PREBOARD QUESTION PAPER (2023-24)
BIOLOGY (SUBJECT CODE -044)

Maximum Marks: 70 **Time: 3 hours**

Class XII

General Instructions:

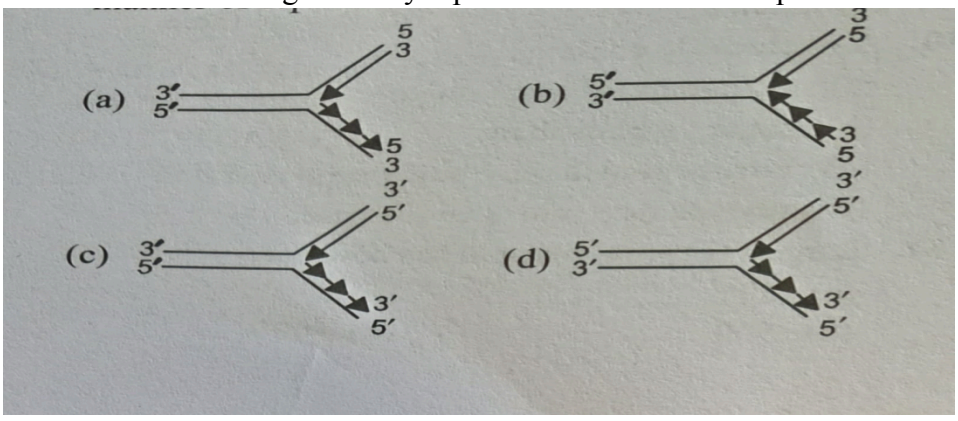
(i) All questions are compulsory.

(ii) The question paper has five sections and 33 questions. All questions are compulsory.

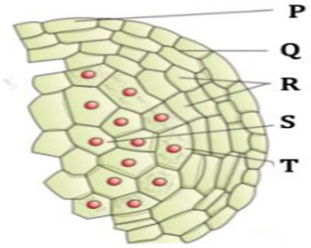
(iii) Section–A **has 16 questions of 1 mark each;**
Section–B **has 5 questions of 2 marks each**;
Section–C **has 7 questions of 3 marks each;** Section– D **has 2 case-based questions of 4 marks each; and** Section–E **has 3 questions of 5 marks each.**

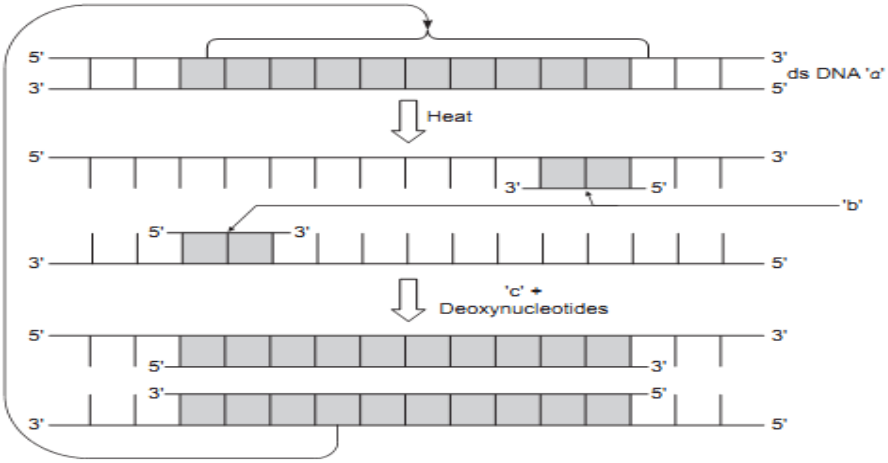
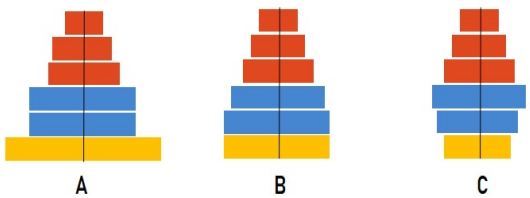
(iv) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.

