

Instructions:

**All Questions are compulsory
Draw neat and labeled diagram
wherever necessary**

- Q-1 Write the following 14**
- (i) Write a note on the scoring matrices used for sequence alignment. 7
 - (ii) Describe virtual screening. Give a thorough explanation of ligand-based virtual screening. 7
- OR**
- (i) Explain molecular visualization and its tools. 7
 - (ii) Explain the basic concept of cheminformatics and its application. 7
- Q-2 Write the following 14**
- (i) Describe protein prediction methods. 7
 - (ii) Explain CoMFA and CoMSIA in depth. 7
- OR**
- (i) Explain the methods for sequence alignment analysis. 7
 - (ii) How does high throughput screening work? Describe the high throughput screening process in its basic steps. 7
- Q-3 Write the following 14**
- (i) Write drug discovery process in detail. 7
 - (ii) What is drug metabolism? Mention its phases. Explain 'Functionlization reactions' in detail. 7
- OR**
- (i) Describe target identification methods. 7
 - (ii) Define targeted therapy and explain its types with examples. 7

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- Q-4 Write the following** **14**
- (i) Write a note on clinical trials. Explain various types and phases of clinical trials. 7
- (ii) Define high-throughput technology. Describe gene expression analysis using microarray technology and its application in pharmacogenomics. 7

OR

- (i) Write principles of ICH GCP guideline and discuss role of ethics committee. 7
- (ii) Write the difference between empiric therapy and individualized therapy. Describe the fundamental components of personalized medicine. 7

- Q-5 MCQs/ Short Questions (Any seven out of twelve)** **14**

- 1 The quality of protein is checked by _____ software.
- a CE b CL
- c PROCHECK d VAST
- 2 Which one of the following is the protein sequence database?
- a mmCIF b NDB
- c DDBJ d PIR
- 3 Sequin is _____ tool.
- a Sequence submission b Sequence retrieval
- c Sequence accuracy check d Sequence prediction
- 4 The presence of _____ affects a drug's bioavailability.
- a Water b Alcohol
- c Food d Fizzy drinks
- 5 QSAR attempts to find _____.
- a Biological activity and electrostatic property b Biological activity and molecular property
- c Topological and geometrical property d Hydrophobic and lipophilic properties
- 6 What will be the Therapeutic Index of a drug with ED 2mg/Kg and TD 6mg/Kg?
- a 3 b 8
- c 12 d 4
- 7 In _____ the investigators observe the subjects, measure their outcomes but do not actively manage the study.
- a Interventional studies b Clinical observational studies
- c Placebo trials d Screening trials

- 8 _____ is a set of standards used internationally to conduct the clinical trials.
- | | | | |
|---|-------------------------|---|----------------|
| a | Nuremberg principles | b | ICH GCP |
| c | Declaration of Helsinki | d | IRB guidelines |
- 9 In _____, the researcher knows the full details of the treatment and so does the patient.
- | | | | |
|---|--------------|---|--------------|
| a | Open trial | b | Single blind |
| c | Double blind | d | Triple blind |
- 10 Nonsteroidal anti-inflammatory drugs are metabolized by _____.
- | | | | |
|---|--------|---|---------|
| a | CYP2C9 | b | CYP2D6 |
| c | CYP2C8 | d | CYP2C19 |
- 11 Which of the following drug is murine type of monoclonal antibody?
- | | | | |
|---|-------------|---|-------------|
| a | Trastuzumab | b | Cetuximab |
| c | Tositumomab | d | Panitumumab |
- 12 Which of the following drug undergoes hydrolysis phase I reactions?
- | | | | |
|---|-----------|---|------------|
| a | Prontosil | b | Nitrazepam |
| c | Halothane | d | Isoniazid |
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