Model Question Paper (Blank) is on next page

Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2021

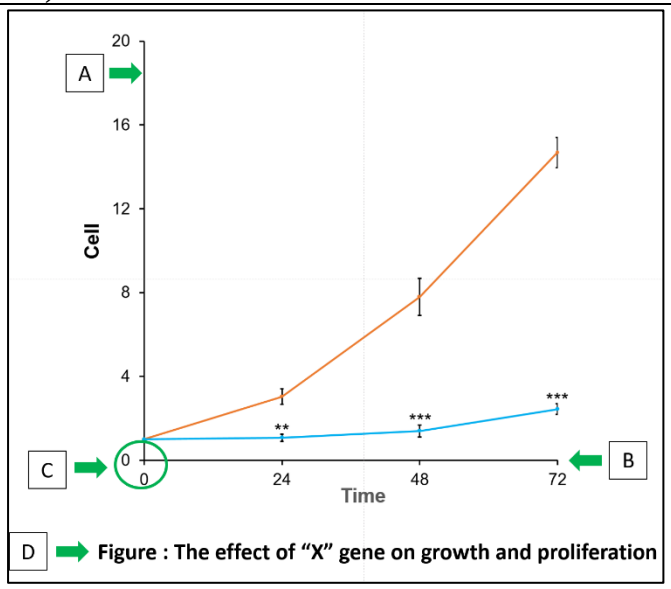
Course: Scientific Writing — **Semester:** II
Program: B.Sc. Allied Sciences — **Time: 03 hrs.**
Course Code: HSCC1019 — **Max. Marks: 100**

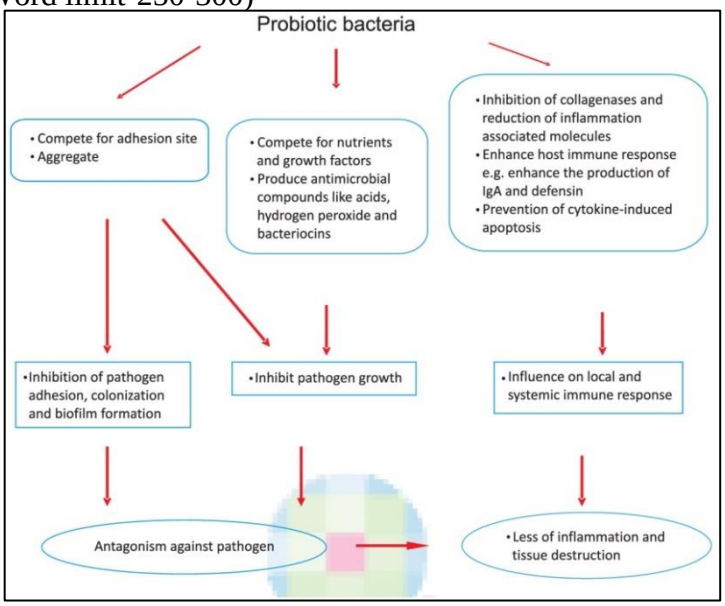
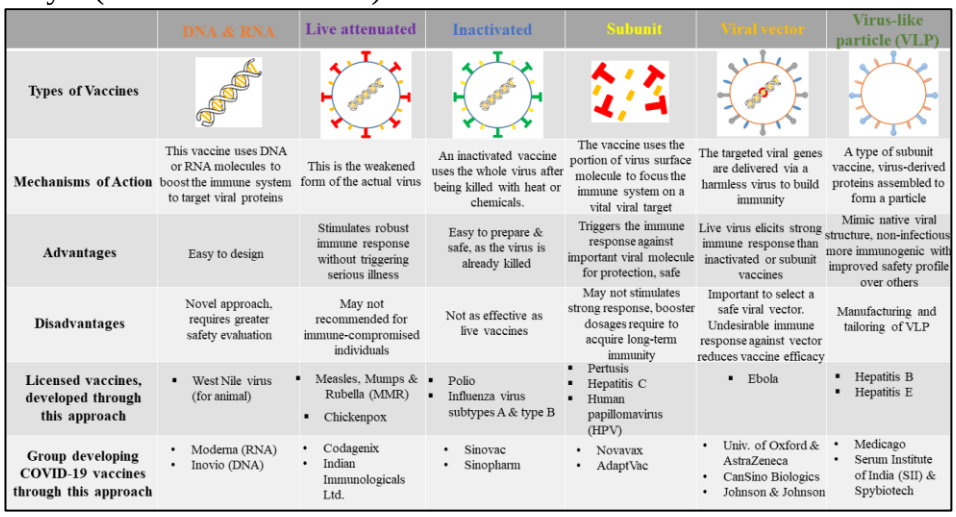
Instructions: Read question carefully.