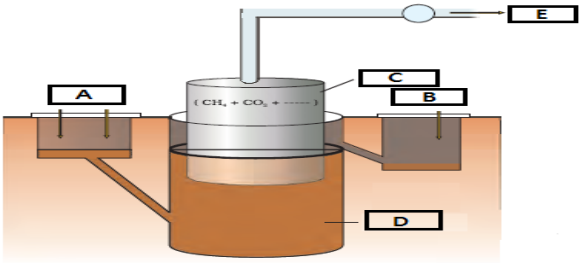
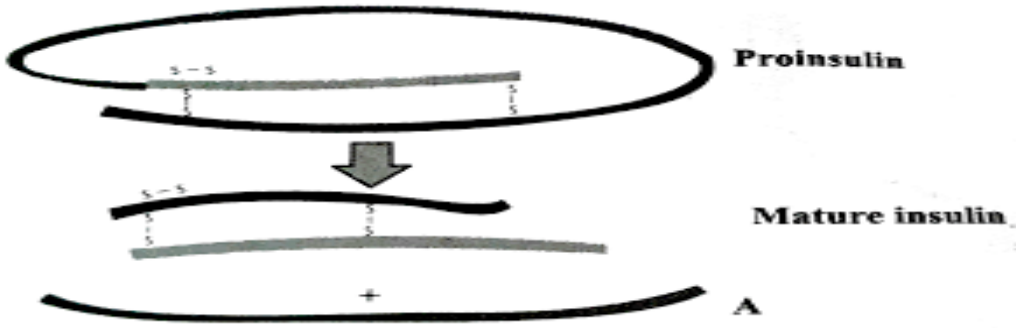
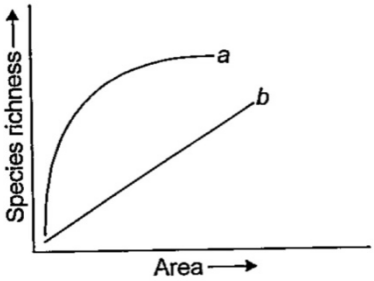
(v) Wherever necessary, neat and properly labeled diagrams should be drawn.

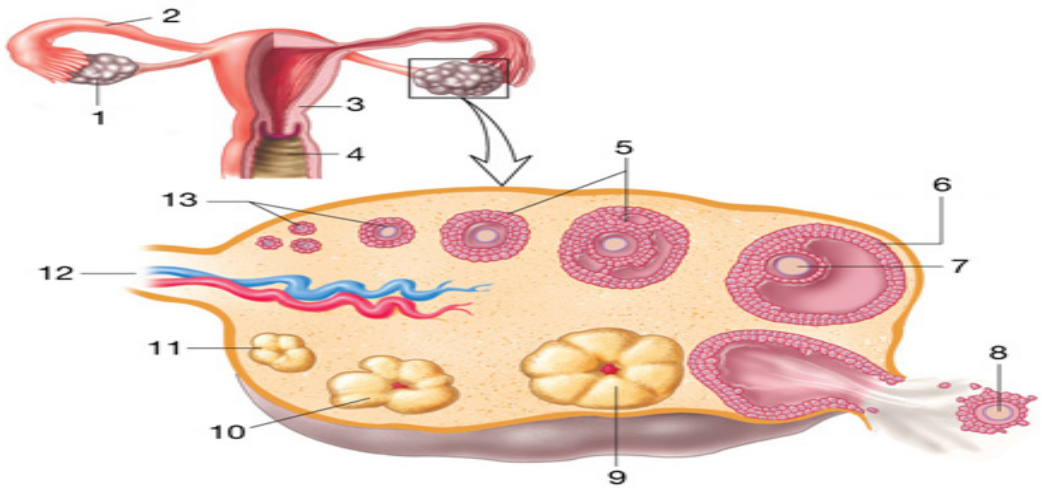
Q.No	**SECTION A**	MARKS
1.	10 Oogonia yield 10 primary oocytes, then how many ova are produced on completion of Oogenesis? (a) 5 (b) 10 (c) 20 (d) 40	1
2.	How many nucleosomes are present in a DNA having 125800 bp (a)12580 (b)1258 (c) 629 (d)6290	1
3.	Control of gene expression in prokaryotes take place at the level of (a) DNA replication (b)Transcription © Translation (d)None of the above	1
4.	Which of the following correctly represents the manner of replication of DNA  (a) (b) (c) (d)	1
5.	An interesting modification of flower shape for insect pollination occurs in some orchids in which a male insect mistakes the pattern on the orchid flower for the female species and tries to copulate with it, thereby pollinating the flower. This phenomenon is called (a) pseudo pollination (b) pseudo parthenocarpy	1

