INDIAN SCHOOL AL WADI AL KABIR
REHEARSAL- II (2023-2024)
SET 1
BIOLOGY (044)

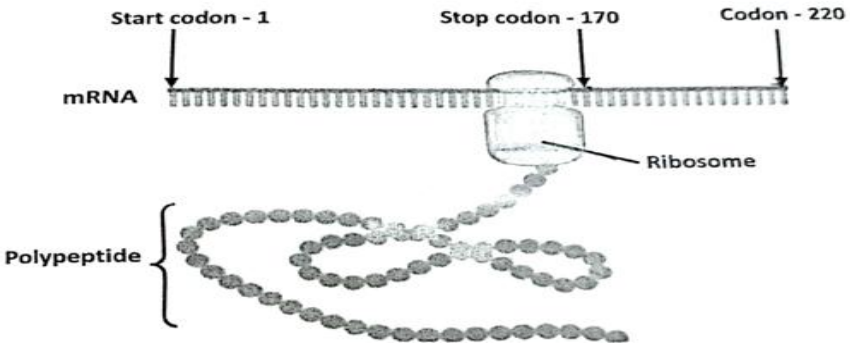
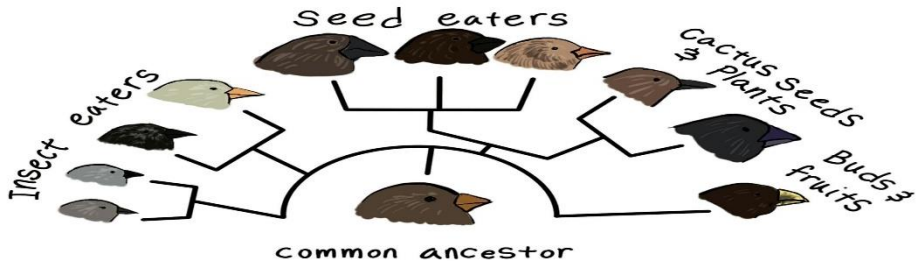
CLASS: XII Max. Marks: 70
DATE: 1/02/24 Time: 3 Hours

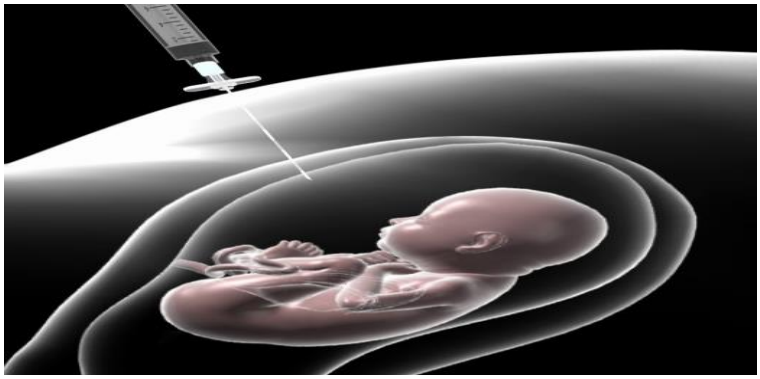
General Instructions:

i) All questions are compulsory.
ii) The question paper has five sections and 33 questions. All questions are compulsory.
iii) Section–A has 16 questions of 1 mark each; Section–B has 5 questions of 2 marks each; Section– C has 7 questions of 3 marks each; Section–D has 2 case-based questions of 4 marks each; and Section–E has 3 questions of 5 marks each.
iv) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.
v) Wherever necessary, neat and properly labeled diagrams should be drawn.

	SECTION A	
Sl. No.	QUESTION	MKS
1	The microsporangia develop and becomes the a) Pollen grain b) Pollen sacs c) Sporogenous Tissue d) Both (a) & (b)	1
2	Phenylketonuria is an a) Autosomal recessive trait b) Autosomal dominant trait c) Sex linked recessive trait d) Chromosomal disorder	1
3	The possibility of a recessive trait being expressed in theoffspring after a test cross? a) 25% b) 50% c) 75% d) 100%	1

4	Which of the following is not true for apomixis? a) It is a mechanism to produce seeds without fertilisation. b) It is a form of asexual reproduction that mimics sexual reproduction. c) It is a form of sexual reproduction that mimics asexual reproduction. d) Hybrid seeds can be made into apomicts.	1
5	Arun thinks that identifying the exact mRNA sequence from the protein sequence is difficult. Is he correct and why? a) No, as the genetic code is universal. b) Yes, as the genetic code is degenerate. c) No, as the mRNA is translated into a protein sequence d) Yes, as the mRNA contains introns which are non-coding sequences.	1
6	Identify the interaction as shown in the figure below between cattle egrets and cattle.  a) Parasitism b) Mutualism c) Commensalism d) Prey Predator	1
7	Rauwolfia vomitoria a medicinal plant growing in different Himalayan ranges, shows diversity at which level. a) Ecological diversity b) Species diversity c) Genetic diversity d) Both (b) & (c)	1
8	Cyclosporin A, which act as an immunosuppressive agent, is produced from a) Streptococcus b) Trichoderma polysporum c) Aspergillus niger d) Monascus purpureus	1
9	The number of possible amino acids that will be in the formed polypeptide is	1

