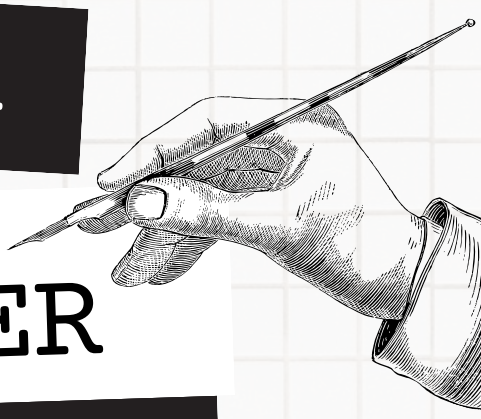
2024

Pre-Board



SAMPLE PAPER

CBSE BOARD / STATE BOARDS

NCERT Based Syllabus



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Practice paper for Preboard
Set- I

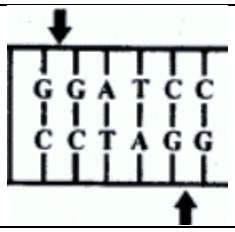
Class: XII **Subject: Biology**
Max. Marks: 70 **Time: 3 hours**

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. Astudent has to attempt only one of the alternatives in such questions.*
(v) *Wherever necessary, neat and properly labeled diagrams should be drawn.*

Q.No	QUESTIONS	Marks
	SECTION A	
1	In one egg apparatus, how many synergids are present? a- 1 **b- 2** c- Egg apparatus does not contain synergids d- All are incorrect	1
2	Which types of pollination brigs genetic diversity in the flowering plants- **a- Xenogamy** b- Geitonogamy c- Chasmogamy d- Cleistogamy	1
3	Which statement is correct about ATP- i- It is a type of nucleotide ii- It contains adenosine nucleoside and phosphoric acid iii- It is present in both DNA and RNA. a. Only i and iii are correct b. Only ii and iii are correct c. Only i and iii are correct **d. All are correct**	1
4	Based on sex determination, the animal may be homogametic or heterogametic. In humans' males are heterogametic (XY) while females are homogametic (XX). What criteria do the insects follow- a. XX/XO b. XX/ XX c. ZZ/ ZY d. XY/ XO	1
5	In a population at a particular locus, the frequency of allele 'A' is 0.5 and that of allele 'a' is 0.4. What would be the frequency of heterozygotes in a random mating population at equilibrium?	1

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	a. 0.12 b. **0.82** c. 100 % d. 1	
6	Mendel's law was true for the situation in which **a- Alleles are affected by their environment** b- Alleles show incomplete dominance c- Alleles show mutation d- Alleses show crossing over and linkage	1
7	Which statement is incorrect about the RNA- i- RNA is more reactive than DNA ii- RNA can be only synthesized from DNA iii- Some viruses can synthesize RNA from their own RNA a- Only i and ii are incorrect **b- Only ii is incorrect** c- Only iii is incorrect d- Only i and iii are incorrect	1
8	Identify the three European geneticists who work and rediscovered Mendel's law of heredity in 1900- **a- Hugo DeVries, Carl Correns Erich Von Tschermak** b- McLeod, Mc Carty and Devries c- Correns. McCarty and Tshermark d- DeVries, McCleod, and McCarty	1
9	Which one is related to biopesticides- a- Trichoderma b- NPV c- Baculovirus d- All of these	1
10	To which restriction enzyme the following is based- a- Bam HI b- Eco R I c- Hind II d- Tet R 	1
11	Bt cotton is a pest-resistant plant with Bt toxin. Which of the following situation is responsible for the activation of Bt toxin the plant- a- Low temperature b- High acidic environment **c- Alkaline pH in the gut of the insect** d- Acidic pH in the stomach of the insect	1
12	Statement A- Living organisms are considered a closed system. Statement B- In this energy cannot be lost or gained by the external environment. a- Only A is correct b- Only B is correct c- B is correct but A is incorrect Both A and B are correct	1

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Questions No. 13 to 16 consist of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below:

a) Both A and R are true and R is the correct explanation of A.