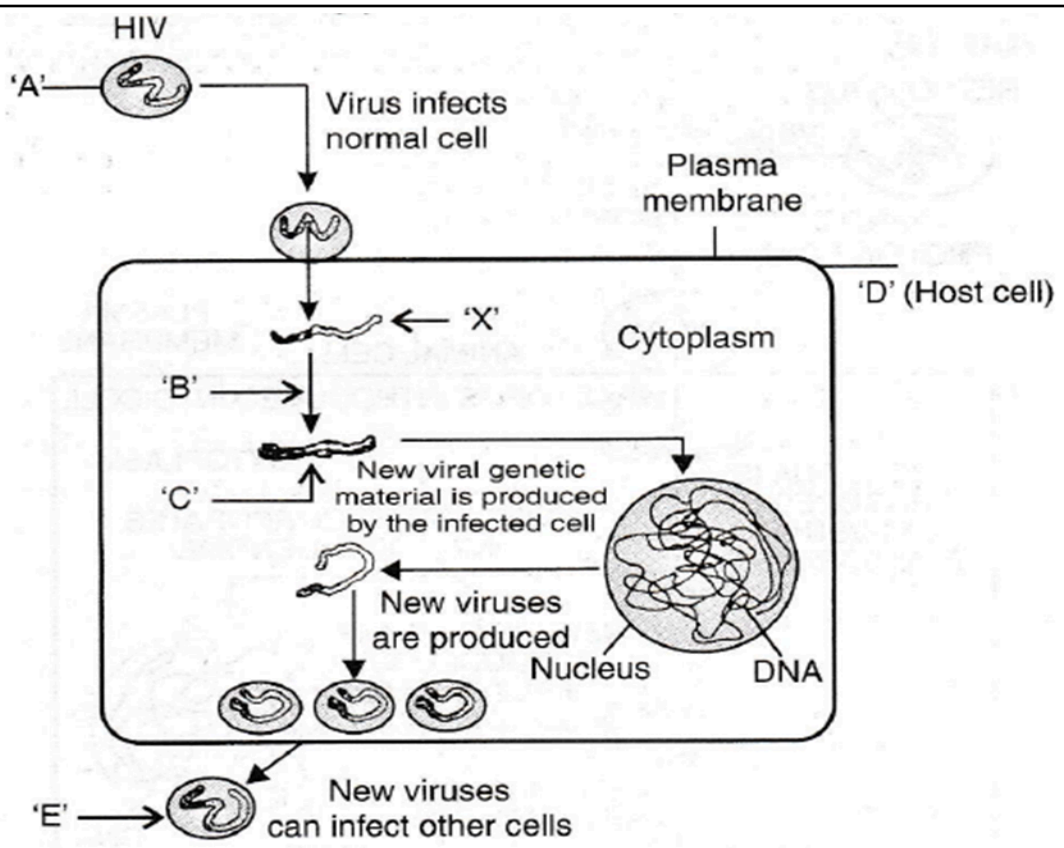
	(c) mimicry (d) pseudo copulation.	
6.	A Polypeptide chain consist of sequence of 1500 amino acids .Can you guess how many nucleotide bases must there be present in the processed mRNA of an eukaryotic cell to message for it . (a)500 (b)1500 © 4500 (d)None of the above	1
7.	Which one of the following ancestors of Man used hides to protect their body and buried their dead? (a) Neanderthal Man (b) *Homo habilis* (c) .*Homo erectus* (d) .Ramapithecus	1
8.	If the maternal grandfather of a boy is haemophilic, maternal grandmother is normal and father is normal then what are the chances that this boy could have haemophilia disease? (a) 25 % (b) 50% (c) 75% (d) 0%	1
9.	Match the items in column 'A' and Column 'B' and choose the correct answer. COLUMN A COLUMN B A Lady bird i) Methanobacterium B Mycorrhiza ii) Trichoderma C Biological control iii) Aphids D Bio gas iv) Glomus (a) A-(ii), B-(iv), C-(iii), D-(i) (b) A-(iii), B-(iv), C-(ii), D-(i) (c) A-(iv), B-(i), C-(ii), D-(iii) (d) A-(iii), B-(ii), C-(i), D-(iv)	1
10.	While isolating DNA from bacteria , which of the following enzymes are not required? (a) Lysozyme (b)Ribonuclease (c) Protease (d)Deoxyribonuclease	1
11.	Which of the following statements does not hold true for restriction enzymes? (a) It recognizes a palindromic sequence (b) Its an endonuclease (c) Its isolated from bacteria (d) It can produce the different kind of sticky ends in different DNA molecules.	1
12.	Which of the following structures are haploid in nature? (a) Nucellus and Antipodals (b) MMC and Antipodals (c) Egg cell and Antipodals (d) Micropore and Central cell	1
Question No. 13 to 16 consist of two statements – Assertion (A) and Reason (R). Answer these questions 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.**		

