

(Pages : 7)

BIOTECHNOLOGY

Maximum : 100 Marks

Tick the correct answer and write the alphabet on right side of the question.

Section A (Multiple Choice Questions)

Each question carries 1 mark and $\frac{1}{2}$ mark will be reduced for wrong answer.

- Which among is India's indigenous Covid-19 vaccine ?
 - Covishield.
 - Covaxin.
 - Pfizer.
 - Sinovac.
- The technique used in the production of Flavr savr Tomato :
 - Si RNA technology.
 - Ribozyme technology.
 - Antisense RNA technology.
 - MicroRNA technology.
- The dye is taken up by live cells.
 - Trypan blue.
 - Eosin.
 - Propidium.
 - Acridine orange.
- Which of the following is a sequence alignment tool ?
 - BLAST.
 - PRINT.
 - PROSITE.
 - PIR.
- Rho factor is involved in :
 - Transcription termination.
 - Transcription initiation.
 - Translation termination.
 - Translation initiation.
- The Bacterial start codon is :
 - UAG.
 - AUG.
 - UGA.
 - AAA.
- Cosmids are :
 - Plasmids with *att* sites.
 - Phage's with *att* sites.
 - Plasmids with *cos* sites.
 - Phage's with *cos* sites.

Turn over

8. Antibodies are produced by :
- a) A cells.
 - b) B cells.
 - c) C cells.
 - d) T cells.
9. Part of an antigen that is recognized by the immune system is :
- a) Paratope.
 - b) Epitope.
 - c) Agrotype
 - d) Hapten.
10. The synthesis of proteins involves polymerisation of :
- a) Amino acids.
 - b) Glucose.
 - c) Monosaccharides.
 - d) Nucleotides.
11. Catalytic RNA molecule is known as :
- a) Abzyme.
 - b) mRNA.
 - c) Ribozyme.
 - d) Sn RNA.
12. Phylogenetic relationship can be shown by
- a) Dendrogram.
 - b) Gene Bank.
 - c) Data retrieving tool.
 - d) Data Search tool.
13. In SDS-PAGE separation is based on :
- a) Molecular weight.
 - b) Shape.
 - c) Charge.
 - d) All of the above.
14. Which among the following is not the property of cancerous cells ?
- a) Anchorage independence.
 - b) Contact inhibition.
 - c) Metastasis.
 - d) Uncontrolled division.
15. The principle of *lac* selection is a :
- a) α Complementation.
 - b) σ Complementation.
 - c) Blue- white selection.
 - d) None of the above.
16. Triploid plants can be generated by :
- a) Ovary culture.
 - b) Anther culture.
 - c) Ovule culture.
 - d) Endosperm culture.

17. Which among the following is an expression vector ?
- a) pUC 18.
 - b) pBR 322.
 - c) pCambia.
 - d) pET.
18. Role of micro-organisms in fermentation was discovered by :
- a) Louis Pasteur.
 - b) Robert Koch.
 - c) Joseph Lister.
 - d) Alexander Fleming.
19. Gas having the highest greenhouse effect :
- a) CO_2 .
 - b) CH_4 .
 - c) CO.
 - d) N_2O .
20. Which of the following vector can carry the largest insert ?
- a) Plasmids.
 - b) BACs.
 - c) YACs.
 - d) Cosmids.
21. The addition of micro-organism which favors health benefits :
- a) Antibiotics.
 - b) Probiotics.
 - c) Prebiotics.
 - d) Adjuvants.
22. The odorless component of LPG :
- a) Butane.
 - b) Propane.
 - c) Ethyl mercaptan.
 - d) Ethane.
23. Which among is a fungal biopesticide ?
- a) Neurospora.
 - b) Beauveria bassiana.
 - c) Aspergillus.
 - d) Penicillium.
24. The Dengue fever virus is :
- a) Arbovirus.
 - b) Ecaovirus.
 - c) Entrovirus.
 - d) Orthomyxovirus.
25. Which among is a bottom yeast :
- a) *S.cerevisiae*.
 - b) *S. ellipsoides*.
 - c) *S.uvarum*.
 - d) *S. pomae*.

