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2021

B.Pharm. 7<sup>th</sup> Semester (Repeater) Examination

PHARMACEUTICAL BIOTECHNOLOGY

(Old Regulation)

Full Marks – 100

Time – Three hours

The figures in the margin indicate full marks  
for the questions.

Answer question No. 1 and any six from the rest.

1. Answer the following:

(10 × 1 = 10)

- (i) These are the substances that normally doesn't act as an antigen or stimulate an immune response but that can be combined with an antigen and at a later time; initiate a specific antibody response on its own.
- (a) Carrier (b) Haptens  
(c) Epitopes (d) None of these
- (ii) This is a type of anti body derived from hybridoma cells.
- (a) Epitopes (b) Monoclonal antibody  
(c) Haptens (d) None of these
- (iii) The union of two unicellular organisms accompanied by an interchange of nuclear material is termed as
- (a) Conjugation (b) Transformation  
(c) Transduction (d) None of these
- (iv) Somatropin needs to be stored in perfect air tight containers particularly at temperature of
- (a) 2-8°C (b) 25-30°C  
(c) 10-15°C (d) None of these

[Turn over

- (v) What is the clinical application of monoclonal antibodies?
- (a) Biosensors (b) Transplant rejection  
(c) Infectious disease (d) Purification of drugs
- (vi) Transcription of RNA from DNA involves the enzyme \_\_\_\_\_
- (a) DNA Transcriptase (b) RNA Transcriptase  
(c) RNA polymerase (d) None of these
- (vii) Which of the following statement is incorrect regarding HAT medium?
- (a) HAT medium is a selective medium  
(b) Aminiopterin in the HAT medium blocks de novo pathway of nucleotide synthesis  
(c) Salvage pathway requires aminiopterin and thymidine  
(d) Hypoxanthin is converted to guanine by HGPRT enzyme
- (viii) The vaccines prepared through recombinant DNA technology are
- (a) Third generation vaccines  
(b) First-generation vaccines  
(c) Second-generation vaccines  
(d) None of the above
- (ix) Following is not the method of immobilization:
- (a) Adsorption (b) Covalent bonding  
(c) Ionic bonding (d) Entrapment.
- (x) Which enzyme is a single-chain coenzyme obtained from culture which converts Plasminogento plasmin?
- (a) Streptokinase (b) Proteases  
(c) Amylases (d) None of the above

2. Answer the following questions: (Any six) (6 × 15 = 90)

- (a) (i) What do you mean by antigen antibody reaction?  
(ii) What are different types of immunity? Classify each of them. (5+10=15)
- (b) (i) Differentiate active immunity and passive immunity.  
(ii) What do you mean by hypersensitivity reaction? Classify each of them.  
(iii) Classify different types of vaccines. (5+5+5=15)

- (c) (i) Define the term "Genetic recombination". Briefly explain about Bacterial transformation process.
- (ii) Explain the mechanism behind "protoplast fusion". (5+10=15)
- (d) (i) What do you mean by gene cloning? Describe the method of DNA cloning using bacterial plasmids with suitable diagram.
- (ii) Describe briefly the production of monoclonal antibodies (MABs) with suitable diagram. (8+7=15)
- (e) (i) Give the advantages of microbial transformation process. What do you mean by aerobic fermentation process?
- (ii) What do you mean by fermentor? Describe the mechanism behind production of gluconic acid production. (7+8= 15)
- (f) (i) What are various methods used for standardisation of Antibiotics?
- (ii) Write silent features of bioreactors.
- (iii) Describe the mechanism behind loop (Recycle) bioreactor. (5+5+5=15)
- (g) (i) Define mutants. Discuss the various factors influencing rate of mutation.
- (ii) Describe the production of Tetracycline. (10+5= 15)
- (h) (i) Briefly explain about different factors that affect enzyme kinetics.
- (ii) What is the use of carrier matrices in enzyme immobilisation? What are various methods of immobilisation? (5+10=15)
- (i) Write short notes on (any *three*) : (5+5+5= 15)
- (i) Hybridoma technology
  - (ii) Pencillinase
  - (iii) Cellular and humoral immunity
  - (iv) Humulin
  - (v) Amylase
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