



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

GSEB
BPT – 4 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 (A) O, (B) O, (c) O, (D)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

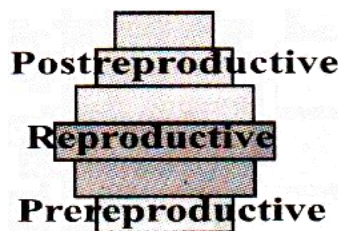
1. Science of cultivation breeding marketing and arrangement of flowers is called
(1) arboriculture (2) floriculture (3) horticulture (4) anthology
2. The arrangement of the nuclei in a normal embryo sac in the dicot plants is
(1) 2 + 4 + 2 (2) 3 + 2 + 3 (3) 2 + 3 + 3 (4) 3 + 3 + 2
3. HIV that causes AIDs, first starts destroying
(1) B-lymphocytes (2) Helper T-lymphocytes
(3) Thrombocytes (4) Leucocytes
4. Reduction in which of the following hormones causes menstruation?
(1) FSH (2) Estrogen (3) FSH-RH (4) Progesterone
5. Given below are four methods (A-D) and their modes of action (1-4) in achieving contraception. Select their correct matching from the four options that follow

Method	Mode of Action
The pill	Prevents sperms reaching cervix
Condom	Prevents implantation
Vasectomy	Prevents ovulation
Copper T	Semen contains no sperms

- (1) A-3, B-4, C-1, D-2 (2) A-2, B-3, C-1, D-2
- (3) A-3, B-1, C-4, D-2 (4) A-4, B-1, C-2, D-2
6. The linking of antibiotic resistance gene with the plasmid vector became possible with _____
(1) DNA polymerase (2) Exonucleases
(3) DNA ligase (4) Endonucleases

7. Which of the following organisms is used in the production of beverages?
 (1) *Penicillium notatum* (2) *Saccharomyces cerevisiae*
 (3) *Aspergillus niger* (4) *Clostridium butylicum*
8. *Trichoderma* has proved a useful microorganism for _____
 (1) Gene transfer in higher plants
 (2) Biological control of soil-borne plant pathogens
 (3) Bioremediation of contaminated soils
 (4) Reclamation of wastelands
9. Which one of the following pairs of plant structures has haploid number of chromosomes?
 (1) Egg nucleus and secondary nucleus
 (2) Egg cell and antipodal cells
 (3) Nucellus and antipodal cells
 (4) Megaspore mother cell and antipodal cells
10. The nutritive cells found in seminiferous tubules are
 (1) Leydig's cells (2) atretic follicular cells
 (3) Sertoli cells (4) chromaffin cells.
11. The chemical substances produced by some microbes which can kill or retard the growth of other microbes are called-
 (1) Toddy (2) Lactic acid (3) Antibiotics (4) Ethanol
12. The primary treatment of sewage involves.
 (1) Digestion (2) Decomposition
 (3) Sedimentation and filtration (4) None of these
13. Electrophoresis and Southern blotting techniques are used in:
 (1) DNA fingerprinting (2) Gene synthesis
 (3) Gene cloning (4) All of these
14. Match the column:
- | | |
|---|-------------|
| (A) Invertebrates | (1) 500 mya |
| (B) Jawless fish | (2) 320 mya |
| (C) Seaweeds | (3) 350 mya |
| (D) <i>Dryopithecus</i> and <i>Ramapithecus</i> | (4) 15 mya |
- (1) A:2, B:1, C:4, D:3 (2) A:1, B:3, C:2, D:4
 (3) A:1, B:4, C:2, D:3 (4) A:4, B:3, C:1, D:2
15. Pairing of fragments derived from DNA is a process called
 (1) Staggering (2) Annealing (3) Augmenting (4) Fragmenting
16. After the formation of the product in the bioreactors, it undergoes through separation and purification processes before a finished product is ready for marketing. These processes are collectively referred to as
 (1) Upstream processing (2) Downstream processing
 (3) Elution (4) Transformation
17. Vaccines produced through recombinant DNA technology are:
 (1) Vaccines for hepatitis (2) Vaccines for polio
 (3) Vaccines for food and mouth disease (4) All of the above

