



RJ VISION PVT. LTD.
(MOST STABLE & INNOVATIVE INSTITUTE)

GSEB
BPT – 5 B

BIOLOGY
TEST

COURSE NAME: 12TH

Marks : 100 marks

Topic : FULL SYLLABUS

DATE :

PART – A

Instructions:

- (1) There are 50 objective type (**M.C.Q**) questions in **part-A** and all questions are compulsory.
- (2) The questions are serially numbered from 1 to 50 and each carries 1 mark.
- (3) Read each question carefully, select proper alternative and answer in the O.M.R. sheet.
- (4) The OMR sheet is given for answering the questions. The answer of each question is represented by (1) O, (2) O, (3) O, (4)O. Darken the circle of the correct answer with ball-pen.
- (5) Rough work is to be done in the space provided for this purpose in the test booklet only.
- (6) Set No. of question paper printed on the upper-most right side of the Question paper is to be written in the column provided in the OMR sheet.

PART-A

1. Tropics (23.5° N to 23.5° s) have _____ species as compared to temperate or polar regions.
(1) less (2) equal (3) more (4) none of these
2. One turn of the helix in a B-form DNA is approximately
(1) 3.4 nm (2) 0.34 nm (3) 2 nm (4) 20 nm
3. Test cross involves:-
(1) Crossing between two genotypes with recessive trait
(2) Crossing between two F₁ hybrids
(3) Crossing the F₁ hybrid with a double recessive genotype
(4) Crossing between two genotypes with dominant trait
4. Which one of the following pairs is wrongly matched?
(1) Coliforms – Vinegar
(2) Methanogens – Gobar gas
(3) Yeast – Ethanol
(4) Streptomyces – Antibiotic
5. Restriction endonuclease-
(1) Cuts the DNA molecule at specific sites
(2) Synthesizes DNA
(3) Restricts the synthesis of DNA inside the nucleus
(4) Cuts the DNA molecule randomly
6. Amino acid sequences, in protein synthesis is decided by the sequence of
(1) tRNA (2) mRNA (3) cDNA (4) rRNA

7. Some of the characteristics of Bt cotton are:
 (1) High yield and resistance to bollworms
 (2) Long fibre and resistance to aphids
 (3) Medium yield, long fibre and resistance to beetle pests
 (4) High yield and production of toxic protein crystals which kill dipteran pests
8. Vertical distribution of different species occupying different levels in dense vegetation is called
 (1) stratification (2) species composition
 (3) standing crop (4) trophic structure
9. Which one of the following is considered important in the development of seed habit?
 (1) Free-living gametophyte (2) Dependent sporophyte
 (3) Heterospory (4) Haplontic life cycle
10. What would be the number of chromosomes in the cells of the aleurone layer in a plant species with 8 chromosomes in its synergids?
 (1) 16 (2) 24 (3) 32 (4) 8
11. Which enzyme is crucial for proper functioning of the immune system?
 (1) Adenosine deaminase (2) Restriction endonuclease
 (3) Ligase (4) Maltase
12. Percentage of individuals in successive age of given population is called
 (1) age distribution (2) age density (3) age graph (4) age curve.
13. Which one of the following is not used as bio-fertiliser?
 (1) Bacillus thuringiensis (2) Anabaena (3) Nostoc (4) Rhizobium
14. In an age pyramid, the number of individuals of reproductive age is lesser than pre-reproductive but higher than post reproductive ones. The population is
 (1) Growing (2) Declining
 (3) Stable (4) Cannot be predicted
15. A wasp pollinating a fig flower is an example of
 (1) Commensalism (2) Amensalism (3) Parasitism (4) Mutualism
16. Microbes present in hydrothermal vents where the temperature far exceed 100°C is
 (1) Cyanobacteria (2) Archaeobacteria
 (3) Eubacteria (4) None of these
17. Method for analyzing inheritance pattern of traits in human being is:
 (1) DNA finger printing (2) Control cross
 (3) Pedigree analysis (4) All of the above
18. Which one of the following has the highest number of species in nature?
 (1) Angiosperms (2) Fungi (3) Insects (4) Birds
19. Which of the following defines Hardy-Weinberg's law?
 (1) $p^2 + 2pq + q^2 = 0$ (2) $q^2 + p^2 + 2pq = 0$
 (3) $p^2 + 2pq + q^2 = 1$ (4) $p^2 + 3pq + q^2 = 1$
20. A threatened species category includes
 (1) Only endangered species (2) Only vulnerable species
 (3) Endangered and rare species (4) Endangered, vulnerable and rare species
21. Where was "Saheli" developed?
 (1) Indian Council of Medical Research, New Delhi (2) Central Drug Research Institute, Lucknow
 (3) All Indian Institute of Medical Sciences, New Delhi (4) None