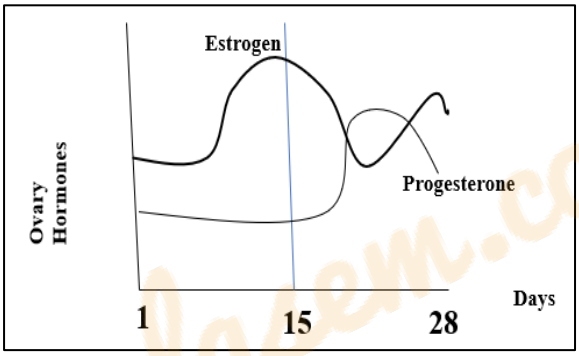
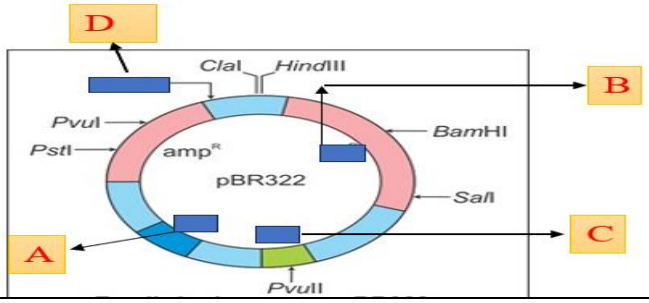
b) Both A and R are true and R is not the correct explanation of A.

c) A is true but R is false.

A is false but R is true.

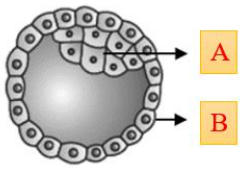
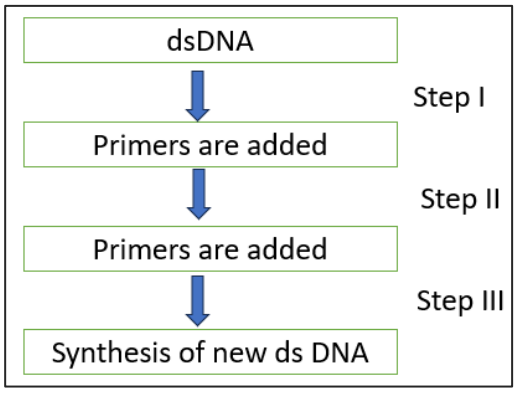
13	Assertion: Primary endosperm is formed due to triple fusion in the embryo sac. Reason: it contains the genetic constitution of both males and females as it is diploid.	1
14	Assertion: Anticodon loop is present in mRNA. Reason: Anticodon loop has codons AUG which binds with the initiation codon.	1
15	Assertion: Interferons are proteins that are part of your natural defenses. Reason: These fight against pathogens that weakens our immune system like retroviruses.	1
16	Assertion: ELISA is an enzyme-linked immune system Assay Reason: It is widely used to detect HIV infection in humans.	1

SECTION B

17	Observe the given graph and answer the questions-  i- Which even takes place on days beyond 28 days ii- Why the level of estrogen is at its peak at day 15?	2
18	Give your statement in the following- i- A color-blind man marries a normal female. ii- Haemoglobin plays a crucial role in our body. Due to certain mutations, a minor variation leads to a genetic disorder related to hemoglobin.	2
19	i- Write the scientific name of the microbe used for fermenting malted cereals and fruit juices. ii- Name the source of cyclosporin-A. How does this bioactive molecule function in our body?	2
	Explain the role of A, B, C and D in the following diagram-  	2

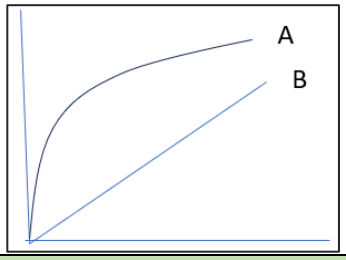
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21	Compare the following by giving two features- i- DFC ii- GFC **OR** Read the following statements. Each statement is denoted by A, B and C. Write the value of 'D'. **Statement** / **Denoted as** the process by which organisms make their food from inorganic sources. / 'A' the rate at which solar energy is captured in sugar molecules during photosynthesis / 'B' The organisms at each level use energy for respiration. / 'C' the available biomass for the consumption to heterotrophs / 'D'	2
	SECTION C	
22	Study the given diagram and answer the given questions- i- Label 'A and 'B. ii- What is the role of 'A' and 'B' iii- Identify the stage of human embryonic development. 	3
23	Explain the followings- i- Blood group shows codominance as well as multiple allelism ii- Incomplete dominance	3
24	Give reason- i- Natural method of birth control like coitus interruptus is not 100 % safe. ii- Amniocentesis is a very useful technique. iii- AI is very effective as ART.	3
25	Distinguish between convergent and divergent evolution giving one example of each.	3
26	i- What are flocs formed during sewage treatment? ii- How BOD is affected during biological sewage treatment. iii- Write two advantages of an anaerobic sludge digester.	3
27	Write the answers based on the diagram of PCR- i- Identify step I and also mention the role of temperature in this step. ii- Identify step II and write the role of primers. iii- Identify the specific enzyme involved in step III.  **OR** Explain any three methods of gene therapy.	3
28	The given graph represents the species-area relationship. Identify 'A' and 'B'. Why the pattern of 'A' is different from 'B'? In this situation only pattern 'A' is possible.	3

