

PARUL UNIVERSITY
FACULTY OF PHARMACY

B. Pharm. Summer 2022 - 23 Examination

Semester: 6**Subject Code: BP605T****Subject Name: Pharmaceutical Biotechnology****Date: 24/04/2023****Time: 10:00am To 1:00pm****Total Marks: 75****Instructions:**

1. Figures to the right indicate maximum marks.
2. Make suitable assumptions wherever necessary.

Q.1 Multiple Choice Questions (MCQs) (1 Mark Each)**(20)**

1. In which of the following method, the enzyme is bound to a suitable adsorbent material rendering it immobile?
 - a) Covalent Bonding
 - b) Membrane entrapment
 - c) Adsorption
 - d) All of these
2. If the physical change accompanying the reaction is heat output, the biosensors are referred to as _____
 - a) Potentiometric biosensors
 - b) Calorimetric biosensors
 - c) Optical biosensors
 - d) Amperometric biosensors
3. _____ step is performed after the directed mutagenesis of the gene?
 - a) Gene editing
 - b) Gene recombination
 - c) 2D NMR
 - d) Gene Expression
4. _____ is not obtained from animal pancreas?
 - a) Catalase
 - b) Chymotrypsin
 - c) Lipase
 - d) Trypsin
5. Klenow fragment is the modified enzyme of which of the parent DNA polymerase?
 - a) DNA polymerase I
 - b) DNA polymerase II
 - c) DNA polymerase III
 - d) DNA polymerase IV
6. Which of the following does not produce cohesive ends upon cleavage on their recognition sequences?
 - a) EcoR-I
 - b) Pvu-II
 - c) BamH-I
 - d) Hind-III
7. Which of the following is a mismatch?
 - a) Polymerase – Taq polymerase
 - b) Template – double stranded DNA
 - c) Primer – oligonucleotide
 - d) Synthesis – 5' to 3' direction
8. How many DNA duplex is obtained from one DNA duplex after 6 cycles of PCR?
 - a) 64
 - b) 32
 - c) 16
 - d) 128
9. Which of the following is type IV hypersensitivity?
 - a) Immediate hypersensitivity
 - b) Immune complex
 - c) Delayed type hypersensitivity
 - d) None of these
10. Which of the following complement component facilitate opsonization and phagocytosis?
 - a) C3a
 - b) C3b
 - c) C5a
 - d) C5b
11. _____ Polypeptide encoded by chromosome 15, attached to $\alpha 3$ subunit, is important for the expression of MHC I on the cell membrane.
 - a) Interferons
 - b) Lymphokines
 - c) β_2 -microglobin
 - d) Interleukins
12. All are Monoclonal antibodies except:
 - a) Tamoxifen
 - b) Transtuzumab
 - c) Rituximab
 - d) Infliximab

13. Labelled antibodies are used to detect
- | | |
|---|--|
| a) The presence of particular DNA molecule in southern blotting | b) The presence of particular RNA molecule in western blotting |
| c) The presence of particular Protein molecule in southern blotting | d) The presence of particular Protein molecule in western blotting |
14. Nucleosome is made up of _____
- | | |
|------------------------------|---|
| a) DNA, histone core protein | b) DNA, histone core protein, linker H1 |
| c) RNA, histone core protein | d) RNA, histone core protein, linker H1 |
15. On the mechanism of the movement of transposable elements they are of _____ types.
- | | |
|------|------|
| a) 1 | b) 2 |
| c) 3 | d) 4 |
16. _____ lack the F factor (fertility factor) and are labeled as F⁻
- | | |
|-------------------------------|----------------------------------|
| a) Female cells | b) Male cells |
| c) Both male and female cells | d) Neither male nor female cells |
17. What is the basic function of the fermenter?
- | | |
|---|---------------------------|
| a) To sterilize the medium | b) To recover the product |
| c) To provide optimum growth conditions to organisms and obtain the desired product | d) To purify the product |
18. pH required for the production of penicillin by fermentation is _____
- | | |
|--------------|------------|
| a) 6.4 - 6.8 | b) 7.5-8.0 |
| c) 5.0 – 6.0 | d) 4.5-6.0 |
19. Which of the following is used as the precursor for Griseofulvin production?
- | | |
|-----------------|---------------------|
| a) Cyanides | b) Chloride |
| c) β- Iononones | d) Anthranilic acid |
20. Cyanide is used as a precursor for production of _____
- | | |
|----------------|----------------|
| a) Carotenoids | b) Vitamin B12 |
| c) Riboflavin | d) Vitamin B2 |

Q.2 Long Answers (any 2 out of 3) (10 Mark Each)

(20)

- a) What is biosensor? Write a note on working and pharmaceutical applications of biosensors.

b) Write a note on method used for the detection and quantification of DNA.
- a) Define vector. Enlist the properties of cloning vectors. Write in detail about PBR322 with a neat labelled diagram.

b) Explain production of Hepatitis- B vaccine by genetic engineering technique.
- a) Write a note on general method of the preparation of viral vaccines and narrate its storage conditions.

b) How vitamin B-12 is produced on large scale by fermentation technique?

Q.3 Short Answers (any 7 out of 9) (5 Mark Each)

(35)

- Write a note on Protein Engineering. Give its applications.
- Narrate the scope and applications of Pharmaceutical Biotechnology.
- Write a note on method used for *in-vitro* gene multiplication.
- Identify the technique used for the production of monoclonal antibodies. Give the applications of the same.
- Differentiate between different types of hypersensitivity reactions.
- Write a note on genomic organization of prokaryotic genome.
- Explain viral mediated gene transfer method. What is the fate of cell if viral genome is separated from prophage?
- Draw a neat labelled diagram and explain the construction of industrial scale fermenter with its controls.
- Write a note on collection, processing and storage of plasma substitutes