Duration :3 Hrs

Maximum Marks : 75

N.B. : 1. All questions are compulsory
2. Figures to right indicate full marks

Q. I **Choose the appropriate option for following multiple choice based questions.** **20M**

1. The function of the transducer in a biosensor is

a) It is used for immobilization of the enzyme

b) It converts the interaction between the analyte and the immobilized enzyme into a measurable signal

c) used to display the signal

d) used for the isolation of the bioanalyte

2. Biotechnology at its core is about

a) understanding life and using this knowledge to benefit people

b) understanding life and using this knowledge to benefit the industry only

c) understanding life and using this knowledge to do only basic research

d) understanding life and using this knowledge to benefit citizens of only our country.

3. The correct flow chart of Biosensor is

a) Bioreceptor-Biosample-Transducer-signal processing-display

b) Transducer-signal processing-display-Biosample-Bioreceptor

c) Biosample-Bioreceptor-Transducer-signal processing-display

d) Display-signal processing-Biosample-Bioreceptor-Transducer-signal processing

4. An Enzyme is immobilized to.....

a) decrease its activity

b) stabilize it.

c) reduce the enzymatic reaction

d) denature it.

5. Ethics includes assessment of

a) the rights and wrongs of the specific technologies and applications

b) the right things of the specific technologies and applications

c) the wrong things of the specific technologies and applications

d) only theoretical aspects of the specific technologies and applications

6. Which of the following vector is obtained from a bacteria:

a) Cosmid

b) Plasmid

c) Phage lambda

d) Shuttle

7. Which of the following is incorrect

a) Therapeutic proteins can be obtained from microorganisms by recombinant DNA technique.

b) Weight of fish can be increased by using recombinant DNA technique

c) Vitamins can be obtained by using recombinant DNA technique

d) All the products obtained through recombinant DNA techniques are not safe for human health.

8. Vector is required in rDNA technology to

a) amplify the foreign gene

b) transfer a gene from animal to another

c) isolate the foreign gene

d) join the foreign gene

9. The denaturation temperature in the PCR is

a) 50^0c

b) 40^0c

c) 94^0c

d) 37^0c

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10. The transgenic golden rice contains genes for

a) vitamin A

b) vitamin D

c) vitamin C

d) vitamin E

11. Following is live attenuated viral vaccine

a) Salk polio vaccine

b) Sabine polio vaccine

c) Diphtheria Vaccine

d) Tetanus Vaccine

12. MHC class I molecule binds to

a) CD4 adhesion molecule of TH cells

b) CD8 adhesion molecule of Tc cells

c) CD4 adhesion molecule of Tc cells

d) CD8 adhesion molecule of TH cells

13. In antibody structure Two identical heavy chains and two identical light chains connected by

a) Hydrogen bond

b) Disulfide Bond

c) Ionic bond

d) Covalent bond

14. _____ are added to vaccines to promote an immune response

a) Stabilisers

b) Diluents

c) Adjuvants

d) Preservatives

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15. Following component of the immune system is part of humoral immunity

a) Natural killer cells

b) Basophills

c) Granulocytes

d) Antibodies

16. _____ technique is used in specific detection of DNA.

a) Southern

b) Northern

c) Western

d) Eastern

17. _____ mutants will not grow when the essential metabolites (growth factor) are absent in culture media.

a) Metabolic mutants

b) Auxotrophic mutants

c) Regulatory mutant

d) Cryptic mutant

18. _____ is the process in which viruses are used to transfer genetic material from one bacterium to another

a) Transformation

b) Transduction

c) Conjugation

d) Transversion

19. Packed bed column is a _____ type of fermentor.

a) Mechanically stirred

b) Forced conviction

c) Pneumatic

d) Surface

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20. Blackstrap molasses are used as a _____ in fermentation.

a) Carbon source

b) Nitrogen source

c) Buffering agents

d) Antifoaming agent

Q. II Long Answer Questions **Any Two** Out of three **20M**

a) Describe protein engineering in detail. (10)

b) Describe plasmid & cosmid cloning vectors in detail. (10)

c) Define Monoclonal antibodies? Explain production of monoclonal antibodies using hybridoma technology. Give any two applications of monoclonal Antibodies. (10)

Q. III Short Answer Questions (Answer **Any Seven**) **35M**

a) Describe design of fermenter and enlist various controlling parameters with monitoring devices used in fermentation. (05)

b) Write a note on Collection and processing of whole human blood. (05)

c) Describe in detail production of Vitamin B12 by fermentation. (05)

d) Enlist blotting techniques with their applications and Explain any one technique. (05)

e) Write a short note on Microbial Biotransformation. (05)

f) Define Mutation, explain types of microbial mutants. (05)

g) Write a short note on hypersensitivity. (05)

h) Explain the method of obtaining interferon by recombinant DNA technology (05)

i) Explain the process of production of catalase enzyme by fermentation in detail. (05)

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