Turn over

26. Which one function as colour fixative :
- a) Sod.chloride.
 - b) Sod. butyrate.
 - c) Sod.nitrate.
 - d) Sod.sulphate.
27. The renal threshold for glucose is :
- a) 140 mg/dl.
 - b) 160 mg/dl.
 - c) 200 mg/dl.
 - d) 250 mg/dl.
28. Which of the following antibiotic inhibits cell wall synthesis ?
- a) Erythromycin.
 - b) Tetracycline.
 - c) Streptomycin.
 - d) Vancomycin.
29. Which of the following is suitable for the primary screening for the antibiotic Producers ?
- a) Crowded plate technique.
 - b) Auxanography
 - c) Disc diffusion test.
 - d) Spread plate method
30. The major organism used for production of Citric acid :
- a) *Pencillium notatum*.
 - b) *Rhizopus nigrificins*.
 - c) *Aspergillus niger*.
 - d) Yeast.
31. Indigenous ecosystem of micro-organisms are called :
- a) Zymogenous.
 - b) Autochthonous.
 - c) Allochthonous.
 - d) Autogenous.
32. Which of the following is not coming under Archaea ?
- a) Methanogens.
 - b) Halophiles.
 - c) Thermoacidophiles.
 - d) Cyanobacteria.
33. Which type of spores are produced sexually ?
- a) Conidia.
 - b) Sporangiospores.
 - c) Ascospores.
 - d) None of these.
34. A naturally occurring anticoagulant :
- a) EDTA.
 - b) Sodium citrate.
 - c) Heparin.
 - d) Calcium Oxalate.

35. Rancidity in spoiled food is due to :
- a) Lipolytic organisms.
 - b) Saccharolytic microbes.
 - c) Proteolytic organisms.
 - d) Amylolytic activity.
36. Natto is a fermented food of :
- a) Soybean.
 - b) Cabbage.
 - c) Fish.
 - d) Rice.
37. Histones are found in :
- a) Prokaryotes.
 - b) Eukaryotes.
 - c) Viruses.
 - d) None of these.
38. The enzyme required for DNA from RNA template :
- a) RNA polymerase.
 - b) Reverse transcriptase.
 - c) DNA polymerase.
 - d) Terminal transferase.
39. T cells are :
- a) Neutrophils.
 - b) Basophils.
 - c) Eosinophils.
 - d) Lymphocytes.
40. Discontinuous heating for sterilization is called :
- a) Sterilization.
 - b) Pasteurization.
 - c) Tyndallisation.
 - d) Fermentation.
41. Natural competency for transformation occur on :
- a) E.coli
 - b) Bacillus subtilis.
 - c) Bacillus licheniformis.
 - d) Pseudomonas aeruginosa.
42. The major carrier of Salmonellosis :
- a) Meat and Egg.
 - b) Meat and Fish.
 - c) Fruit and Egg.
 - d) Egg and Fish.
43. BOD used for the measurement of :
- a) Atmospheric pollution.
 - b) Nuclear pollution.
 - c) Sewage pollution.
 - d) Thermal pollution.

44. Which of the following is a method of disinfection ?
- a) Chlorination.
 - b) Sedimentation.
 - c) Coagulation.
 - d) Fermentation.
45. The plasmid present in *Agrobacterium rhizogene* :
- a) Col plasmid.
 - b) Ti plasmid.
 - c) Ri plasmid.
 - d) Tol plasmid.
46. The 1st Asian to get Nobel Prize for Physiology and Medicine :
- a) Sir C.V. Raman.
 - b) Har Gobind Khorana.
 - c) Kenichi Fukui.
 - d) Federic Sanger.
47. Which one is a heat labile hormone ?
- a) Zeatin.
 - b) BAP.
 - c) IAA.
 - d) 2-4-D.
48. Height in man is an example of :
- a) Monogenic inheritance.
 - b) Polygenic inheritance.
 - c) Dipsogenic inheritance.
 - d) None of the above.
49. The most effective way to analyse variation at the whole genome level is to use :
- a) Single Nucleotide Polymorphism (SNP).
 - b) Structural DNA.
 - c) Segmental duplication.
 - d) Number of transposons.
50. Biodiesel obtained from :
- a) *Calotropis*.
 - b) *Catharanthus rosea*.
 - c) *Jatropha curcus*.
 - d) *Acacia*.

(50 × 1 = 50 marks)

Section B

*Write briefly about any **ten** question.*

Each question carries 5 marks.

51. What is somatic hybrids ? How they develop and discuss its vast application in plant breeding ?
52. Discuss about current status of vaccine development and production in India.
53. What are the major environmental threats faced by Kerala and comment on your opinion about possible measures to control it.
54. Role of Biotechnology research to boost startup program in India.
55. Methods to develop, haploids and application of haploid production.
56. Globally and specifically in India AMR rate rising. What is major reason for this and propose the remedial measures to reduce the rate ?
57. In pandemic situation teaching mode is changed to online mode discuss its pros and cons. What is your opinion about online research ?
58. What is the principle of GC MS ? Explain the working procedure and vast research applications in biological sciences.
59. What is CRISPR CAS 9 technology ? Discuss the procedure of CRISPER technology and its applications.
60. What is hybridoma ? How it is used for the production of monoclonal antibody.
61. Explain any four methods for scaling up of monolayer culture.
62. Discuss about biosafety levels and containment of biohazards.
63. Discuss about the environmental release of GMO's.
64. What is SCP ? Explain microalgae as SCP.

(10 × 5 = 50 marks)