

Q.P. Code :31548

[Time: Three Hours]

[marks. 70]

Please check whether you have got the right question paper.

- N.B: i) All questions are compulsory  
ii) Write structure whenever necessary

- Q.1 A) Briefly answer the following questions 10
- 1) Explain the term proteome
  - 2) List important macromolecules that act as drug targets
  - 3) Optical isomerism can influence biological activity, explain with a suitable example
  - 4) Give one example of a nuclear receptor
  - 5) What are characteristics of  $\alpha$  –helix of protein
  - 6) What are post translational modifications? Give one example
  - 7) Lipids can act as drug targets. Explain giving suitable example
  - 8) What is the significance of SAR studies
  - 9) Name the enzyme involved in glucuronidation of a substrate
  - 10) Which nitrogen atom can act as a better hydrogen bond acceptor amongst  $\text{NR}_3$  or  $\text{C}_6\text{H}_5\text{NH}_2$ ? Justify

- B) Match column A with columns B and C 5

	A	B	C
i.	Competitive inhibition	Target nucleic acids	Two hydrogen bonds
ii.	Sulfate conjugation	$K_m$ increases	Covalent bond
iii.	Alkylating agents	Target fungal enzyme	$V_{max}$ constant
iv.	Allylamines	Adenine pairs with thymine	Phase-II metabolism
v.	DNA secondary structure	PAPS	Squalene epoxidase

- Q.2 A) Answer the following 4
- i) Briefly discuss “Ionic interactions” and their role in drug-receptor-binding
  - ii) Complete the following table

Receptors: Binding region	Ligand: Binding groups	Type of intermolecular interaction
$-\text{COO}^\ominus$		
$-\text{NH}_2$		

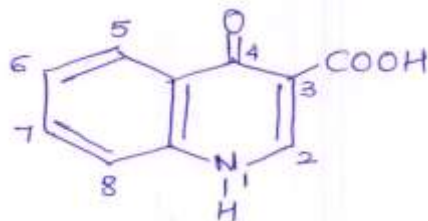
- B) Give the structure and generic name for the following (Any three) 3

- i) A suicide inhibitor of beta lactamase enzyme
- ii) Prodrug of tetracycline
- iii) A second generation orally active cephalosporin
- iv) An extended spectrum penicillin

Q.P. Code :31548

C) Answer the following questions (Any two) 4

- i) Give the generic name, structure and name the enzyme inhibited by 4-Amino-N-(5-methyl-1, 2-oxazol-3-yl) benzene sulfonamide
- ii) What is the effect of the following on the core given below



- a) Introduction of a cyclopropyl group at position 1
- b) Introduction of a fluoro at position 8
- iii) Give the generic name and structure of a third generation fluoroquinolone, comment on its advantages.

Q.3 A) Explain the following with a suitable example 4

- i) GPCR
- ii) Signal transduction

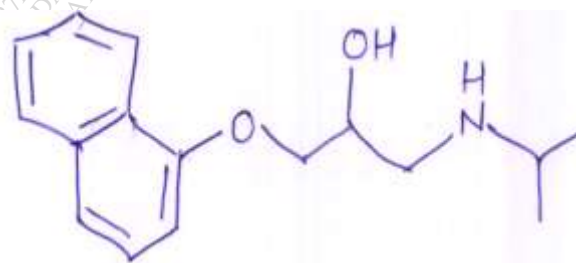
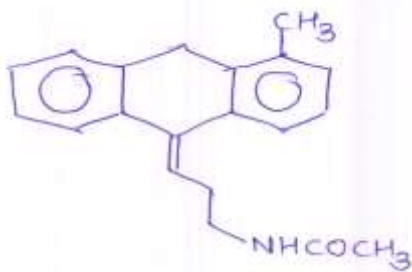
B) Outline the synthesis pathway for primaquine with suitable reagents and reaction conditions 3

C) Answer in brief 4

- i) Proteins can be drugs and drug targets, justify.
- ii) Define the following terms: 'Agonist' and 'Sensitization'

Q.4 A) Predict any two phase I metabolites for each of the following molecules 4

- i)
- ii)



OR

A) Name any four phase II drug metabolizing enzymes and give an example of a reaction catalyzed by any one of them 4

B) Outline the synthesis pathway for Cloxacillin with suitable reagents and reaction conditions 3

Q.P. Code :31548

- C) Answer the following questions (Any two) 4
- i. Explain Bioisosterism with suitable example.
  - ii. Lomefloxacin is phototoxic? Justify
  - iii. Name any two drugs in treatment of pneumocystis

- Q.5 A) With respect to SAR of penicillins outline the structural modifications that improve 4
- i) Acid stability
  - ii)  $\beta$  – lactamase resistance

**OR**

- A) Give rationale for combination therapy of a  $\beta$  –lactam antibiotic and  $\beta$  –lactamase inhibitor. Give an example of such a combination used clinically. 4

- B) Outline the synthesis pathway for Dapsone with suitable reagents and reaction conditions 3

- C) Answer the following 4

- i) Enlist the structural features of Artemisinin. Give structure of hydrophilic derivative of Artemisinin.
- ii) Give structure and mechanism of action for mebendazole

- Q.6 A) Write a note on “Allylamine antifungal agents” 4

- B) Outline the synthesis pathway for Clotrimazole or Metronidazole with suitable reagents and reaction conditions 3

- C) Write the mechanism of action for the following (Any two) 4

- i. INH
- ii. Ethambutol
- iii. Streptomycin

\*\*\*\*\*