized by their bodies. For this reason, they excrete parts of the drugs that remain undigested. The drugs and hormones were meant to make the livestock and poultry grow faster as well as keeping them from getting sick. As such, and inevitably, some of those hormones and antibiotics will leach into groundwater or get into water ways and contribute to pharmaceutical pollution.</p>	<p>3M</p> <p>1M for each cause (Consider only 3 causes)</p>



Q. No.	Sub No.	Answers	Marking Scheme
		<p>5. Human Domestic Drug use and Disposal Behaviour</p> <p>We as consumers are responsible for a significant amount of the pharmaceutical and personal care products that end up in streams, groundwater, lakes, and rivers. It is not uncommon to find a home cabinet full of unused and expired drugs. The problem is that out of all these drugs, only a fraction is disposed of properly.</p>	
2	e	<p>Discuss types and importance of fibres in diet.</p> <p>Marking Scheme: Types-1M; Importance- 2M (one-point 1M)</p> <p>Answer:</p> <p>Types of Fibres-</p> <ol style="list-style-type: none">1. Soluble Fibre2. Insoluble Fibre <p>1. Soluble Fibre Soluble Fibre is a chemical constituent of plant cell walls, which are non-cellulosic polysaccharides, oligosaccharides, pectins, p-glucans, and gums. Soluble fibre is found in foods like fruit, oats, beans, and barley. When it dissolves in water it forms a gel-like substance.</p> <p>2. Insoluble Fibre- Insoluble Fibre is a chemical constituent of plant cell walls, which are Cellulose, hemicellulose, lignin. Insoluble fibre does not dissolve in water and is found in foods like wholemeal bread, wheat bran, vegetables, and nuts.</p> <p>Importance of fibres</p> <ol style="list-style-type: none">1. Help in digestion- Fibres play an important role in the digestion by providing the support to the food material. In the intestine food material are combine with the fibrous material and easily pass out through the anal/rectal region.2. Maintain the cholesterol level- In our body cholesterol are not easily pass out from the body but due to involvement of fibres unwanted cholesterol are ligate with the fibre and easily excrete from the body.3. Maintain the blood sugar level- By helping in the digestion process fibres allow the essential substances absorption and removal so it regulates the blood sugar level.4. Prevention in GIT infections- Some time indigestion, constipation and disturb digestion, cause the infections in the GIT. For the treatment of these conditions doctor are recommending taking of more fibres fruit or vegetable. Fibres are also preventing the severe problems like piles.	<p>3M</p> <p>1M</p> <p>2M (1M for each importance)</p>
2	f	<p>State what is Food safety? What are Nutraceuticals?</p> <p>Marking Scheme: Food Safety-1.5 M; Nutraceuticals-1.5M</p> <p>Answer:</p>	3M



Q. No.	Sub No.	Answers	Marking Scheme
		<p>Food safety –</p> <p>Food safety is a scientific method/discipline that describes how to handle, prepare, and store food to avoid food-borne illness.</p> <p style="text-align: center;">OR</p> <p>Food safety involves the procedures followed at the time of preparation, handling, and storage of the food to prevent food-borne illness.</p> <p>Nutraceuticals-</p> <ul style="list-style-type: none">• They are defined as a substance which has physiological benefits or provide protection against chronic disease.• Nutraceuticals are products, which other than nutrition are also used as medicine.• It used to improve health prevent chronic disease and increase life expectancy.• The Products are isolated from herbal products, dietary supplements (nutrients) specific diets.• Nutraceutical products can be considered non-specific biological therapies used to promote general well-being, control symptoms, and prevent malignant processes.• The term “nutraceutical” combines the two words of “nutrient,” which is a nourishing food component, and “pharmaceutical,” which is a medical drug. The name was coined in 1989 by Stephen De Felice, founder and chairman of the Foundation for Innovation in Medicine, which is an American organization located in Cranford, New Jersey.• Nutraceuticals include dietary fiber, polyunsaturated fatty acids (PUFA, fish oil), proteins, peptides, amino acids, keto-acids, minerals, antioxidant vitamins, etc.	<p>1.5M</p> <p>1.5M</p>
2	g	<p>State objective of National Health program of prevention and control of cancer cardiovascular diseases diabetes and stroke.</p> <p>Marking Scheme: Any 3 objectives- 3 Marks</p> <p>Answer:</p> <ol style="list-style-type: none">1. Health promotion through behaviour change with involvement of community, civil society, community-based organizations, media etc.2. Opportunistic screening at all levels in the health care delivery system from subcentre and above for early detection of diabetes, hypertension, and common cancers.3. Outreach camps are also envisaged: To prevent and control chronic non-communicable diseases (NCD), especially Cancer, Diabetes, CVDs and Stroke.4. To build capacity at various levels of health care for prevention, early diagnosis, treatment, Information Communication or Behaviour Change Communication (IEC/BCC) operational research and rehabilitation.	<p>3M</p> <p>1M for each objective</p>