	The diagram below shows the process of translation.  a) 169 b) 170 c) 219 d) 220	
10	In EcoRI, the letter 'R' represents a) The genus of the prokaryotic cell from which the restriction enzyme is isolated. b) The strain of the prokaryotic cell from which the restriction enzyme is isolated. c) The species of the prokaryotic cell from which the restriction enzyme is isolated. d) The palindrome sequence of the restriction enzyme	1
11	The given picture illustrates which phenomenon.  a) Natural selection b) Adaptive radiation c) Branching descent d) Convergent evolution	1
12	A single stranded DNA or RNA, tagged with a radioactive molecule (probe) is allowed to hybridize to its complementary DNA in a clone of cells followed by detection using a) ELISA diagnosis. b) PCR c) Autoradiography. d) MRI	1

	Question No. 13 to 16 consist of two statements – Assertion (A) and Reason (R). Answer thesequestions selecting the appropriate option given below: a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true and R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
13	Assertion: The Nile perch introduced in Lake Victoria led to the extinction of more than 200 species of cichlid fish in the lake. Reason: Due to co-extinction between the Nile perch and the cichlid fish in the lake.	1
14	Assertion: Morphine is a very effective sedative and painkiller. Reason: Many drugs are used as medicines to help patients cope with illness.	1
15	Assertion: The coelacanth is the ancestor of the first amphibians. Reason: The amphibians evolved into reptiles.	1
16	Assertion: Fragmentation, leaching and catabolism in decomposition operate simultaneously in the detritus. Reason: Humification and mineralization occur during decomposition in the soil.	1
	SECTION B	
17	 a) Identify the procedure that the figure above shows. b) Briefly explain the procedure and one merit of it.	2
18	With the help of a neat and labelled diagram represent the mature embryo sac.	2
19	a)What was Marshall Nirenberg's contribution in the study of Genetic Code. b) How is Severo Ochoa enzyme helpful in RNA synthesis.	2
20	How can transgenic animals be created to get biological products useful to man, give any two examples to support your answer.	2
21	Draw a neat and labelled diagram of a E. coli cloning vector pBR322 OR Diagrammatic representation with labelling showing the recombinant DNA technology.	2
	SECTION C	

22	a) Explain the following terms in relation to a seed: i) Ex-albuminous ii) Dormancy b) Any two advantages of seeds to the angiosperms.	3
23	What is a cistron, State any two difference between the mono-cistron and poly-cistron. OR What is translation, briefly explain the steps involved in this process.	3
24	In tomato plants, the gene for purple stem is dominant over green stem and the gene for red fruit is dominant for yellow fruit. If the two plants heterozygous for both traits are crossed, state what proportion of the offspring are expected to have: (Illustrate your answer using a Punnett square) a) Purple stems and yellow fruits. b) Green stems and red fruits. c) Purple stems and red fruits.	3
25	a)What is Darwinism theory of evolution based on? b) What is Hardy-Weinberg eqilibrium, list any three factors that effect this principle.	3
26	Modern society has used chemical fertilizers to meet the ever-increasing demand of agricultural produce. These chemicals are toxic and extremely harmful to both humans and the environment as well. How could microbes act as Biofertilizer's and help both the humans and the environment and help to reduce pollution? Justify your answer with examples.	3
27	Cancer is one of the most dreaded diseases of human beings and is a major cause of death all over the globe a) How do normal cells turn into cancer cells. b) What is the most feared property of cancer give reason for your answer? c) Give any three methods used in the detection of cancer.	3
28	a) State Gause's Competitive Exclusion Principle and one example that rules out this principle and shows co-existence. b) Represent the pyramid of biomass in sea	3
	SECTION D	
	Q.no 29 and 30 are case based questions. Each question has subparts with internal choice in one subpart	4
29	Western Ghats is a biodiversity site in India, home to 5000 flowering plants, 139 mammals, 508 birds, 179 amphibian species, and 325 globally threatened species. It is under distress due to agriculture and human population growth. Venkat Ramakrishnan shares a case study of private enterprise protecting biodiversity in the Western Ghats. The range covers 60,000km^2 and forms the catchment area for complex river systems. The Western Ghats is a UNESCO World Heritage Site.	

