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Reg. No. | | | | | | | | |

IV Semester M.Sc. Degree Examination, September/October - 2022

Chemistry

Medicinal Organic Chemistry

(CBCS Scheme 2019-20)

Paper : CH - 404-OC

Time : 3 Hours **Maximum Marks : 70**

***Instructions to Candidates*:**

Answer question No.1 and any five of the remaining.

1. Answer any **Ten** of the following: **(10×2=20)**

a) Define chemotherapy.

b) Citing examples, distinguish metabolites from anti-metabolites.

c) Highlight the utility and properties of soft drugs with suitable examples.

d) Draw the structure of cholesterol and indicate its IUPAC nomenclature.

e) How are vitamin-D distinguished from sterols and bile acids by Uv-Visible spectroscopy?

f) Sketch the synthesis of (dl) - Norgestrel

g) Indicate the importance of LD_{50} an ED_{50}

h) How are penicillins differentiated from cephalosporins using ^1H NMR spectroscopy?

i) Define anti-virals. Expand the term COVID-19.

j) Draw the general structure of barbiturates. Why are they termed as cyclic ureides?

k) Convert benzil to phenytoin.

l) Formulate the synthesis of furox. Give its therapeutic category.

2. a) Write the basic Hansch equation and elaborate the terms. How is the equation helpful in drug discovery?

b) Citing examples, highlight the inter-relationship between prodrugs and APIs

c) Outline the macromolecular perturbation theory of drug-receptor interactions.

(3+3+4=10)

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3. a) Illustrate the usefulness of Blanc's rules in the determination of size of rings in steroids.
   b) Discuss Barbier-Wieland degradation. Highlight its importance.
   c) Outline Turgor's synthesis of oestrone. **(3+3+4=10)**

4. a) Discuss woodward's synthesis of cephalosporin-e.
   b) Sketch the synthesis and mode of action of
      i) Ibuprofen
      ii) Metformin
      iii) Sorbitrate. **(4+6=10)**

5. a) What are antifungals? Give the synthesis of fluconazole.
   b) Formulate the synthesis of:
      i) Pethidine and
      ii) Methadone.

   Discuss the SAR of the molecules with reference to morphine. **(4+6=10)**

6. a) Define "Lead Compound". Give examples Describe the various methods employed to increase the efficacy of a lead molecule.
   b) Outline Marker's degradation. **(5+5=10)**

7. a) Describe the total synthesis of Chloromycetin. Give its therapeutic category. Indicate its SAR with tetracycline antibiotics
   b) Sketch the synthesis and mode of action of
      i) Cyclophosphamide
      ii) Chlorpheniromine. **(4+6=10)**

8. Write short notes on:
   a) Computer applied drug design and molecular modelling (3D-QSAR)
   b) Sequence of amino-acids of the chains of insulin.
   c) DOTS treatment. **(3+4+3=10)**