22. "Test tube" baby refers to-
- (1) A baby born in test tube
 - (2) An ovum made to fertilise in-vitro and then implanted in the uterus
 - (3) A method of tissue culture
 - (4) None of these
23. Pills, implants and IUDs are very effective if taken within _____ of coitus.
- (1) 5 days
 - (2) 72 hours
 - (3) 30 days
 - (4) 15 days
24. Sterilisation in males is _____ and in females is _____.
- (1) Vasectomy, Tubectomy
 - (2) Tubectomy, Vasectomy
 - (3) Vasectomy, Vasectomy
 - (4) Tubectomy, Tubectomy
25. Substitution of a purine nucleotide by pyrimidine nucleotide is called
- (1) Transition
 - (2) Transversion
 - (3) Inversion
 - (4) Transduction
26. Trisomy has a chromosome complement of-
- (1) $2n - 1$
 - (2) $2n + 2$
 - (3) $2n + 3$
 - (4) $2n + 1$
27. Wheat variety Atlas 66 is rich in
- (1) Lipid content
 - (2) Water content
 - (3) Protein content
 - (4) Mineral content
28. Which one of the following pairs is correctly matched
- (1) Ribosomal RNA-carries aminoacids to the site of protein synthesis
 - (2) Transcription-process by which protein is synthesized
 - (3) Translation-process by which carries the information from nucleus to the ribosome
 - (4) Anticodon-site of tRNA molecule that contains complementary bases to the triple code on the RNA
29. Which of the following pyrimidine base is common in both DNA and RNA.
- (1) Adenine
 - (2) Guanine
 - (3) Cytosine
 - (4) Thymine
30. Which of the following feature of RNA 'make it labile and easily degradable'?
- (1) Single stranded nature
 - (2) 2'-OH group on sugar
 - (3) Phosphodiester bond
 - (4) Absence of Hydrogen bond
31. Which of the following is produced by genetically engineered bacterium?
- (1) Tyrosine
 - (2) Insulin
 - (3) Glycogen
 - (4) ADH
32. The method of DNA fingerprinting involves the use of:
- (1) Restriction enzyme
 - (2) Taq polymerase
 - (3) Oligonucleotide primers
 - (4) All of these
33. Rain-soaked forest occurs in which state of India?
- (1) Assam
 - (2) Meghalaya
 - (3) Arunachal Pradesh
 - (4) Nagaland
34. Identify the palindromic sequence in the following.
- (1) $\frac{GAATC}{CTTUUG}$
 - (2) $\frac{GGATCC}{CCTAGG}$
 - (3) $\frac{CCTGG}{GGACC}$
 - (4) $\frac{CGATA}{GCTAA}$
35. Which of the following is the bacterial disease in humans?
- (1) Pneumonia
 - (2) Malaria
 - (3) Plague
 - (4) Both (1) and (3)
36. The theory of natural selection was given by
- (1) Lamarck
 - (2) Alfred Wallace
 - (3) Charles Darwin
 - (4) Oparin and Haldane

