KATHMANDU UNIVERSITY
End Semester Examination
July/August, 2019

Level : B.Pharm.
Year : IV
Course : PHAR 422
Semester : II

Exam Roll No.:
Time : 30 mins.
F.M. : 20

Registration No.:
Date :

SECTION "A"
[20Q × 1 = 20 marks]

Tick [√] the correct answer.

1. Development of transgenic plant with improved characteristic comes under.....
[a] Red biotechnology
[b] Blue biotechnology
[c] Green biotechnology
[d] White biotechnology

2. Which of the following is not the characteristic of biopharmaceuticals?
[a] Biopharmaceuticals are high molecular weight proteins.
[b] They are prepared by chemical synthesis.
[c] They may exhibit the immune reaction.
[d] The production cost is high.

3. The low molecular weight organic compound that binds with the apoenzyme to form catalytically active enzyme is termed as.....
[a] Coenzyme
[b] Prosthetic group
[c] Modulator
[d] Inhibitor

4. Glucokinase catalyze the transfer of phosphate from ATP to glucose and to no other hexose. Therefore, glucokinase enzyme exhibit.....
[a] Absolute specificity
[b] Group specificity
[c] Relative specificity
[d] None

5. Cyanogen bromide activation is used to activate carrier containing.....group during covalent type enzyme immobilization process.
[a] Amine [b] Diol [c] Methyl [d] Carbonyl

6. Which of the following statement is false regarding enzyme immobilization process?
[a] Enzyme immobilization may enhance the stability and activity of enzyme.
[b] Both the substrate and the product should move freely in and out of the support on which the enzyme is immobilized.
[c] Immobilization is also applicable when one of the substrate is insoluble.
[d] Immobilized enzyme can be used for the continuous production system.

7. In fermentation process, upstream processing begins with.....
[a] Isolation, selection and improvement of suitable strain of microorganism
[b] Removal of a single ampoule of the working cell bank from storage and its use to prepare starter culture
[c] Recovery and purification of desired end products
[d] Effluent treatment

8. All of the following are the aerobic processes in biological treatment of effluents of fermentation except.....
[a] Trickling filter [b] Rotating disc contactor
[c] Activated sludge process [d] Sludge blanket

9. All of the following are fibrous protein except.....
[a] Keratin [b] Elastin [c] Haemoglobin [d] Collagen

10. Which of the following statement/s is/are true regarding rDNA technology?
[a] rDNA technology is used to obtain large number of copies of specific DNA fragments
[b] rDNA technology is used to obtain large quantities of protein produced by the concerned gene
[c] rDNA technology is used to integrate gene of interest into chromosomes where it expresses itself
[d] All of the above

11. Which of the following restriction endonuclease produce blunt ends?
[a] HindIII [b] SmaI [c] EcoRI [d] BamHI

12. The technology used for the production of monoclonal antibodies is .....
[a] Mass culture [b] Suspension culture
[c] Hybridoma [d] rDNA

13. ..... is used to prevent acute rejection of transplanted kidneys.
[a] Daclizumab [b] Rituxan
[c] Cetuximab [d] Adalimumab

14. α-helix and β strands are the major elements of .....structure of protein
[a] Primary [b] Secondary [c] Tertiary [d] Quaternary

15. .....vaccine contain the only antigenic parts of the pathogen necessary to elicit a protective immune response.
[a] Live attenuated [b] Killed [c] Subunit [d] Toxoid

16. What protect the intellectual property created by inventors?
[a] Patent [b] Trade marks
[c] Copyright [d] Trade secrets

17. In Nepal, patent can be renewed for.....
[a] Once [b] Two times [c] Three times [d] None

18. Ebola virus is classified in .....
[a] Risk group 1 [b] Risk group 2 [c] Risk group 3 [d] Risk group 4

19. The anticodon region is of important structural component of .....
[a] DNA [b] tRNA [c] mRNA [d] rRNA

20. The two strands in DNA double helix is joined by ..... bond.
[a] Covalent [b] Hydrogen [c] Ionic [d] Phosphodiester

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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"
[5Q × 3 = 15 marks]

Answer *ANY FIVE* questions.

1. What are the major differences between the traditional drugs and biopharmaceuticals?
2. Describe about the mechanism of enzyme action.
3. What is enzyme immobilization? List out the properties of ideal carrier/support for enzyme immobilization.
4. What are the different techniques available for the storage of pure culture?
5. What do you understand by protein post translational modification? Give the functional effects of glycosylation on protein.
6. What is intellectual property right (IPR). Mention its advantages.
7. Explain briefly about polymerase chain reaction.

SECTION "C"
[5Q × 5 = 25 marks]

Answer *ANY FIVE* questions.

8. Explain the responsibilities of pharmacist toward the development of biopharmaceuticals.
9. Write short notes on:
   a. Non-competitive enzyme inhibition
   b. Application of enzyme in medical field
10. What are the types of fermentation media? Write about the composition and sterilization of fermentation media.
11. Write about DNA replication.
12. What are the biotechnological precautions to be undertaken for ensuring the safety in biotechnology?
13. Differentiate between monoclonal and polyclonal antibodies. Explain how hybrid cells are selected during the monoclonal antibodies production.
14. What is vaccine? Explain about any two of new generation vaccines.

SECTION "D"

[2Q × 7.5 = 15 marks]

Answer *ANY TWO* questions.

15. Explain in detail about the different enzyme immobilization techniques with their advantages and disadvantages.

16. What is protein destabilization? Describe the mechanism involved in degradation of protein pharmaceuticals. Write about the formulation approaches to protein stabilization.

17. What is rDNA technology? Write about the general steps involved in gene cloning. How can you select the transformed host cell in gene cloning using plasmid as a vector?