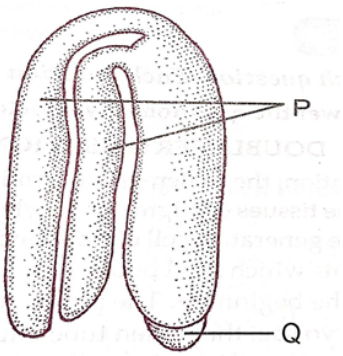
KENDRIYA VIDYALAYA SANGATHAN (LUCKNOW REGION)
PRE BOARD EXAM-2025-26

Class: 12 **Subjects: Biology (044)**
Time: 3 Hours **M.M.:70**

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 labelled diagrams should be drawn.

SECTION-A

Q.NO.	QUESTION	MARK
1	Identify P and Q in the following diagram of a typical dicot embryo.  (A) P- cotyledons, Q- root cap (B) P- hypocotyl Q- Root cap (C) P- Cotyledons Q- Plumule (D) P- Plumule Q- Radicle	1
2	Which of the following is showing accurate pairing? (A) Syphilis — *Treponema pallidum* (B) AIDS — *Bacillus conjugalis* (C) Gonorrhoea — *Leishmania donovani* (D) Typhoid — *Mycobacterium leprae*	1
3	Variation in gene frequencies within populations can occurs by chance rather than by natural selection. This referred to as (A) Genetic flow (B) Genetic drift (C) Random mating (D) Genetic load	1
4	All of the following obeys Mendel's laws except _____. (A) Linkage (B) Independent assortment (C) Dominance (D) Purity of gametes	1
5	A template strand in bacterial DNA has the following base sequences: 5'-TTTAACGAGG-3' What would be the RNA sequence transcribed from this template DNA? (A) 5'-AAATTGCTCC-3' (B) 3'AATTGCTCC-5' (C) 3'-AAAUUGCUCC-5' (D) 5'-CCUCGUUAA-3'	1
6	The primary endosperm nucleus is formed by the fusion of which of the following (A) A male gamete and a female gamete (B) A male gamete and two polar nuclei (C) A female gamete and two synergids (D) Two male gametes and an egg cell	1

7 — 1

Which of the following molecules (drugs) is not a correct match with their use?

	Molecules/Drugs	**Uses**
A	Cocaine	Accelerates the transport of dopamine
B	Heroin	Depressant and slows down body function
C	Morphine	Produces Hallucination
D	Barbiturates	Help patient to cope up with insomnia

8 — 1

Which of the following microorganisms shows the correct relationship between the production of bread and alcohol?

	Microorganism	**Bread**	**Alcohol**
A	*Lactobacillus*	Yes	No
B	*Saccharomyces cerevisiae*	Yes	Yes
C	*Propionibacterium shermanii*	No	Yes
D	*Tricoderma polysporum*	No	No

9 — 1

If haploid number of chromosome in a plant is 12 then the number of chromosome in monosomic is

(A) 26 (B) 23

(C) 22 (D) 25

10 — 1

Variations caused due to mutation are

(A) Random and direction less (B) Random and direction

(C) Random and small (D) Random , small and directional

11 — 1

Which of the following is the important event in origin of life

(A) Formation of nucleoproteins (B) Formation of CH4

(C) Formation of NH3 (D) Formation of cyanamide.

12 — 1

Gene gun is suitable for

A. Disarming the pathogen vector

B. Transformation of plant cells

C. Constructing recombinant DNA by joining with vectors

D. DNA fingerprinting

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

A. If both the assertion and the reason are true and the reason is a correct explanation of the assertion

B. if both the assertion and reason are true but the reason is not a correct explanation of the assertion

C. if the assertion is true but the reason is false

D. Assertion is false but reason is true

13 — 1

Assertion: A number of white winged moths decreased after industrialization in England.

Reason: Effects of industrialization were more marked in rural areas of England.

14 — 1

. **Assertion:** Smoking can raise blood pressure and increase heart rate.