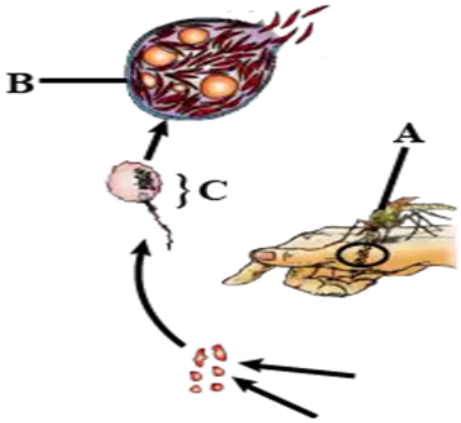
c) A is true but R is false. **d) A is false but R is true**		
13.	Assertion (A) : Genetic Drift refers to changesin allele frequency. Reason (R) : Heritable variations enable survival of the fittest.	1
14.	Assertion (A) : Second infection of the same pathogen is quickly eliminated. Reason (R) : Pre -formed memory B and T cells elicit a quick and vigorous attack on pathogen.	1
15.	Assertion (A) : "Saheli" is an oral contraceptive pill for females containing nonsteroidal preparation. Reason (R) : It is "once in a week" pill with high contraceptive value and side effects.	1
16.	Assertion (A) : Human Insulin is produced in E. coli. Reason (R) : In mammals , insulin is synthesized as a pro- hormone which contains an extra non- protein part.	1
	SECTION B	
17.	Explain with the help of an example the relationship between restriction Endonuclease and a Pallindromic nucleotide sequence.	2
18.	(A) Mention the type of evolution that has brought the similarity as seen in potato tuber and sweet potato. (B) According to Hardy Weinberg's principle the allele frequency of a population remains constant. How do you interpret the change of frequency of alleles in a population?	2
19	Given below is an enlarged view of one microsporangium of a mature anther. (i) Identify and name R, S &T wall layers. (ii) Mention the characterstics and function of the cell forming wall layer "T" 	2
20	Write the source and the effect on the human body of the following Drugs. a) Morphine b) Cocaine	2
21.	What is meant by "alien species" invasion? Name one plant and one animal alien species that are a threat to our Indian native species.	2

