

Mark scored:

KATHMANDU UNIVERSITY
End Semester Examination
July/August, 2018

Level : B. Pharm.
Year : IV

Course : PHAR 422
Semester: II

Exam Roll No. :

Time: 30 mins.

F. M. : 20

Registration No.:

Date Aug 03 2018

SECTION "A"

[20 Q × 1 = 20 marks]

Check (✓) the correct answer of the following multiple choice questions:

1. The first biopharmaceutical product of rDNA technology which was approved for human use is
a. Growth hormone b. Human insulin c. Interferon d. Interleukin
2. Some enzymes require the presence of a non-protein substance if they are to catalyze a reaction. Which of the following terms is the best general term for such a substance?
a. Cofactor b. Coenzyme c. Prosthetic group d. Modulator
3. Glutamine synthetase is an example of enzymes catalyzing formation of C-N bonds and is responsible for catalyzing following reaction
 $ATP + L\text{-Glutamate} + NH_4^+ = ADP + \text{orthophosphate} + L \text{ glutamine}$
According to IUB system, this enzyme is classified into:
a. Oxidoreductase b. Hydrolases c. Isomerases d. Ligases
4. Which of the following is considered as a disadvantage to the physical adsorption method of immobilization?
a. It is possible to separate and purify the enzymes after being immobilized
b. The enzymes are not usually damaged by adsorption
c. The adsorption is a reversible process
d. State of immobilization is very sensitive to solution pH, ionic strength and temperature
5. Which of the following is not the lattice entrapment method of enzyme immobilization?
a. Organic polymerization by chemical reaction
b. Temperature induced gelation
c. Interfacial Polymerization Method
d. Precipitation from an immiscible solvent
6. All of the following are examples of secondary metabolite of microorganism except:
a. Citric acid b. Penicillin c. Griseofulvin d. Cephalosporin
7. Which of the following is not the physical treatment of effluent treatment process?
a. Screens to remove larger matter b. Trickling filter
c. Constant velocity channels d. Sedimentation tanks

8. Biochemical oxygen demand is
 - a. Amount of dissolved oxygen used by aerobic microorganisms when decomposing organic matter in the waste water
 - b. Amount of dissolved oxygen used in decomposition of organic and inorganic matter in the waste water
 - c. Amount of atmospheric oxygen dissolved in waste water
 - d. None of the above
9. What term is used to describe the process by which proteins are synthesized from a genetic code?
 - a. Replication
 - b. Transcription
 - c. Translation
 - d. Reproduction
10. In DNA double helix structure, three hydrogen bonds are formed between
 - a. Adenine and thymine
 - b. Guanine and cytosine
 - c. Adenine and guanine
 - d. Thymine and cytosine
11. The restriction enzymes are named for
 - a. the person who discovered
 - b. the bacterium they are derived from
 - c. the viral DNA that they attack
 - d. None of the above
12. In order to insert a foreign gene into plasmid, both must.....
 - a. Have identical DNA sequence
 - b. Originate from the same type of cell
 - c. Be cut by the same restriction enzyme
 - d. Be of the same length
13. The cross linkage of antigens by antibodies is known as
 - a. Agglutination
 - b. Complement fixation
 - c. A cross reaction
 - d. All of the above
14. T cells are the source of
 - a. Interleukin
 - b. Interferon
 - c. Lymphotoxin
 - d. All of the above
15. The process of introduction of weakened pathogen into human body is called
 - a. Immunization
 - b. vaccination
 - c. attenuation
 - d. none of these
16. The process of weakening a pathogen is called
 - a. vaccination
 - b. attenuation
 - c. immunization
 - d. virulence reduction
17. structure must have polypeptide.
 - a. Primary
 - b. Secondary
 - c. Ternary
 - d. Quaternary
18. Laboratory workers handling dangerous or exotic agents with a high risk of life-threatening disease practice
 - a. Standard Microbiological Practices
 - b. Biosafety Level 2 Practices
 - c. Biosafety Level 3 Practices
 - d. Biosafety Level 4 Practices
19. The first recombinant antigen vaccine approved for human use is
 - a. Hepatitis B vaccine
 - b. Hib vaccine
 - c. Var vaccine
 - d. DPT vaccine
20. The rights of an author or artist with respect to his or her creation are governed by the law of:
 - a. Patents
 - b. Copyright
 - c. Trade marks
 - d. Industrial design

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Note: Check (✓) the number of each question you have answered in the front page of main answer book (of Sections B, C and D).

SECTION "B"

[5 Q. × 3 = 15 marks]

Answer *ANY FIVE* questions:

1. Describe old and new biotechnology with suitable examples.
2. What are the advantages and disadvantages of enzyme immobilization?
3. Describe the structure of DNA.
4. Define batch process, fed batch process and continuous process of fermentation.
5. What are restriction enzymes? How do these enzymes participate in the recombinant DNA technology?
6. Why you need monoclonal antibody? Name any two monoclonal antibodies.
7. If you have done invention. How you protect intellectual property?

SECTION "C"

[5 Q. × 5 = 25 marks]

Answer *ANY FIVE* questions:

8. Write short notes on:
 - a. Reversible enzyme immobilization
 - b. Application of enzyme immobilization
9. Discuss about the design and construction of fermenter with suitable diagram.
10. What are the sources of enzyme? Describe how enzyme works as biocatalysts with suitable example.
11. What are the basic steps involved in recombinant DNA technology?
12. What do you mean by "passive vaccination and "Active vaccination"? Explain with examples.
13. What are the advantages and disadvantages of "conventional" and "modern" vaccines?
14. What are the causes of protein destabilization? Explain them.

SECTION "D"
[2 Q. × 7.5 = 15 marks]

Answer *ANY TWO* questions:

15. What is enzyme inhibition? Differentiate between competitive and non-competitive enzyme inhibition. Explain about factors affecting enzyme activity.
16. What is downstream processing? Describe various steps involved in downstream processing.
17. What are DE Novo pathway and Salvage pathway in Monoclonal antibody production? Why they are important? What is the role of HAT medium in it?