

BHARATIYA VIDYA BHAVANS V.M. PUBLIC SCHOOL
SAMPLE PAPER-8
SUBJECT –BIOLOGY

SECTION A

1. Give one example of an animal which exhibits Oestrous cycle.
2. State one reason why breast-feeding the baby acts as a natural contraceptive for the mother.
3. Identify the correct statement :
 - A. Female of many birds has a pair of dissimilar ZW chromosomes, While the males possess a pair of similar ZZ chromosomes
 - B. Female of many birds has a pair of similar ZZ chromosomes, while the males possess a pair of dissimilar ZW chromosomes
4. What will happen if DNA replication is not followed by cell division in a eukaryotic cell?
5. State one reason for adding blue-green algae to the agricultural soil.

SECTION B

6. Draw and label the parts of the head region only of a human sperm.
7. What is amniocentesis ? How is it misused ?
8. Rearrange the following in increasing order of evolution :

Gnetales; Ferns; *Zosterophyllum*; *Ginkgo*

9. Differentiate between active and passive immunity.

OR

Differentiate between outbreeding and outcrossing.

10. Name two groups of organisms which constitute 'flocs'. Write their Influence on the level of BOD during biological treatment of sewage.

SECTION C

11. Why is making cells competent essential for biotechnology experiments ? List any two ways by which this can be achieved.
12. Human insulin when synthesised in the body needs to be processed before it can act. Explain giving reasons.
13. Write any two ways how genetically modified plants are found to be useful.
14. Provide two reasons that make the count of prokaryotic species difficult.

15. Explain how does the inflow of large amount of nutrients like phosphates and nitrates into the water body drastically affects the aquatic life there. Name the phenomenon responsible.
- 16.(a) How is apomixis different from parthenocarpy ?
(b) Describe any two modes by which apomictic seeds can be produced.
17. Why is haemophilia rare in human females ? Mention a clinical symptom for the disease.
18. (a) What are the transcriptional products of RNA *polymerase III* ?
(b) Differentiate between 'Capping' and 'Tailing'.
(c) Expand *hnRNA*.
19. Giving three reasons, write how Hardy-Weinberg equilibrium can be affected.
20. Do you support 'Dope' test being conducted on sportspersons participating in a prestigious athletic meet? Give three reasons in support of your answer.
21. Suggest and describe a technique through which a virus-free healthy plant can be obtained from a diseased sugarcane plant.
22. How are Baculoviruses and *Bacillus thuringiensis* used as bio-control agents ? Why are they preferred over readily available chemical pesticides ?

SECTION D

23. Draw a schematic diagram of the *E. coli* cloning vector pBR322 and mark the following in it :
(a) ori
(b) rop
(c) ampicillin resistance gene
(d) tetracycline resistance gene
(e) restriction site BamHI
(f) restriction site EcoRI

OR

- (a) Draw schematic diagrams of segments of a vector and a foreign DNA with the sequence of nucleotides recognised by EcoRI.
- (b) Draw the vector DNA segment and foreign DNA segments after the action of EcoRI and label the sticky ends produce

SECTION D

24. (a) Describe the formation of mature female gametophyte within an ovule in angiosperms.
(b) Describe the structure of the cell(s) that guide(s) the pollen tube to enter the embryo-sac...

OR

Explain the different phases of menstrual cycle and correlate the phases with the different levels of ovarian hormones in a human female.

25. Work out a monohybrid cross upto F₂ generation between two pea plants and two *Antirrhinum* plants both having contrasting traits with respect to colour of flower. Comment on the pattern of inheritance in the crosses carried above.

OR

Describe the process of transcription in a bacterium.

26. A. Name the population growth pattern the equation $\frac{dN}{dt} = rN$

Date

Represents What does “r” represent in the equation? Write its importance in population growth.

B Explain the principle of carrying capacity by using population Verhulst-Pearl logistic growth curve.

OR

(a) With suitable examples, explain the energy flow through different trophic levels. What does each bar in this pyramid represent?

(b) Write any two limitations of ecological pyramids.

Prepared by Ms.Anjali Dhar