

Roll No. _____

D.A.V. INSTITUTIONS, CHHATTISGARH

SAMPLE QUESTION PAPER-2023-24

CLASS XII

SUBJECT-BIOLOGY

Time Allowed: 3 Hours

Maximum Marks: 70

GENERAL INSTRUCTIONS:

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

1. The technique called gamete intra fallopian transfer is recommended for those females
 - a. Who cannot produce an ovum.
 - b. Who cannot retain the foetus inside the uterus.
 - c. Whose cervical canal is too narrow to allow the passage for the sperms
 - d. Who cannot provide a suitable environment for fertilization
2. After parturition, which natural contraception way can be utilized?
 - (a)Lactational menorrhoea
 - (b)Lactational amenorrhoea
 - (c)Lactational deficiency
 - (d)Lactational prevention
3. Which one of the following statements about Histones is wrong?
 - a. Histones carry positive charge in the side chain
 - b. Histones are organized to form a unit of 8 molecules
 - c. The pH of histones is slightly acidic
 - d. Histones are rich in amino acids-Lysine and Arginine
4. In 1953, S. L. Miller created the primitive earth conditions in the laboratory and gave experimental evidence for the origin of first form of life from pre-existing non-living organic molecules. The primitive earth conditions created include

- a. Low temperature, volcanic storms, atmosphere rich in oxygen
 - b. Low temperature, volcanic storms, reducing atmosphere
 - c. High temperature, volcanic storms, non-reducing atmosphere
 - d. High temperature, volcanic storms, reducing atmosphere containing CH₄, NH₃, etc
5. Drugs like barbiturates, amphetamines, benzodiazepines, and other similar drugs, that are normally used as medicines for.....
- a. Sedative and pain killer
 - b. Diuretics
 - c. Depression and insomnia
 - d. Analgesics
6. Every time, when the dosage of a drug, has to be increased, to achieve the same effect, that initially occurred, in response to a smaller dose. This condition is known as
- (a) Rebound effect (b) Tolerance (c) Withdrawal syndrome (d) Addiction
7. What type of gametes will be formed by genotype RrYy?
- a. RY,Ry,rY,ry
 - b. RY,Ry,ry,ry
 - c. Ry,Ry,Yy,ry
 - d. Rr,RR,Yy,YY
8. Genetically modified food can be harmful because it can cause
- a. Allergy and toxicity
 - b. Incorporation of antibiotic resistance genes in human beings
 - c. Disturbance in metabolism due to enzymes for antibiotic resistance
 - d. All of the above
9. Carrying capacity K means _____
- a. Organism's capability of maximum reproduction
 - b. Nature's limit for supporting maximum growth of a species
 - c. Nature's limit for supporting maximum number of species
 - d. Organism's capability to withstand environmental odds
10. Gause's principle of competitive exclusion states that:
- a. More abundant species will exclude the less abundant species through competition
 - b. Competition for the same resources excludes species having different food preferences
 - c. No two species can occupy the same niche indefinitely for the same limiting resource
 - d. Larger organisms exclude smaller ones through competition
11. Which ecosystem has the highest primary productivity?
- (a) Pond ecosystem
 - (b) Lake ecosystem

(c) Grassland ecosystem

(d) Forest ecosystem

12. Which of the following countries has the highest biodiversity?

(a) Brazil

(b) South Africa

(c) Russia

(d) India

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): Functional megaspore divide repeatedly to form seven celled eight nucleated structure

Reason(R): The Mitotic divisions are free nuclear not followed by cell wall formation immediately

14. Assertion (A): Morgan carried out several Dihybrid crosses in drosophila and found F₂ ratio deviated significantly from the expected Mendelian Ratio

Reason(R): The reason attributed by Morgan for this deviation is incomplete dominance

15. Assertion (A): ADA deficiency can be cured by bone marrow transplantation

Reason(R): ADA deficiency can be treated by enzyme replacement therapy

16. Assertion (A): Analysis of age pyramids for the human population can provide important inputs for long-term planning

Reason(R): The shape of the age pyramid shows the density of the human population