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	SECTION- D	
	Q. No. 29 and 30 are case-based questions. Each question has 3 subparts with internal choice in one subpart.	
29	Insulin is produced by beta cells of the pancreatic islets in most vertebrates. Insulin is an essential hormone. It helps your body turn food into energy and controls your blood sugar levels. Sometimes your body can't make enough insulin or can't use it properly. This led to serious complications. i- What is the chemical nature of Insulin? **OR** Why the use of insulin obtained by other animals are not advised? ii- Insulin is related to which of the following- a- Diabetics b- Renal failure c- Hypertension d- Angina iii- Different chains of Insulin are stabilized by- a- Hydrogen bond b- Disulphide bond c- Phosphodiester bond d- Glycosidic bond iv- Which statement is correct about insulin obtained from genetic engineering- a- First, such insulin is formed by Eli Lily company b- In this Plasmid of Eco RI is used c- Two chains 'A' and 'B' are joined by a specific linkage d- All are correct	4
30	Population interaction is defined as the type of interaction between two organisms or between two different species. In this different populations of organisms interact with one another to establish a stabilised transfer of energy and food sources. Some population interactions may be beneficial (+) to one or harmful (--) to another. Sometimes such interaction may be harmful to both or beneficial for both. Some examples are predation, parasitism, commensalism, etc. i- Predators control the population of prey. Give one example in favour of the statement. **OR** Write any one chemical defence mechanism which protects the prey from their predators. ii- An example of mutualism is- a- Fungi and algae in Lichen b- Parthenium (carrot grass) and Carrot c- Water hyacinth and fish d- Lice and human iii- If two species competing for the same resource, they can avoid competition by a- Interspecific competition b- Resource partitioning	4

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	c- Broos parasitism d- Co-extinction iv- In which of the following interaction the interaction is lethal to one species while other has neither benefit nor loss- a- Parasitism b- Competition c- Amensalism d- None of these	
	SECTION- E	
31	i- Even though each pollen grain has two male gametes, why are at least 20 pollen grains required to fertilize 20 ovules present in the female reproductive part? ii- Why do most zygotes in flowering plants divide only after a certain amount of endosperm formation? iii- Write any two methods of formation of apomictic seeds. Comment on the significance of apomixis. **OR** i- Draw a typical structure of an ovule and label the following parts- a- Central cell b- Filiform apparatus c- Micropyle d- Chalaza ii- Write two adaptations of the following- a- Wind-pollinated flower b- Insect-pollinated flower iii- How many microspores mother cell is required to produce 100 microspore tetrads?	5
32	Given below is a stretch of mRNA DNA formed after the transcription process- **5'—AUGAGGCCAUUAGUAAGCA 3'** i- Write the corresponding coding strand of the parent DNA ii- What is the specific role of the first triplet codon of mRNA at 5'end? iii- Make a diagram of the transcription unit and label any two parts. iv- How do sigma factors and rho factors assist in the process? **OR** i- How inducers affect the transcription process in E. coli bacteria. ii- Why Okazaki fragments are obtained in short sequences during replication? **iii-** What is the importance of activation of t RNA?	5
33	i- What is the source of Cannabinoids and Cocaine? ii- Make the chemical structure of morphine. iii- Give example of any two hallucination drugs. Why these are called as hallucinogenic drugs. iv- Write any two consequences of drug abuse. **OR** i- Why AIDS is called as syndrome? ii- Which cells are known as HIV factory and why? iii- What is the genetic makeup of HIV? iv- Which division of the ministry of health and family welfare control programmes relate to AIDS in India? v- Why does an individual with AIDS becomes susceptible to diseases?	5

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