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		<p>5. To support for diagnosis and cost-effective treatment at primary, secondary and tertiary levels of health care.</p> <p>6. To support for development of database of NCDs through Surveillance System and to monitor NCD morbidity and mortality and risk factors.</p>	
2	h	<p>Write note on Gram staining of bacteria.</p> <p>Marking Scheme: Definition:0.5 M; Procedure: 2M; Observation: 0.5M</p> <p>Answer:</p> <p>Gram staining:</p> <ul style="list-style-type: none">• Gram staining is a common technique used to differentiate two large groups of bacteria based on their different cell wall constituents.• The Gram stain procedure distinguishes between Gram positive and Gram-negative groups by colouring these cells red or violet. <p>Procedure:</p> <ol style="list-style-type: none">1. Place slide with heat fixed smear on staining tray.2. Gently flood smear with crystal violet and let stand for 1 minute.3. Tilt the slide slightly and gently rinse with tap water or distilled water using a wash bottle.4. Gently flood the smear with Gram's iodine and let stand for 1 minute.5. Tilt the slide slightly and gently rinse with tap water or distilled water using a wash bottle.6. The smear will appear as a purple circle on the slide.7. Decolorize using 95% ethyl alcohol or acetone.8. Tilt the slide slightly and apply the alcohol drop by drop for 5 to 10 seconds until the alcohol runs almost clear. Be careful not to over-decolorize.9. Immediately rinse with water.10. Gently flood with safranin to counterstain and let stand for 45 seconds.11. Tilt the slide slightly and gently rinse with tap water or distilled water using a wash bottle.12. View the smear using a light-microscope under oil-immersion. <p>Observation:</p> <ul style="list-style-type: none">• Gram –Positive: Bacteria which retain the crystal violet dye and appear deep violet colour.• Gram – negative: Bacteria which loose violet when washed with alcohol and are stained with red dye safranine and appear red.	<p>3M</p> <p>0.5M</p> <p>2M</p> <p>0.5M</p>



Q. No.	Sub No.	Answers	Marking Scheme
2	i	<p>Write note on Pharmacoeconomics.</p> <p>Marking Scheme: Each point:0.5M; Any six point: 3M</p> <p>Answer:</p> <p>Pharmacoeconomics</p> <ul style="list-style-type: none">• 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.• Pharmacoeconomics can be defined as the branch of economics that uses cost-benefit, cost-effectiveness, cost-minimization, cost-of-illness and cost-utility analyses to compare pharmaceutical products and treatment strategies”.• Pharmacoeconomics according to the International Society for Pharmacoeconomics and Outcomes Research (ISPOR)- According to the International Society for Pharmacoeconomics and Outcomes Research (ISPOR), pharmacoeconomics is “the study of individuals, firms, and markets with respect to the use of pharmaceutical products, services, and programs, and that focuses on the costs (inputs) and consequences (outcomes) of such use”. <p>Important Role of Pharmacoeconomics:</p> <p>A. Fixing the price of a new drug and re-fixing the price of an existing drug. 2. Drug development and clinical trials.</p>	<p>3M</p> <p>Each point – 0.5M</p>



Q. No.	Sub No.	Answers	Marking Scheme
		<p>B. Finalizing a drug formulary.</p> <p>C. Introduction of new schemes and programs in hospital pharmacy and clinical pharmacy.</p> <p>D. Including a drug in the medical/insurance reimbursement schemes.</p> <p>E. Creating data for promotional materials of medicines.</p>	
2	j	<p>State the causative agent and mode of transmission of</p> <p>i. Malaria</p> <p>ii. Cholera</p> <p>Marking Scheme: Causative agent-0.5M each; Mode of transmission-1M each</p> <p>Answer:</p> <p>i. Malaria-</p> <p>a. Causative agent-</p> <p>Malaria caused by the following parasite- (<i>Anyone can be Considered</i>)</p> <p><i>Plasmodium falciparum,</i></p> <p><i>Plasmodium vivax,</i></p> <p><i>Plasmodium ovale,</i></p> <p><i>Plasmodium malariae,</i></p> <p><i>Plasmodium knowlesi.</i></p> <p>b. Mode of transmission-</p> <ul style="list-style-type: none">• Usually, people get malaria by being bitten by an infective female Anopheles mosquito. Only Anopheles mosquitoes can transmit malaria and they must have been infected through a previous blood meal taken from an infected person.• Because the malaria parasite is found in red blood cells of an infected person, malaria can also be transmitted through blood transfusion, organ transplant, or the shared use of needles or syringes contaminated with blood.• Malaria may also be transmitted from a mother to her unborn infant before or during delivery (“congenital” malaria). <p>ii. Cholera-</p> <p>a. Causative agent-</p> <p>Cholera is a Communicable disease caused by <i>Vibrio Cholerae</i></p> <p>b. Mode of transmission-</p>	<p>3M</p> <p>0.5M</p> <p>1M</p> <p>0.5M</p>



