

Question Paper

Exam Date & Time: 13-May-2023 (10:00 AM - 01:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

BPharm Theory End-Semester Examinations - May 2023

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 category of enzymes are employed in the commonly used enzyme based biosensors? (1)
[Oxidoreductases](#)
[Transferases](#)
[Hydrolases](#)
[Isomerases](#)
- 2) Glutathione is a/an (1)
[Dipeptide](#)
[Tripeptide](#)
[Octapeptide](#)
[Tetrapeptide](#)
- 3) Name the enzyme used for clarifying fruit juices (1)
[Lipase](#)
[Pectinase](#)
[Peptidase](#)
[Sucrase](#)
- 4) The depurinating agent used in Southern blotting is (1)
[0.5M NaOH](#)
[0.2M NaOH](#)
[0.5M HCl](#)
[0.2M HCl](#)
- 5) Plasmid essential for conjugation process in bacteria is (1)
[F factor](#)
[R Plasmid](#)
[Col Plasmid](#)
[Virulence factor](#)
- 6) Which of the following is NOT a characteristic sequence of transposons? (1)
[Insertion sequence](#)
[Terminal inverted repeat](#)
[Flanking direct repeat](#)
[Restriction site](#)

- 7) The organism capable of biotransforming Resveretrol to Piceatannols is (1)
- [Aspergillus T-36 strain](#)
[Streptomyces sp. strain SB-14](#)
[Mucor spinosus AS 3.3450](#)
[Proteus vulgaris AS 1.1208](#)
- 8) Which of the following is a label-free immunoassay? (1)
- [Western Blotting](#)
[RIA](#)
[Agglutination](#)
[Micro array](#)
- 9) Which of the following statements about blood collection is correct? (1)
- [Blood can be collected from any adult of age group 18 to 60 years](#)
[Haemoglobin content not less than 8.7 and 10.0% for female and male donors, respectively](#)
[Not more than 700ml blood collected at one attendance](#)
[Blood is collected from median cubital vein in front of elbow into sterile container containing suitable anticoagulant](#)
- 10) In fermentation, controlling the growth rate of the microorganisms by adjusting the concentration of any one of the components of the medium is known as (1)
- [Turbidostat](#)
[Chemostat](#)
[Single stage fermentation](#)
[Solid state fermentation](#)
- 11) Which of the following methods is NOT adopted for Penicillin fermentation? (1)
- [Solid state fermentation](#)
[Surface liquid fermentation](#)
[Fed batch process](#)
[Air lift fermentation](#)
- 12) The principal fungus used for the commercial citric acid production is (1)
- [Aspergillus](#)
[Streptomyces](#)
[Penicillium](#)
[Mucor](#)
- 13) One of the following precursors is essential for the fermentative production of Vitamin B12 by microbes (1)
- [Copper](#)
[Manganese](#)
[Cyanide](#)
[Iron](#)
- 14) Which of the following is a closed culture system? (1)
- [Batch fermentation](#)
[Fed batch fermentation](#)
[Continuous fermentation](#)
[Solid state fermentation](#)

- 15) The term 'Insertional inactivation' in genetic engineering refers to (1)
- [Inactivation of recombinant protein after it is secreted by the organism](#)
 - [Inactivation of origin of replication present in the plasmid vector](#)
 - [Inactivation of selectable marker after insertion of gene of interest](#)
 - [Insertion of inactivated gene of interest into the plasmid](#)
- 16) Inactivation/killing of microorganisms used for vaccine preparation are done by treating them with (1)
- [moist heat treatment](#)
 - [thiomersal reagent](#)
 - [sodium metabisulfite](#)
 - [alkylating agent](#)
- 17) One of the following types of vaccines is a classic example for recombinant antigenic preparation (1)
- [Oral Polio Vaccine \(OPV\)](#)
 - [Hepatitis B Vaccine \(HBV\)](#)
 - [Rabies Vaccine](#)
 - [BCG Vaccine](#)
- 18) In the production of mAbs, the fused cells are incubated for 2-4 weeks before selecting a suitable clone to (1)
- [Provide time for synthesis of DNA in cancer cells](#)
 - [Prevent the death of splenocytes](#)
 - [Eliminate the unfused B cells](#)
 - [Facilitate clonal expansion](#)
- 19) The type of cytokine released in response to virus infection is (1)
- [Type I Interferons](#)
 - [Type II Interferons](#)
 - [Type III Interferons](#)
 - [Interleukins](#)
- 20) Name the first cell recruited at the place of infection (1)
- [Natural killer cells \(NK cells\)](#)
 - [Complementary system](#)
 - [Polymorphonuclear leukocytes \(PMNL\)](#)
 - [Macrophages](#)

II Long Answers

Answer all the questions.

- 1) Discuss the production of human insulin by recombinant DNA technology. (10)
- 2) Explain in detail the mechanism of protection offered by humoral and cell mediated immunity. (10)

III Short Answers

Answer all the questions.

- 1) Define enzyme immobilization and mention its advantages. Add a note on support binding as a method of immobilization. (5)

- 2) Explain the role and method of protein engineering by 'Site directed mutagenesis'. (5)
- 3) Describe the principle and the steps involved in polymerase chain reaction. (5)
- 4) Enlist ELISA methods and explain sandwich ELISA. (5)
- 5) Explain the conjugation mode of gene transfer. (5)
- 6) Sketch the design of a typical fermentor and elaborate on its basic elements. (5)
- 7) Write a note on industrial production of Penicillin. (5)

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