SECTION A

S. No.	MCQ's /Fill in the blanks/ T&F (1.5 marks each)	**30 Marks**	**CO**
1	The first principle of scientific writing is to write with _____ in mind. a. peer reviewers b. the reader c. the journal d. the major result	**1.5**	**CO1**
2	The Materials and Methods should a. provide enough details and references to enable a scientist to repeat the work b. refer to published methods but not present those details c. include every detail of procedures followed	**1.5**	**CO1**
3	The Discussion should be organized in a _____ structure. a. tunnel b. pyramid c. funnel d. linear e. circular	**1.5**	**CO1**
4	The Results section should relate the results to other published work: True or False?	**1.5**	**CO1**
5	The Introduction should be the longest section: True or False?	**1.5**	**CO1**
6	Which of the following is the strongest recommendation for taking vitamin B6? a. Although vitamin B6 seems to reduce the risk of macular degeneration, it may have some side effects. b. Vitamin B6 reduces the risk of macular degeneration, but it may have some side effects. c. Taking vitamin B6 may have some side effects, but vitamin B6 also reduces macular degeneration. d. Although taking vitamin B6 has some side effects, vitamin B6 reduces macular degeneration.	**1.5**	**CO1**
7	The difference between the expected value of a statistic and the value of the parameter being estimated is called a: a. Standard error b. Bias	**1.5**	**CO2**

	c. Sampling error d. Non-sampling error		
8	Of the following sampling methods, which is a probability method? a. Judgement b. Quota c. Simple random d. Convenience	**1.5**	**CO2**
9	Increasing the sample size _____ (increases/reduces/ has no effect) upon the sampling error.	**1.5**	**CO3**
10	Among these, which sampling is based on equal probability? a. Simple random sampling b. Stratified random sampling c. Systematic sampling d. Probability sampling	**1.5**	**CO3**
11	Which among the following is the benefit of using simple random sampling? a. The results are always representative. b. Interviewers can choose respondents freely. c. Informants can refuse to participate. d. We can calculate the accuracy of the results.	**1.5**	**CO3**
12	What is the name of the conceptual framework in which the research is carried out? a. Research hypothesis b. Synopsis of Research c. Research paradigm d. Research design	**1.5**	**CO4**
13	The format of thesis writing is the same as in a. Writing of Seminar representation b. Preparation of research paper/article c. A research dissertation d. Presenting a workshop/conference paper	**1.5**	**CO1**
14	Which one among the following statement is true in the context of the testing of hypotheses? a. It is only the alternative hypotheses that can be tested. b. It is only the null hypotheses that can be tested. c. Both the alternative and the null hypotheses can be tested. d. Both the alternative and the null hypotheses cannot be tested.	**1.5**	**CO4**
15	Research and Development become the index of development of the country. Which of the following reasons are true with regards to this statement? a. R&D targets human development b. R&D can enhance people's standard of living in the country c. R&D reflects the actual economic and social conditions being prevailed in the country d. All the above	**1.5**	**CO3**

16	A researcher is exploring how non-English speaking students interact in a classroom setting. The most important form of data collection will be: a. interviews b. documents (grade and discipline reports) c. students' internet usage d. observations	**1.5**	**CO3**
17	Which is ***not*** a feature of a research proposal? a. A short literature review b. A discussion of the findings c. A section on how the data is to be analyzed d. A section discussing proposed data collection method	**1.5**	**CO2**
18	Questionnaires are primarily quantitative in nature: True or False?	**1.5**	**CO2**
19	Choose the most appropriate statement. In the first stage in designing a survey you should a. Identify the population of the survey b. Design the questionnaire c. Identify the objectives of the survey d. Pilot the questionnaire	**1.5**	**CO4**
20	Look at the following potential studies and consider which indicates that a case study might be appropriate a. When you want to find out the effect of maternal alcohol use on infants. b. When you want to find out the effect of parental education on children's achievement. c. When you want to find out how a nursery organizes its outdoor provision. d. When you want to find out whether there is a correlation between summer-born children and later achievement.	**1.5**	**CO3**
	SECTION B (5 marks each question)		
Q	Short Answer Type Question (5 marks each) Scan and Upload 4 questions 5 marks. Word limit (100-120)	**20 Marks**	**CO**
1	 **Figure : The effect of "X" gene on growth and proliferation**	**5 (4+1)**	**CO4**

	Q1: Mark "A", "B", "C" and "D" in the graph. **Q2:** Identify the mistakes, overlooked in the graph.		
2	Write different components of a scientific poster.	**5**	**CO1**
3	Briefly describe the difference between observational and experimental data	**5**	**CO2**
4	When exploratory research can be used?	**5**	**CO3**
	SECTION C 30 marks		
Q	**Two case studies 15 marks each subsections**	**30 Marks**	**CO**
1	Case Study 1 (Word limit-250-300)  **Q1:** Write an appropriate "Title" for the study based on the presented graphical abstract. (words limit 15-17) **Q2:** Write a brief "Summary" of the observation based on the presented graphical abstract. (words limit 225)	**15 (4+11)**	**CO1**
2	Case Study 2 (Word limit- 250-300) 	**15 (2+3+3 +7)**	**CO2**