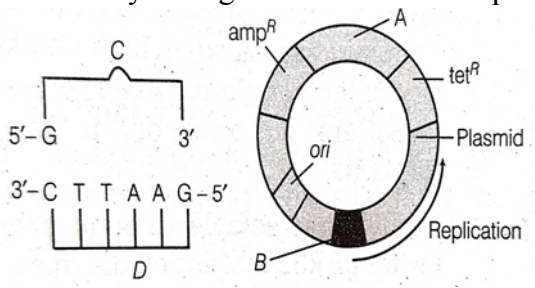
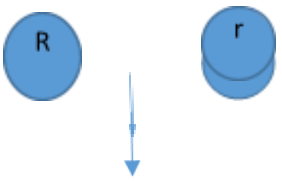
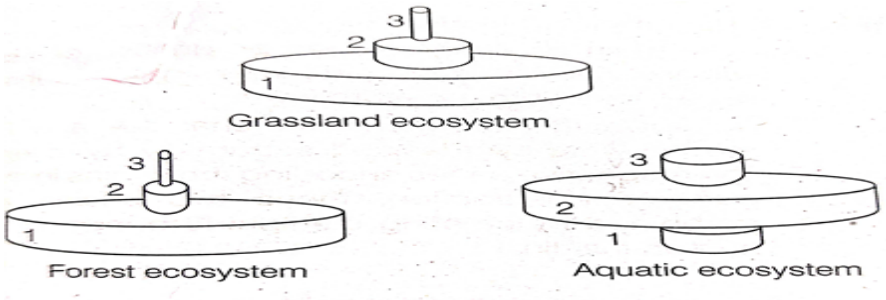
Reason: Nicotine stimulates adrenal gland to release adrenaline and nor-adrenaline into the blood circulation, both of which raise blood pressure and increase heart rate.

15 — 1

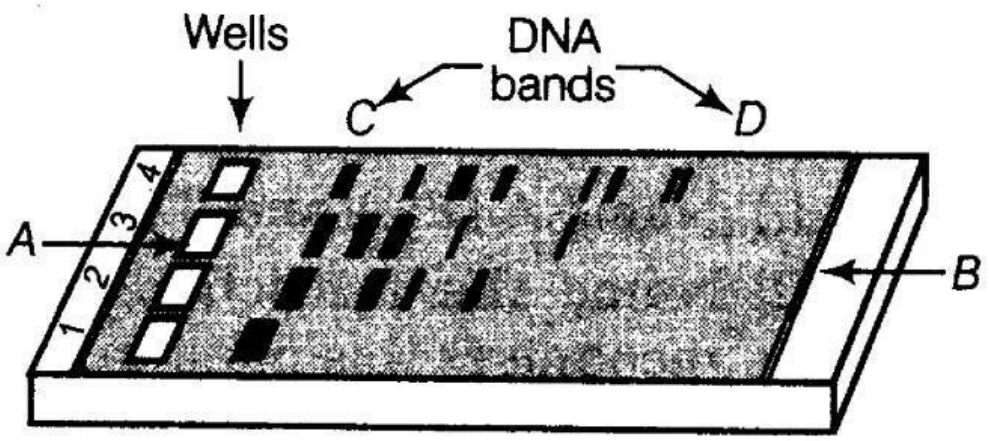
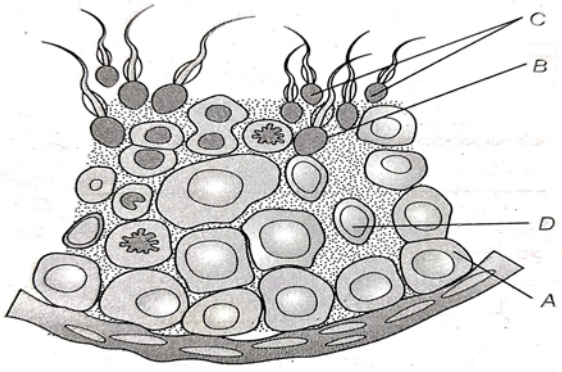
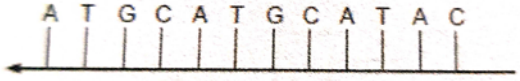
Assertion: A bacterial cell with no restriction enzymes could easily get infected and lysed by bacteriophages.

