

Question Paper

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



MANIPAL ACADEMY OF HIGHER EDUCATION

Pharmaceutical Biotechnology (Theory) [PBT-BP605T-S2]

Marks: 75

Duration: 180 mins.

I Multiple Choice Questions (MCQs)

Answer all the questions.

Section Duration: 30 mins

1) For the determination of which amino acid did Rechnitz develop the first tissue-based biosensor? (1)

[Alanine](#)

[Arginine](#)

[Phenylalanine](#)

[Tyrosine](#)

2) Aspartame is a/an (1)

[Dipeptide](#)

[Tripeptide](#)

[Octapeptide](#)

[Polypeptide](#)

3) Most important and vital α -amylases are obtained from all except (1)

[Bacillus](#)

[amyloliquefaciens](#)

[Bacillus licheniformis](#)

[Aspergillus oryzae](#)

[Streptomyces griseus](#)

4) The purpose of using 0.2M HCl in Southern blotting is (1)

[Denaturation](#)

[Depurination](#)

[Purination](#)

[Stabilization](#)

5) The type of gene transfer with the aid of a virus in which lysogeny is a key feature is (1)

[HFr Conjugation](#)

[Generalized](#)

[transduction](#)

[Specialized transduction](#)

[Transformation](#)

6) Most of the substantial portion of the mobile human genome consists of (1)

[Class I TEs](#)

[Class II](#)

[TEs](#)

[IS elements](#)

ORFs

- 7) The organism capable of biotransforming Camptothecin to 10-hydroxy camptothecin is (1)
- [Aspergillus T-36 strain](#)
[Streptomyces sp. Strain SB-14](#)
[Mucor spinosus AS 3.3450](#)
[Proteus vulgaris AS 1.1208](#)
- 8) In Sandwich ELISA, the interpretation of the result is based on (1)
- [Direct proportionality of colour response to patient antibody](#)
[Direct proportionality of colour response to patient antigen](#)
[Indirect proportionality of colour response to patient antigen](#)
[Indirect proportionality of colour response to patient antibody](#)
- 9) Which of the following is NOT the property of an ideal plasma substitute? (1)
- [Same colloidal osmotic pressure as the whole blood](#)
[Viscosity is similar to that of plasma](#)
[Molecular weight such that the molecules do not easily diffuse through the capillary walls](#)
[Fairly high rate of excretion or destruction by the body](#)
- 10) The aspect ratio of a fermenter is (1)
- [Inoculum size to seed tank volume ratio](#)
[Height to diameter ratio](#)
[Diameter to height ratio](#)
[Impeller shaft to vane length ratio](#)
- 11) The optimum pH for penicillin production is (1)
- [4.2-5.5](#)
[5-6](#)
[7-7.5](#)
[8.5-9](#)
- 12) The sugar medium used for citric acid production is (1)
- [Beet molasses](#)
[Blackstrap molasses](#)
[Corn steep liquor](#)
[Chitin](#)
- 13) The major organism widely used for Vitamin B12 production is (1)
- [Mucor](#)
[Aspergillus](#)
[Streptomyces](#)
[Schizo](#)
[saccharomyces](#)
- 14) Which of the following is NOT a type of fed-batch fermentation? (1)
- [Variable Volume Fed-Batch Culture](#)
[Fixed Volume Fed-Batch Culture](#)
[Cyclic Fed-Batch Culture](#)

[Static Fed-Batch Culture](#)

- 15) The leading and lagging strands of DNA where restriction enzyme cleaves are known to possess, (1)
- [GC-rich regions](#)
[polyadenine tail](#)
[Palindromic sequence](#)
[tandem repeats](#)
- 16) Which of the following antibody can have a pentameric structure? (1)
- [IgG](#)
[IgM](#)
[IgA](#)
[IgE](#)
- 17) Which of these is NOT a characteristic feature of adaptive immunity? (1)
- [Immunogenic memory](#)
[Phagocytosis](#)
[Self and non-self-recognition](#)
[Diversity](#)
- 18) Which of these cell types plays a central role in adaptive immune response? (1)
- [Helper T cells](#)
[Natural Killer cells](#)
[Dendritic cells](#)
[Phagocytic cells](#)
- 19) An activated Cytotoxic T (T_C) cell can kill any nucleated cell expressing a complex composed of (1)
- [MHC class I and an antigenic molecule](#)
[MHC class II and an antigenic molecule](#)
[MHC class I and a cytokine messenger protein](#)
[MHC class II and a cytokine messenger protein](#)
- 20) The antigen-binding region of an antibody molecule is found in the (1)
- [V_H Region](#)
[V_L Region](#)
[V_H and V_L Region](#)
[Fab Region](#)

II Long Answers

Answer all the questions.

- 1) Discuss in detail the production of Human insulin by recombinant DNA technology. (10)
- 2) Explain the process involved in the production of monoclonal antibodies using hybridoma technology. (10)

III Short Answers

Answer all the questions.

- 1) Write a note on fluorescent biosensors. (5)
- 2) Mention the applications of proteases and elaborate on alkaline proteases. (5)
- 3) What are vaccines? Classify vaccines with suitable examples for each type. (5)
- 4) Classify ELISA methods and explain competitive ELISA. (5)

- 5) Write a note on Transduction. (5)
- 6) Discuss the design features, merits and demerits of continuous stirred tank and air lift fermenters. (5)
- 7) Enlist the properties of an ideal plasma substitute and write a note on dextran. (5)

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