SECTION-B

17. Name and explain the role of inner and middle walls of human uterus.

18. Point out any two similarities in the behaviour of chromosomes and genes

19. How are morphine and heroin related? Mention the effect each one of them has on the human body?

20. Explain the significance of satellite DNA in DNA finger printing?

21. In a botanical Garden of a city there is a huge banyan tree growing, on which hundreds of birds and thousands of insects live. Draw the pyramid of numbers and biomass represented by this community.

OR

The pyramid of energy is always erect. Explain with reasons.

SECTION – C

22. Describe the process of parturition in humans

23. Why angiosperm anthers are called dithecous? Describe the structure of its microsporangium.

24. How are the following microbes useful to us?

a) Trichoderma polysporum

b) Monascus purpureus

c) Streptococcus

25. How does Hardy-Weinberg equation explain genetic equilibrium?

How this equilibrium gets disturbed?

26. What is Allergy? What is the role of histamine in inflammatory response?

Name two drugs which reduce the symptoms of allergy

(OR)

Describe the sexual and asexual phases of life cycle of plasmodium that causes malaria in humans

27. How are recombinant vector created?

Why is only one type of restriction endonuclease required for creating one Recombinant vector?

28. (a) Why should we conserve biodiversity?

How can we do it?

(b) Explain the importance of biodiversity hot-spots

SECTION – D

29. Every gene contains the information to express a particular trait. In a diploid organism there are two copies of each gene called alleles. In heterozygotes one of these two alleles will be different. The normal allele produces a normal enzyme and the modified allele would be responsible for normal or less efficient enzyme or non-functional enzyme or no enzyme at all. But if the allele produces a non-functional enzyme or no enzyme, the phenotype may be affected. The phenotype will only be dependent on the functioning of the unmodified allele.

- a. Why recessive allele is unable to express itself in a heterozygous state?
- b. Give an example for an incomplete dominance.
- c. write the phenotypic and genotypic ratios of incomplete dominance.

(OR)

c. In heterozygotes the phenotype will only be dependent on the functioning of the modified allele. Substantiate the statement with the help of an example.

30. Cancer occurs when a normal cell starts dividing uncontrollably. This happens when the genes that regulate cell growth fail (or) deleted. Proto-oncogenes are genes that normally promote the growth and division of normal cells. Tumor suppressor genes are the genes that normally inhibit the division and survival of abnormal cells. Once a Normal cell transforms into a cancer cell, it starts dividing out of control. Cancer cells can spread from the original site called the primary tumor to other tissues. This can occur in three different ways. One way is local spread in which aggressively dividing cancer cells directly invade nearby tissues. Another way involves the lymphatic system. The third way, cancer cells can spread through the blood to distant sites.

- a) How does a cancerous cell differ from a normal cell?
- b) Benign tumors are less dangerous than malignant tumors. Why?
- c) Write the two probable causes of cancer.

OR

c) What is metastasis?

SECTION - E

31. Describe the events of spermatogenesis with the help of schematic representation Explain the hormonal regulation of spermatogenesis in humans.

OR

- (i) When and where primary oocytes formed in human female?
- (ii) Trace the development of these oocytes till ovulation.
- (iii) How gonadotropins influence this developmental process?

32. Explain the process of amino acylation of tRNA. Mention its role in Translation. How do ribosomes act as factories for protein synthesis? Describe initiation and termination phases of protein synthesis .

OR

- (a) DNA polymorphism is the basis of DNA fingerprinting explain.
- (b) Describe the role of lactose in Lac Operon.

33. What is ADA deficiency? How does gene therapy help to solve this deficiency? What will be the permanent cure for this disease?

OR

- (i) How does RNA interference help in developing pest-resistant plants?
- (ii) List four advantages of genetically modified organisms.
