Mark scored:

KATHMANDU UNIVERSITY
End Semester Examination
February/March, 2018

Level : B. Pharm.
Year : IV
Course : PHAR 422
Semester : II
Exam Roll No. :
Time: 30 mins.
F. M. : 20
Registration No.:
Date MAR : 2 1 2018

SECTION "A"
[20 Q × 1 = 20 marks]

1. Designing an organism to produce an useful chemical, food, enzyme, low MW proteins, fine chemicals, SCP, effluent treatment, soil remediation etc. is termed as..... biotechnology
[a] White [b] Blue [c] Red [d] Green

2. Which of the following invention do not belong to old biotechnology?
[a] Structure of DNA [b] Gene as a carrier of heredity
[c] Penicillin [d] Vaccination

3. According to Chargaff's rule
[a] Adenosine is not equal to thymidine [b] Guanine is always equal to adenosine
[c] purine is always equal to pyrimidine [d] Guanine is not equal to Cytosine

4. Which codon does not signal for termination of protein synthesis?
[a] UAA [b] UGA [c] UAG [d] UAU

5. If enzyme has systemic code E.C. 4.1.2.1 it belongs to the class.....
[a] Ligase [b] Isomerase [c] Lyases [d] Transferase

6. Second recombinant protein drug to be marketed was.....
[a] Adagen 1 [b] Insulin [c] Altepase [d] Aminotransferase

7. ..... residue of enzyme should not participate in covalent binding with matirx.
[a] amino acid [b] glycol [c] thiol [d] carboxylic

8. ..... method do not require matrix for immobilization.
[a] Entrapment [b] Covalent binding [c] Cross-linking [d] Ionic binding

9. The level of chemical hazard is indicated on the ..... color of NFPA label.
[a] Red [b] Blue [c] Yellow [d] White

10. Immobilization method with no chemical bond formation between matrix and enzyme is .....
[a] Adsorption [b] Encapsulation [c] Cross-linking [d] Both [b] and [c]

11. A pure inoculum at .....phase is used to inoculate the media for fermentation.
[a] Stationary [b] Logarithmic [c] Lag [d] All of the above

12. For both intracellular and extracellular product first step in down streaming is .....
[a] Cell separation from media [b] Homogenization
[c] Removal of nucleic acid [d] Freeze drying

13. ..... were the first to discover and use a primitive form of vaccination, called
[a] English; vaccilatiom [b] Greek; vaccination
[c] Chinese; variolation [d] Latins; vacca

14. Both lipophilic and hydrophilic antigen can be incorporated in:
[a] Liposomes [b] Immunostimulation complex
[c] Micelles [d] All of the above

15. To get purer form of DNA from either cells or plasmid vector, crude DNA is .....
[a] boiled [b] treated with RNAase
[c] fractionated on $CsCl_2$ gradient [d] treated with detergent

16. ..... forms the stable covalent bond between two DNA backbone to give the recombinant DNA.
[a] restriction endonuclease [b] DNA ligase
[c] alkaline phosphatase [d] fusogenic agent

17. OKT3 prevents organ transplant rejection by targeting .....
[a] CD25 receptor on T cells [b] CD3 receptor on T cells
[c] CD 20 receptor on B cells [d] CD 2 receptor on B cells17

18. For *in vivo* production of monoclonal antibodies, hybrid cells are propagated in ..... cavity of mice.
[a] Peritoneal [b] Thoracic [c] Cranial [d] Pelvic

19. Most comprehensive agreement on intellectual property is .....
[a] TRIPs [b] GATT [c] WIPO [d] WTO

20. In Nepal trademark can be renewed..... times for a period of ..... years.
[a] 3; 3 [b] 5; 5 [c] 2; 7 [d] Several ; 7

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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. List down differences between biopharmaceuticals and traditional drugs.
2. Which Act covers the Intellectual Property Right in Nepal? List down the advantages of Intellectual Property Right.
3. Why is magnesium used in Polymerase Chain Reaction?
4. Write about significance of PEGylation in enzyme drug delivery.
5. Write short note on anti-idiotype vaccine.
6. Define each biosafety levels of microorganisms according to risk.
7. Compare between porous and non-porous matrix for immobilization. Why is immobilization preferred over soluble enzyme?

SECTION "C"

[5 Q. × 5=25 marks]

Answer *ANY FIVE* questions:

8. When is the Michelis-Menten constant same as substrate concentration? Discuss about enzyme inhibition.
9. Define immobilization. Write detail account on irreversible immobilization.
10. Discuss in about micelles as multivalent subunit vaccine. How is Hepatitis B Surface Antigen (rDNA) vaccine produced?
11. Explain about the HAT selection used for murine monoclonal antibody production.
12. List down the differences between agarose gel and polyacrylamide electrophoresis. Write a short on Northern Blotting.
13. Give the flowchart of downstream processing. What are the advantages of synthetic media over natural media?

14. Define biopiracy. Write about various methods to protect the intellectual property right.

SECTION "D"

[2 Q. × 7.5=15 marks]

Answer *ANY TWO* questions:

15. Explain the concept of cell bank in fermentation. How a cell culture can be preserved for fermentation? How is mammalian cell culture system different from microbial cell culture system?

16. Discuss about different generations of monoclonal antibodies. In what possible ways can monoclonal antibodies exhibit their therapeutic actions?

17. Describe in detail about the vectors used in rDNA technology.