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Q. No.	Sub No.	Answers	Marking Scheme
		<ul style="list-style-type: none">• Spread is mainly by contaminated food, water, milk.• Human being is the only reservoir of cholera infection.• Immediate source of infection is the stools and vomitus of cases and carriers.	1M
2	k	<p>Define: Epidemic, Pandemic and Endemic</p> <p>Marking Scheme: Each definition:1M</p> <p>Answer:</p> <p>Epidemic: (rapid mass spread): 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 the 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.</p> <p>Endemic: (particular area): Endemic means the constant presence and/or usual prevalence of a disease or infectious 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</p> <p>Pandemic: (world widespread): It is an epidemic that affects large geographical regions 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.</p>	3M 1M 1M 1M
3		Attempt ALL questions	20 M
		<i>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.</i>	
3	a	The International Pharmaceutical Federation was founded in year_____ Answer: 1912	1M
3	b	Write full form of MDG. Answer: Millennium Development Goals	1M



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Q. No.	Sub No.	Answers	Marking Scheme
3	c	<p>Health is a state of complete _____, mental and social well-being and not merely the absence of disease.</p> <p>Answer: Physical</p>	1M
3	d	<p>The National Health Mission was launched in year _____</p> <p>Marking Scheme: 1M (Consider both answers if students write)</p> <p>Answer: 2005 or 2013</p> <p><i>(The National Health Mission (NHM) encompasses its two Sub-Missions, The National Rural Health Mission (NRHM) and The National Urban Health Mission (NUHM).)</i></p> <ol style="list-style-type: none">1. National Rural Health Mission (NRHM) was launched in year 20052. National Urban Health Mission, (NUHM) was launched in year 2013	1M
3	e	<p>Define the term demography.</p> <p>Answer:</p> <p>Demography is a scientific study of human populations includes.</p> <ul style="list-style-type: none">• their size, composition, and distribution across space.• the process through which populations change.	1M
	f	<p>Breastfeeding awareness week is celebrated in month of _____</p> <p>Answer: ii) August</p>	1M
3	g	<p>Give two examples of psychotropic substances.</p> <p>Marking Scheme: Each example – 0.5M, Consider any two examples.</p> <p>Answer: Alcohol, caffeine, nicotine, heroin, cocaine, amphetamines</p>	1M
3	h	<p>Write one common cause of Air pollution.</p> <p>Marking Scheme: Cause -1M (Consider any one cause for 1M)</p> <p>Answer:</p> <ol style="list-style-type: none">1. Particles and gases emitted from car, truck, buses exhaust etc.2. Insecticides, pesticides, and fertilisers emit harmful chemicals.3. Factories and industries are the main source of carbon monoxide, organic compounds, hydrocarbons, and chemicals. These are released into the air, degrading its quality.4. Mining Activities.5. The household cleaning products and paints contain toxic chemicals that are released in the air.	1M
3	i	<p>Kwashiorkor develops due to deficiency of _____</p> <p>Answer: Proteins</p>	1M



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Q. No.	Sub No.	Answers	Marking Scheme
3	j	<p>The practice of adding vitamins and minerals to food during processing to increase its nutritional value is known as_____</p> <p>Answer: i) Fortification of food</p>	1M
3	k	<p>Filariasis is caused by_____</p> <p>Marking Scheme: 1M (Any one causative agent)</p> <p>Answer: Nematode: <i>Wuchereria bancrofti</i>, or <i>Wucherria malayi</i> or <i>Brugia malayi</i>, or <i>B. timori</i></p>	1M
3	l	<p>Following are examples of respiratory tract infections, except_____</p> <p>Answer: ii) Amoebiasis</p>	1M
3	m	<p>The causative organism for plague is_____</p> <p>Answer: iii) <i>Yersinia pestis</i></p>	1M
3	n	<p>Write full form of MERS.</p> <p>Answer: Middle East respiratory syndrome</p>	1M
3	o	<p>What do you mean by mortality?</p> <p>Marking Scheme: Definition - 1M or meaning – 1M</p> <p>Answer: Mortality is defined as the number of deaths in the population in each period of time.</p> <p>OR</p> <p>Mortality means death rate or the number of deaths in a certain group of people in a certain period of time.</p>	1M
3	p	<p>Write full form of WHO.</p> <p>Answer: World Health Organization</p>	1M
3	q	<p>Give one example of any one national health programme focused on nutrition.</p> <p>Marking Scheme:1M (Any one programme)</p> <p>Answer:</p> <ol style="list-style-type: none">1. Integrated Child Development Service Programme (ICDS)2. Special Nutrition Programme (SNP)3. Balwadi Nutrition Programme4. National Iodine Deficiency Disorders Control Programme5. Mid-day Meal Programme6. National nutritional anemia prophylaxis programme	1M
3	r	<p>First National Health Policy was launched by government of India in year_____</p> <p>Answer: iii) 1983</p>	1M
3	s	<p>In which year National Health Programme on Mental Health was Launched?</p> <p>Answer: 1982</p>	1M



Q. No.	Sub No.	Answers	Marking Scheme
3	t	<p>What is the measure of quality of life in different disease states?</p> <p>Answer: (Any one point should be considered for 1M)</p> <ol style="list-style-type: none">1. Quality of Life Index (QLI)2. Material and physical well-being, relationships with other people, social, community and civic activities, personal development and fulfilment and recreation.	1M