Environmental Degradation in the Western Ghats

The Western Ghats were once covered in dense forests. Today, a large part of the range has converted into agricultural land for tea, coffee, rubber, and oil palm, or cleared for livestock grazing, reservoirs, and roads. The growth of human populations around protected areas and other forests has also led to habitat destruction, increased fragmentation, wildlife poaching and human-wildlife conflict.

a) Why are the Western Ghats considered as a Biodiversity hotspot. 1

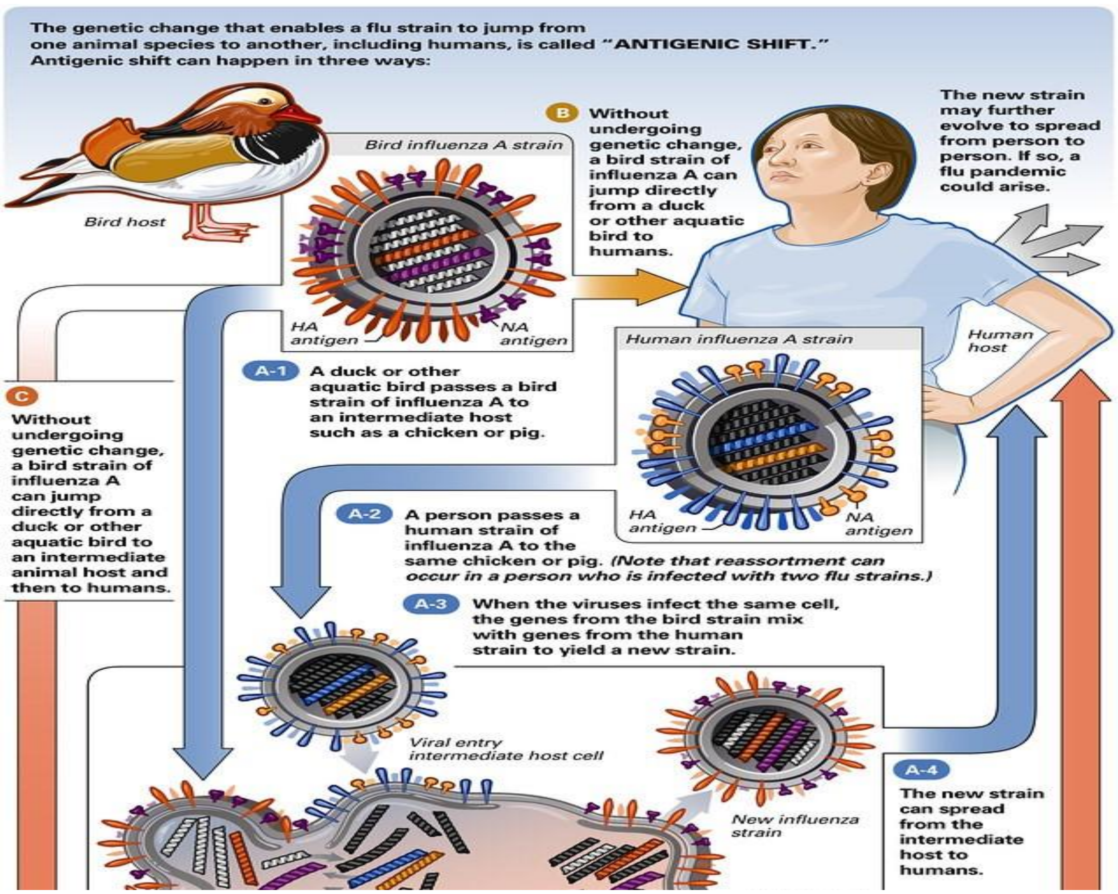
b) What are sacred groves. 1

c) What type of conservation program should the private enterprise start to protect the Western Ghats, briefly explain the method with any two examples. 2

OR

What is the major cause of biodiversity loss, briefly explain it.

30



a) Name the group of viruses that causes the most common human ailments, the common cold, Identify their site of infection.

b) Give one example in recent times where humans experienced antigenic shift of a particular strain of virus. Do you think this situation is a major public concern? Why 1

c) Explain the term intermediate host and identify the two-intermediate host of the human liver fluke. 1

	OR Name the two host of the malarial parasite, briefly explain the life cycle of the parasite in the primary host.	2
	SECTION E	
31	a) Why is it difficult for a cell to take up the plasmid. b) How is the bacterial cell made competent to take up the DNA. c) Describe the different methods used to introduce alien DNA into the host cell. OR a) How is elution step carried out for constructing a rDNA. b) Explain insertional inactivation and how can this method be useful in genetic engineering.	5
32	How is the DNA helix packed in prokaryotes and Eukaryotes organisms respectively? OR a) What criteria should a genetic material possess. b) Why is DNA a better genetic material as compared to RNA. c) List the three types of RNA and their specific functions.	5
33	a) Name the hormone crucial in parturition and state its role in it. b) How is polyspermy checked by the ovum? c) Why does corpus luteum stay active throughout pregnancy and in the absence of fertilization, is active only for 10-12 days? d) Why is breastfeeding recommended during the initial stages of infant growth? OR a) What are venereal diseases, name any two bacterial VD b) Name any two VD's that are not curable although treatable and suggest ways to prevent them. c) Lactational amenorrhea is a contraceptive method. List two advantages.	5