18. Humuline is a:
- (1) Natural insulin
 - (2) Human insulin synthesized by genetically engineered E.coli
 - (3) Human insulin synthesized by pancreas
 - (4) Chemically synthesized insulin
19. Deliberate alteration of genome for treatment of disease is called-
- (1) Transformation rescue
 - (2) Imprinting
 - (3) Exon shuffle
 - (4) Gene therapy
20. In eukaryotes, RNA polymerase III is responsible for synthesis of:
- (1) 28 S RNA, 18 S RNA and 5.8 S RNA
 - (2) tRNA, hnRNA, rRNA
 - (3) tRNA, 5SRNA, sn RNA
 - (4) hnRNA, tRNA, rRNA
21. The use of bio resources by multinational companies and other organizations without proper authorisation from the countries and people concerned without compensatory payment is called-
- (1) Bioethics
 - (2) Biopiracy
 - (3) Bioterror
 - (4) Bioweapon
22. All are the problems related to reproductive health except
- (1) over population
 - (2) low infant mortality rate
 - (3) early marriage
 - (4) high maternal mortality rate.
23. Which of the following characters was not chosen by Mendel?
- (1) Pod shape
 - (2) Pod colour
 - (3) Position of flower
 - (4) Position of pod
24. In a DNA molecule, the phosphate group is attached to carbon ____ of the sugar residue of its own nucleotide and carbon ____ of the sugar residue of the next nucleotide by ____ bonds.
- (1) 5',3', phosphodiester
 - (2) 3',5', phosphodiester
 - (3) 5',3, glycosidic
 - (4) 3',5' glycosidic
25. The integral form of the exponential growth equation
- (1) $N_t = N_0 e^{rt}$
 - (2) $N_0 = N_t e^{rt}$
 - (3) $N_t = N_0 e^{rt}$
 - (4) $rN = N e^{rt}$
26. Evidence of evolution from fossils is known as:
- (1) Paleontological evidence
 - (2) Embryological evidence
 - (3) Physiological evidence
 - (4) Biochemical evidence
27. What type of human population is represented by the following pyramid?



- (1) Expanding population
 - (2) Vanishing population
 - (3) Stable population
 - (4) Declining population
28. A high density of a protected animal in a National Park can result into
- (1) Mutualism
 - (2) Intraspecific competition
 - (3) Emigration
 - (4) Predation
29. Who proposed that the first form of life could have come from pre-existing non-living organic molecules?
- (1) S.L miller
 - (2) Oparin and Haldane
 - (3) Charles Darwin
 - (4) Alfred wallace

30. In cryopreservation germplasm is maintained at
 (1) – 196°F (2) 0°F (3) – 100°F (4) None of these
31. Cyclosporine-A is produced by fungus _____.
 (1) *Trichodermapolysporum* (2) *Penicilliumnotatum*
 (3) *Micromonospora* (4) *Aspergillumsniger*
32. In context of secondary treatment of sewage, 'Flocs' is associated with which microbes?
 (1) Bacteria and algae (2) Algae and fungus
 (3) Fungi and bacteria (4) Fungi and lichen
33. Fungi which form symbiotic associations with plants are _____.
 (1) *Rhizobium* (2) *Mycorrhizae*
 (3) *Azospirillum* (4) *Oscillatoria*
34. The secondary treatment of sewage waste is also known as _____.
 (1) Chemical treatment (2) Physical treatment
 (3) Biological treatment (4) Detoxification
35. The fragmented DNA can be visualized by staining DNA with
 (1) NaCl (2) Ethidium bromide
 (3) Ethylene bromide (4) NaBr
36. Which one of the following diseases is non-communicable?
 (1) Diphtheria (2) Flu (3) Cancer (4) Malaria
37. An antibiotic resistance gene in a vector usually helps in the selection of:
 (1) Competent cells (2) Transformed cells
 (3) Recombinant cells (4) None of the above
38. Which of the following should be chosen for best yield if one were to produce a recombinant protein in large amounts?
 (1) Laboratory flask of largest capacity
 (2) A stirred-tank bioreactor without in-lets and outlets
 (3) A continuous culture system
 (4) Any of the above
39. Select the mismatched pair.
 (1) Biolistics- Gold coated DNA
 (2) Microinjection – Antigen –antibody reaction
 (3) Electroporation –Formation of temporary pores
 (4) None of these
40. Protein encoded gene cry IAb controls:
 (1) Cotton bollworm (2) Beetles
 (3) Corn borer (4) Flies
41. Natural methods for contraception work on the principle of
 (1) Preventing fertilization (2) Preventing implantation
 (3) Preventing ovulation (4) Preventing embryo development
42. A transgenic food crop which may help in solving the problem of night blindness in developing countries is
 (1) Bt cotton (2) golden rice (3) Flavr Savr (4) Bt corn.
43. The ideal contraceptive for females who want to delay pregnancy and/or space children is
 (1) Periodic abstinence (2) Barrier contraceptive
 (3) Hormonal pills (4) IUD

