

Question Paper

Exam Date & Time: 21-May-2024 (10:00 AM - 01:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

End Semester Examination
Manipal Academy of Higher Education, Manipal
VI Semester B. Pharm
(Choice Based Credit System CBCS)
Course Code & Course : PBT-BP605T: Pharmaceutical Biotechnology

Max.Marks: 75

Pharmaceutical Biotechnology [PBT-BP605T-S1]

Marks: 75

Duration: 180 mins.

I Multiple Choice Questions (MCQs)

Answer all the questions.

Section Duration: 30 mins

1) Which of the following is NOT the major stabilizing force of a polypeptide's overall conformation? (1)

- [Hydrophobic interactions](#)
- [Electrostatic attractions](#)
- [Covalent linkages](#)
- [Hydrophilic interactions](#)

2) Analytical devices that convert a biological response into an electrical signal is ----- (1)

- [Transducer](#)
- [Electrode](#)
- [Biosensor](#)
- [Western blot](#)

3) Which of the following is NOT the benefit of enzyme immobilization? (1)

- [Better process economy](#)
- [Increased activity of enzyme](#)
- [Easy product recovery](#)
- [Increase stability of enzyme](#)

4) Major source of γ -interferon includes (1)

- [Monocytes](#)
- [T- Cells](#)
- [Fibroblasts](#)
- [Epithelial cells](#)

5) Type III Hypersensitivity reaction is: (1)

- [Antigen mediated immune response](#)
- [Immune complex mediated hypersensitivity](#)
- [Immediate reaction](#)

[Delayed hypersensitivity](#)

6) _____ is used to prevent clump formation during reconstitution of vaccine with sterile saline. (1)

[Polyoxy-ethylene ester](#)

[Formaldehyde](#)

[Sodium](#)

[metabisulphite](#)

[Polyoxy-ethylene](#)

[ether](#)

7) The secretory antibody is: (1)

[IgD](#)

[IgE](#)

[IgA](#)

[IgG](#)

8) Which of the following organism produces an exotoxin? (1)

[Clostridium tetani](#)

[Salmonella typhi](#)

[Vibrio cholerae](#)

[Bordetella pertussis](#)

9) Yellow fever vaccine production involves attenuation by:----- (1)

[Growing the organism in artificial conditions](#)

[Growing the organism at unfavourable temperature](#)

[Drying](#)

[Growing the organism in an unnatural host](#)

10) Which of the following organism's genome is made entirely of retrotransposons ? (1)

[Homo sapiens](#)

[Mus musculus](#)

[Saccharomyces cerevisiae](#)

[Trichomonas vaginalis](#)

11) Which of the following ELISA technique is a single antibody method? (1)

[Direct ELISA](#)

[Indirect ELISA](#)

[Sandwich ELISA](#)

[Competitive ELISA](#)

12) Which of the following is NOT a feature of bacterial conjugation? (1)

[Pilus formation](#)

[Transfer of F plasmid](#)

[Physical contact](#)

[Packing of host genome into bacteriophage vector capsid](#)

13) The organism which helps the biotransformation of progesterone and testosterone is----- (1)

[Cephaslosporium aphidicola](#)

[Rhodococcus globerulus](#)

[Trichothecium roseum](#)

- 14) Aspergillus wentii
The purpose of using 0.2M HCl in Southern blotting is ----- (1)
- Denaturation
Purination
Depurination
Stabilization
- 15) Aspect ratio of a fermentor is----- (1)
- Inoculum size to seed tank volume ratio
Height to diameter ratio
Diameter to height ratio
Impeller shaft to vane length ratio
- 16) Sugar medium used for citric acid production is----- (1)
- Beet molasses
Black strap molasses
Corn steep liquor
Chitin
- 17) The acceptable size range of dextran as a suitable plasma substitute is (1)
- 30,000 to 60,000
40,000 to 1,00,000
1,00,000 to 2,50,000
1,50,000 to 3,00,000
- 18) Identify the two major pathways and their proportion in the utilization of glucose for citric acid production. (1)
- EMP and TCA in the proportion 2:1
EMP and HMP in the proportion 1:2
80% EMP and 20% TCA
80% EMP and 20% HMP
- 19) In fermentation, controlling the growth rate of the microorganism by adjusting the concentration of any one of the chemical component of the medium is ----- (1)
- Chemostat
Turbidostat
Single stage fermentation
Solid state fermentation
- 20) Before extraction of penicillin, the filtrate is _____ by the addition of _____ (1)
- Acidified, H₂SO₄
Acidified, HCl
Neutralised, Phosphate Buffer
Basified, Na₂CO₃

II Long Answers

Answer all the questions.

- 1) Explain the steps involved in the production of Insulin by recombinant DNA technology. (10)

- 2) Define fermentation and discuss various types of fermentations. Add a note on controlling elements of a typical fermentor. (8+2) (10)

III Short Answers

Answer all the questions.

- 1) Write a note on the types of electrodes used in biosensors. Mention the applications of biosensors. (5)
- 2) Classify the approaches used in protein engineering. Elaborate on site directed mutagenesis. (5)
- 3) What are plasmids? Give the nomenclature and features associated with pBR322. (5)
- 4) What is attenuation? What are the different means to achieve it? Add a note on the advantages and disadvantages associated with attenuated vaccines. (5)
- 5) "Our immune system responds more rapidly to second antigen exposure compared to initial antigen exposure". Justify the given statement and elaborate on the same with a graphical representation. (5)
- 6) Explain the methods of gene transfer from a donor to a recipient bacterium through physical contact. (5)
- 7) Expand ELISA and enlist various types. Discuss sandwich ELISA as an antigen detection method. (5)

-----End-----