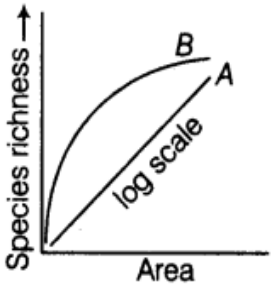
Reason: Restriction enzymes catalyses' the synthesis of protection coat around bacterial cells that prevent bacteriophage attack.

16	**Assertion:** Sterilization is a terminal method used for both males and females. **Reason:** It is highly effective and its reversibility is very poor.	1

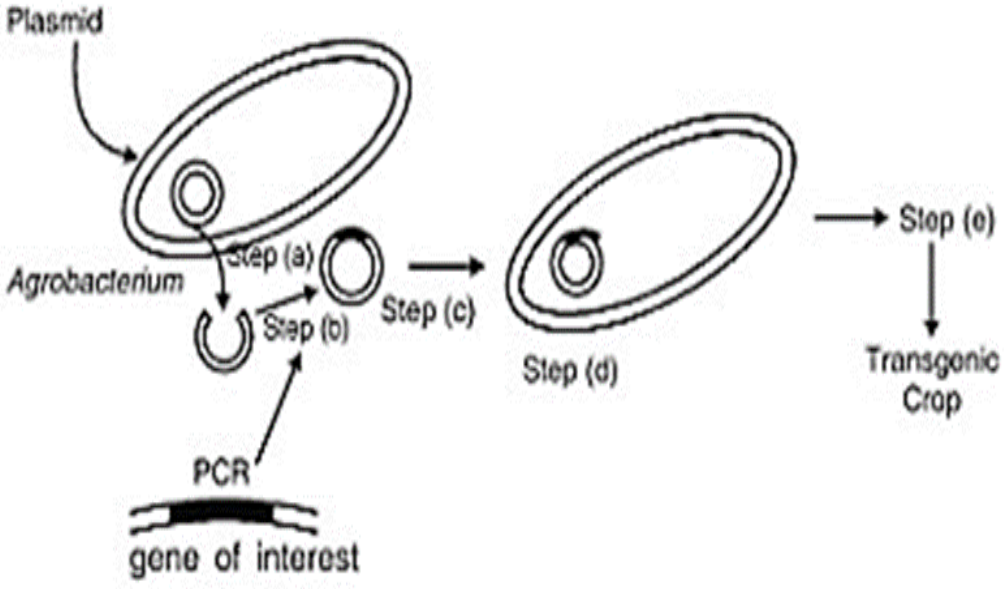
	SECTION B	
17	Amniocentesis, the technique of sex determination is banned in our country. Is this ban necessary? Comment.	2
18	In the figure given below, parts A and B are the missing sites from the cloning vector. Study the figure and answer the questions that follows  (i) Identify the parts A and B in the given illustration. **(ii)** What is the term given to C and D and explain why?	2
19	Due to improper functioning, thymus gland was removed from the body of a 12 year-old person. Can you predict the effects that will be observed in the immune functions of this individual?	2
20	(i) Find out the genotype and phenotype of F1 generation R= dominant and red, r = recessive and white from the given cross in snapdragon plant showing incomplete dominance. RR x rr  **F1 – generation** (ii) Comment upon the concept of incomplete dominance. **OR** (i) How is the child affected, if it has been grown from the zygote formed by an XX- egg fertilized by a Y- carrying sperm? (ii) What do you call this abnormality?	2
21	Typical pyramids of biomass (g/m2) of three different ecosystems are shown below as : 1- Producers 2- Herbivores 3- Carnivores  	2

	(i) In aquatic ecosystem, an inverted pyramid is observed. Suggest a possible reason for this. (ii) What will be the pyramid of energy for all three ecosystem be like?	