44. Which of the following is the least effective method of birth control?
 (1) Vasectomy (2) Rhythm method
 (3) The pill (4) IUDs
45. The genotypes of husband and wife are $I^A I^B$ and $I^A i$. Among blood types of their children, how many different genotypes and phenotypes are possible?
 (1) 3 genotypes : 3 phenotypes
 (2) 3 genotypes : 4 phenotypes
 (3) 4 genotypes : 3 phenotypes
 (4) 4 genotypes : 4 phenotypes
46. Which of the following is not an ectoparasite?
 (1) Lice on humans (2) Copepods on marine fishes
 (3) Mistletoe on other plants (4) Female anophelids on humans
47. At what temperatures pollen grains can be stored for several years
 (1) -196°C (2) -120°C (3) -160°C (4) -80°C
48. Seminal plasma is rich in which sugar?
 (1) Sucrose (2) Glucose (3) Fructose (4) Maltose
49. In number of insects and mammals the type of sex determination is:
 (1) XO type (2) XY type (3) ZW type (4) Any of the above
50. What is the total number of species present on earth as estimated by Robert May?
 (1) 3 million (2) 5 million (3) 7 million (4) 9 million

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. What is meant by monosporic development of a female gametophyte?
2. Citing lake as an example of a simple aquatic ecosystem, interpret how various functions of this ecosystem are carried out. Make a food chain that is functional in this ecosystem.
3. What are "flocs"? State their role in effluent treatment and their ultimate fate in sewage treatment tank
4. What is the mechanism by which the AIDS Virus causes deficiency of immune system of the infected person?
5. Mention two applications of DNA polymorphism.
6. How is a continuous culture system maintained in Bio-reactors and why?
7. Mention two strategies evolved to prevent self- pollination in flowers.
8. What is parturition? Which hormones are involved in induction of parturition?

9. Discovery of Lobefins is considered very significant by evolutionary biologists. Explain.
10. Why is the Human Genome project called a mega project?
11. In which way has the study of biology helped us to control infection diseases?
12. Differentiate between commensalism and mutualism by giving one example each from plant only.

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. In our society the women are often blamed for giving birth to daughters. Can you explain why this is not correct?
14. Suggest the aspects of reproductive health which need to be given special attention in the present scenario.
15. Draw a labelled diagram of a section through ovary.
16. How does the transmission of each of the following diseases take place?
(i) Amoebiasis (ii) Malaria (iii) Ascariasis (iv) Pneumonia
17. Differentiate between the following
(i) Repetative DNA and Satellite DNA
(ii) mRNA and tRNA
18. How are dominance, co-dominance and incomplete dominance patterns of inheritance different from each other?
19. Make a chart (with diagrammatic representation) showing a restriction enzyme, the substrate DNA on which it acts, the site at which it cuts DNA and the product it produces
20. (a) Differentiate between spermatogenesis and spermiogenesis.
(b) Mention the role of mitochondria in sperm.
21. Explain three basic steps to be followed during genetic modification of an organism.

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. Briefly describe the following:
(a) Transcription
(b) Polymorphism
(c) Translation
(d) Bioinformatics
23. What is oogenesis? Give a brief account of oogenesis.
24. Differentiate between in situ and ex situ approaches of conservation of biodiversity.
25. How is determination in honey bees different that other insects? Also explain sex determination in insects & birds.
26. (a) Describe the stage of embryo development in dicot plant.
(b) Draw a schematic labelled diagram of fertilized embryo sac of an angiosperm plant.
27. What are the features required by a vector, to be use for cloning in Biotechnology?