	DNA & RNA	Live attenuated	Inactivated	Subunit	Viral vector	Virus-like particle (VLP)
Types of Vaccines						
Mechanisms of Action	This vaccine uses DNA or RNA molecules to boost the immune system to target viral proteins	This is the weakened form of the actual virus	An inactivated vaccine uses the whole virus after being killed with heat or chemicals.	The vaccine uses the portion of virus surface molecule to focus the immune system on a vital viral target	The targeted viral genes are delivered via a harmless virus to build immunity	A type of subunit vaccine, virus-derived proteins assembled to form a particle
Advantages	Easy to design	Stimulates robust immune response without triggering serious illness	Easy to prepare & safe, as the virus is already killed	Triggers the immune response against important viral molecule for protection, safe	Live virus elicits strong immune response than inactivated or subunit vaccines	Mimic native viral structure, non-infectious more immunogenic with improved safety profile over others
Disadvantages	Novel approach, requires greater safety evaluation	May not recommended for immune-compromised individuals	Not as effective as live vaccines	May not stimulates strong response, booster dosages require to acquire long-term immunity	Important to select a safe viral vector. Undesirable immune response against vector reduces vaccine efficacy	Manufacturing and tailoring of VLP
Licensed vaccines, developed through this approach	▪ West Nile virus (for animal)	▪ Measles, Mumps & Rubella (MMR) ▪ Chickenpox	▪ Polio ▪ Influenza virus subtypes A & type B	▪ Pertusis ▪ Hepatitis C ▪ Human papillomavirus (HPV)	▪ Ebola	▪ Hepatitis B ▪ Hepatitis E
Group developing COVID-19 vaccines through this approach	• Moderna (RNA) • Inovio (DNA)	• Codagenix • Indian Immunologicals Ltd.	• Sinovac • Sinopharm	• Novavax • AdaptVac	• Univ. of Oxford & AstraZeneca • CanSino Biologics • Johnson & Johnson	• Medicago • Serum Institute of India (SII) & Spybiotech

	Q1: Write an appropriate "Legend" for the above figure. (words limit 30) **Q2**: Which of the above vaccine strategies uses the virus itself? **Q3:** Which of the above vaccine strategies successfully used against sexually transmitted infection (STI). **Q4:** If someone ask you to recommend a suitable vaccine, which can elicits a strong immune response against a particular infectious disease and comparatively safe for general population, which one would you recommend among above and why?		
	SECTION- D 20 marks		
Q	Long Answer type Questions Scan and Upload (10 marks each) Word limit 200-250	**20 Marks**	**CO**
1	**Read the below paragraph carefully and answer the questions:** Previous studies suggest that both vesicular and non-vesicular transport machinery are responsible for the delivery of lipids to their final destinations. Vesicular transport has an important role in protein trafficking, endocytic and exocytic (secretory) pathways. It is an energy dependent process and involves cytoskeletal reorganization. Nonetheless, lipid transport was still identified when vesicular transport was impaired by either depletion of ATP, reduced temperature, or treatment with pharmacological inhibitors (such as brefeldin A and colchicine). Lipid transportation was also detected among cell organelles, those are not linked by vesicular transport machinery (e.g., ER/mitochondria and ER/peroxisomes). These observations suggest that non-vesicular transport mechanisms have a significant role in intracellular lipid trafficking. Non-vesicular lipid transport in and between organellar membranes is mostly facilitated by three possible methods: lateral diffusion, trans-bilayer flip-flop, and monomeric lipid exchange. Lateral diffusion is responsible for the lateral movement of lipid in a membrane bilayer. Although lateral diffusion mostly transport lipid within membranes, this process was also identified between membranes which are linked via membrane bridges. Lipids are moved between two layers of the membrane bilayer by the process called trans-bilayer flip-flop. This type of movement takes place either spontaneously or mediates by flippases and translocases. Trans-bilayer flip-flop do not participate directly in inter-organelle lipid transport. It can either encourage non-vesicular lipid transport by monomeric lipid exchange or influence vesicular transport through the alteration of membrane curvature, vesicle budding and fusion. Monomeric lipid exchange, the primary mechanism of intra-cellular lipid transport is an energy-independent process. In this process, lipid monomer is transported from a donor membrane to an acceptor membrane through the cytosol either spontaneously or facilitated by lipid transfer proteins (LTPs). Spontaneous transport of lipid molecule from donor to the acceptor membrane through cytosol is a time- consuming process and insufficient for substantial transport of major lipids.	**10 (1+4+5)**	**CO4**

	Q1: Write an appropriate "Title" for the above paragraph. (words limit 15-17) **Q2:** Which transport mechanism has comparatively more physiological significance over others and why? (words limit 100) **Q3:** Write a brief account on different modes of transport, employed by a cell for survival. (words limit 120)		
2	**Q1:** Define the term "Study design" **Q2:** What are the advantages and disadvantages of cross sectional studies? **Q3:** If you want to verify whether any potential co-relation exists among exposure of certain pathogen and the outcomes observed in your study population, what type of study you will plan and why?	**10 (1+5+4)**	**CO3**