	SECTION C	
22.	A schematic representation of Polymerase chain reaction (PCR) is given below. Answer the questions that follows:  a) Name the process 'a' and identify 'b'. b) Identify 'c' and mention its importance in PCR. c) For what purpose PCR technique is used?	3
23.	(a) Mention any 2 problems that are taken care of by Reproduction and Child Health Care programme. (b) What is amniocentesis and why there is a statutory ban on it?	3
24.	Trace the development of a megaspore to the formation of mature embryo sac in a flowering plant with the help of labeled diagram.	3
25.	Name a disorder and give its karyotype and write the symptoms which a human male suffer as a result of an additional X chromosome.	3
26.	A)Draw the structure of t-RNA having anticodon UAC. B) How is degeneracy different from unambiguous characterstic of codon.	3
27.	Study the age pyramids A, B & C of the Human population given below and answer the question that follows.  i) Identify the population pyramid which is more appropriate and name it . ii) What would be the growth rate pattern when the resources are unlimited? iii) What is unique about population pyramid "C" ?	3

28.	Given below is a figure of a biogas plant  i) Name the group of organisms and the substrate they act on to produce biogas. ii) Identify the products A ,B,D, E and discuss their significance. OR Explain how do Flocs& activated sludge help in sewage treatment .	3
	SECTION D CASE BASED QUESTION)	
29.	Study the figure given below of a biomolecule  i) What does the above diagram depicts ? ii) Identify the strand "A" mentioned in the above figure. iii) Write the main steps involved for the formation of mature insulin with the help of Genetic Engineering.	4
30.	Study the graph given below and answer the questions that follows .  i) Name the naturalist who studied the kind of relationship shown in the graph .write the observation made by him. ii) When would the slope of the line "b' become stepper? iii) Write the situations as discovered by ecologists when the value of "Z" lies between 0.1 and 0.2	4

	SECTION E	
31.	The following is the illustration of the sequence of ovarian events 1 TO 13 in human female:  a) Identify the figure that illustrates corpus luteum and name the pituitary hormone that influences its formation. b) Specify the endocrine function of corpus luteum. Why is it essential? c) Draw a neat sketch of ovum with following labels: zonapellucida, corona radiata and perivitelline space OR a) Write the type of and location of the genes causing thalassemia in human. b) State the cause and symptoms of the disease. c) Why are colour blindness and thalassemia categorized as Mendelian disorders? d) About 8% of human male population suffers from colour blindness whereas only about 0.4% of human female population suffers from this disease. Write an explanation to show how it is possible	5
32.	Answer the following questions based on Meselson and Stahl's experiment: (i) Write the name of the chemical substance used as source of nitrogen in the experiment by them. (ii) Why did the scientists synthesize the light and the heavy DNA molecules in the organism used in the experiment? (iii) How did the scientists make it possible to distinguish the heavy DNA molecule from the light DNA molecule? Explain. (iv) Write the conclusion the scientists arrived at, after completing the experiment. OR Study the diagram showing replication of HIV in Humans and answer the questions that follows	5

	 i) What type of viruses causes AIDS? Name its Genetic Material. Or the group name of such viruses which possesses this type of genetic material. ii) Does this virus follows central dogma or it deviates from it ? iii) Name the enzyme "B" acting on "X" to produce molecule "C". iv) What does NACO means and write its role in preventing AIDS? v) What do you mean by the statement that " Incubation period for AIDS may vary from one month to ten years".	
33.	a) IVF is becoming more popular in current scenario that is helping childless couples to bear a child. Describe the different steps that are carried out in this technique. b) Would you consider Gamete Intrafallopian Transfer (GIFT) as an IVF ? Give reason to support your answer. OR A) How is Dengue disease different from Typhoid ? Write any two points of differences betw two. B) Study a part of the life cycle of malarial parasite given below. Answer the questions that f	5



(i) Mention the roles of 'A' in the life cycle of the malarial parasite.
(ii) Name the event 'C' and the organ where this event occurs.
(iii) Identify the organ 'B' and name the cells being released from it

x------x