	SECTION -C	
22	Explain the functions of the following reproductive parts of a flower. **(i)** Synergids (ii) Micropyle (iii) Hilum	3
23	Study the diagram given below and answer the following questions  (i) Why have DNA fragments in bank D moved farther away in comparison to those in band C? (ii) Identify the anode end in diagram. (iii) How are these DNA fragments visualized?	3
24	(i) Identify the parts A, B, C and D from the figure of seminiferous tubule given below. (ii) Write the function of A and D. (iii) When do the oogenesis and the spermatogenesis initiate in human females and males, respectively. 	3
25	(a) Mention two events in which DNA is unzipped. (b) Predict the consequences when both the template and coding strand of a DNA segment participate in transcription process? **OR** (a) Construct a complete transcription unit with promotor and terminator on the basis of the hypothetical template strand given below: 	3

	(b). Write the RNA strand transcribed from the above transcription unit along with its polarity.	
26	Refer to the figure given below and answer the questions that follows:  (a) Explain the process by which Tasmanian wolf evolved. (b) Name the process that have resulted in evolution of wolf and Tasmanian wolf. **(c)** Compare and contrast the two animals shown?	3
27	Identify A,B, C, D, E, and F in the table given below: Organism | Bioactive molecule | Use *Monascus purpureus* | **A** | **B** **C** | **D** | Antibiotic E | Cyclosporin -A | **F**	3
28	**The following graph shows the species-area relationship.**  **Answer the following questions as directed.** **(i) Name the naturalist who studied the kind of relationship shown in the graph. Write the observations made by him.** **(ii) Write the situations as discovered by the ecologists when the value of Z (slope of the line) lies between** • **0.1 and 0.2** • **0.6 and 1.2** • **(iii)What does Z stand for?** **(iv) When would the slope of the line 'b' become steeper?**	3

	SECTION -D	
29	Given below is a set of information about some fruits and seeds. **Fruit** | **Fruit and seed formation** **P** | Nucellar cells surrounding the embryo sac develop into embryos **Q** | Ovary develops into the fruit by the application of growth hormones. **R** | Thalamus contributes to fruit formation. **S** | Ovary matures into a fruit after fertilization. On the basis of the information provided above, answer the following questions with justification for each answer. A. How many embryo sacs will be present in each ovule of S before maturation and how many egg(s) will be present in each embryo sac when the embryo sac is developed from a single megaspore? B. (i) Which of these fruits exhibits polyembryony? Will their embryos exhibit genetic variation? Justify. (ii) What will be ploidy of the embryonic cells in the above case? Attempt either subpart C or D. C. Which of these fruits can be considered as parthenocarpic? Give a reason. OR D. Which of the fruits P, Q, R or S is a true fruit with seeds? Give reason.	4
30	Modern life style in big cities and towns is surely making lives more easy and comfortable for people. On the contrary, many more health issues and problems are on the rise and one of them is allergic reactions. Answer the following questions- (a) Write any four steps you would suggest to minimize the cause of the above allergic response. (b) List any two allergens. (c) How does the human body respond to them? Explain.	4
	SECTION -E	
31	(i) List the different attributes that a population has and not an individual organism. (ii) What is population density? Explain any three different ways the population density can be measured, with the help of an example each. OR (i) Name the population growth pattern the equation {dN/dt =rN} represents. What does 'r' represent in the equation? Write its importance in population growth. (ii) Explain the principle of carrying capacity by using population Verhulst-Pearl logistic growth curve.	5

32	Observe the representation of gene involved in the lac operon given below- P i p O z y a (a) Identify the region where the repressor protein will attach normally. (b) Under certain conditions repressor is unable to attach at this site. Explain. (c) If repressor fails to attach to the said site what products will be formed by z, y and a? (d) Analyze why this kind of regulation is called negative regulation. **OR** Transcription in eukaryotes is more complex process than in prokaryotes. Justify and compare the initiation, elongation and termination in bacterial cells with eukaryotes.	5
33	To a 4-year-old patient, clinical gene therapy is given for an enzyme, which is important for the immune system to function. (A) Lymphocytes of the patient. (B) ..... (C) Introduction of functional ADA cDNA into lymphocytes (D) ..... After observing the treatment flow chart, answer the following questions. (a) Complete the missing steps (B) and (D) in the given flowchart. (b). Identify the disease to be treated. (c). Why doesn't the above method have a perfect solution to your problem? (d) Explain how the scientists have developed a way to cure this disease forever. **OR** Explain the steps a, b, c, d, and e shown in the given figure. In the given figure, *Agrobacterium* is used for the production of transformed crops.  	5