37. Synthesis of DNA from RNA is explained by
 (1) central dogma reverse (2) reverse transcription
 (3) teminism (4) all of these.
38. Species richness of tropics is because of:
 (1) Tropics have more evolutionary time (2) Tropics have relatively constant environment
 (3) Tropics receive more solar energy (4) All of the above
39. At present, how many biosphere reserves does India have?
 (1) 11 (2) 14 (3) 17 (4) 20
40. Identify the type/level of biodiversity from the following:
 (1) Genetic (2) Species (3) Ecological (4) All of the above
41. In a monohybrid cross between two heterozygous individuals percentage of pure homozygous individuals obtained in F_1 generation will be
 (1) 25% (2) 50% (3) 75% (4) 100%
42. A gene showing co-dominance has
 (1) One allele dominant over the other
 (2) Alleles tightly linked on the same chromosome
 (3) Allele that are recessive to each other
 (4) Both the alleles independently expressed in the heterozygote
43. The most common biofertilizer for rice crop is
 (1) Sesbanearosteata (2) Azolla (3) Bacillus polymer (4) Trifolium
44. Which protein protects against viral infections:
 (1) Immunoglobulin (2) Interferon (3) Myosin (4) Actin
45. Which of the following sets of diseases is caused by bacteria:
 (1) Tetanus and mumps (2) Cholera and tetanus (3) Typhoid and small pox (4) Herpes and influenza
46. Attractants and rewards are required for:
 (1) Anaemophilly (2) Entomophilly (3) Hydrophyll (4) Cleistogamy
47. If mammalian ovum fails to get fertilized, which one of the following is unlikely?
 (1) Primary follicle starts developing (2) Estrogen secretion further declines
 (3) Progesterone secretion rapidly declines (4) Corpus luteum will disintegrate
48. Which of the following is affected by the infection of Wuchereria bancrofti?
 (1) Lymphatic vessels (2) Respiratory system (3) Nervous system (4) Blood circulation
49. To get pollinated by bee, the Mediterreanean orchid, ophrys employs
 (1) Pseudo-copulation (2) Place for laying eggs
 (3) Sexual deficit (4) Reward in the form of nectar
50. A lady is diagnosed to have both her fallopian tubes blocked. Which ART can help her to conceive a child?
 (1) GIFT (2) ZIFT (3) IVF (4) SUZI

PART- B

Instructions:

- (1) Write in a clear legible handwriting.
- (2) There are three sections in part- B of the question paper and total 1 to 27 questions are there.
- (3) All the questions are compulsory. Internal options are given.
- (4) The numbers at right side represent the marks of the question.
- (5) Start new section on new page.
- (6) Maintain sequence.

SECTION – A [2 M]

Answer question No. 1 to 12 as directed. Each question carry 2 marks. (Attempt any 8 out of 12)

[16]

1. Describe the structure of nucleosome.
2. Explain the roles of the following in biotechnology.
 - (a) Gel Electrophoresis
 - (b) Selectable markers in pBR322
3. Explain the significance of palindromic nucleotide sequence in the formation of recombinant DNA.
4. Describe the post-fertilisation changes in a flower.
5. Which property of DNA double helix led Watson and Crick to hypothesize semi-conservative mode of DNA replication? Explain.
6. Mention the role of ribosomes in peptide bond formation How does ATP facilitate it?
7. What are the application and future challenges of HGP?
8. Discuss surgical method of sterilisation.
9. Write a short note on phenylketonuria.
10. How does the transmission of each of the following diseases take place?
 - (a) Amoebiasis
 - (b) Malaria
 - (c) Ascariasis
 - (d) Pneumonia
11. How do mycorrhizae help the plants to grow better?
12. A bacterial cell was transformed with a recombinant DNA that was generated using a human gene. However, the transformed cells did not produce the desired protein. What could be the possible reason?

SECTION – B [3 M]

Answer question No.13 to 21 as directed. Each question carry 3 marks. (Attempt any 6 out of 9)

[18]

13. With a neat diagram explain the 7-celled, 8-nucleate nature of the female gametophyte.
14. Name and explain the two types of immune responses in humans.

OR

The two types of immunity are humoral immunity and cell-mediated immunity.

Humoral immunity: Immune response given by antibodies found in the blood.

Cell-mediated immunity: T-lymphocytes mediate this immunity.

15. How do homologous organs represent divergent evolution? Explain with the help of a suitable example.
16. Draw a labelled diagram of the sectional view of a mature pollen grain of angiosperms. Explain the function of generative cell and vegetative cell.
17. Write an explanatory note on In situ conservation.
18. Explain briefly
 - (a) PCR
 - (b) Restriction enzymes and DNA
 - (c) Chitinase
19. Write short note on "Theory of natural selection".
20. How HIV virus infect the human cell? How is HIV infection diagnosed?
21. How are microbes useful in industrial production of enzymes and other bioactive molecules?

SECTION – C [4 M]

Answer question No. 22 to 27 as directed. Each question carry 4 marks. **(Attempt any 4 out of 6)**

[16]

22. Define decomposition and describe the processes and products and decomposition.
23. A 17-year old boy is suffering from high fever with profuse sweating and chills. Choose the correct option from the following diseases which explains these symptoms and rule out the rest with adequate reasons.
- (a) Typhoid
 - (b) Viral Fever
 - (c) Malaria
24. (a) Explain the process of spermatogenesis in human male.
(b) What are the functions of Leydig cells and nurse cells?
25. Explain the process of translation.
26. Name and explain the models population growth.
27. Give types and functions of nuclease enzyme.

