

**B.Sc. Semester-IV Examination, 2022-23****CHEMISTRY [Honours]**

Course ID : 41415 Course Code : SH/CHEM/405/SEC-2

Course Title : Pharmaceutical Chemistry (T-2)

Time : 2 Hours

Full Marks : 40

*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*1. Answer any **five** of the following questions:

2×5=10

- a) Which microorganism is used for fermentation of citric acid?
- b) Write the chemical name of aspirin.
- c) Name two drugs which are used as antibacterial agents.
- d) Mention two serious side effects of the drug ibuprofen.
- e) Which disease can be treated with the drug acyclovir?
- f) What is the function of an anti-inflammatory drug?

*[Turn Over]*

- g) Write the scientific name of Vitamin-C.
- h) Name an antibiotic possessing a nitro group.

2. Answer any **four** of the following question:

5×4=20

- a) i) Show the synthetic route for the preparation of aspirin.
- ii) Differentiate between antipyretic and analgesic drugs regarding their action.
- iii) Name the food sources to get Vitamin-C.  
2+2+1=5
- b) i) Draw the retro synthetic analysis and forward synthesis method of chloramphenicol.
- ii) Draw the structure of ibuprofen. 3+2=5
- c) i) What are aerobic and anaerobic fermentation? Give examples for each.
- ii) Describe the mechanism of activity of penicillin as an antibiotic. (2+1)+2=5
- d) i) How is Vitamin-C produced via fermentation process? Give a brief outline.
- ii) Name two drugs which are used as CNS agents. (1½+1½)+2=5

479/Chem.

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e) Name the two bacteria and two fungi that are used for production of ethanol via fermentation process. What type of antibiotic is cephalosporin?  $2+2+1=5$

f) What is the use of phenobarbital? Describe the retrosynthesis of phenobarbital. Deduce the forward synthesis of the above drug.  $1+2+2=5$

3. Answer any **one** of the following questions:

$$10 \times 1 = 10$$

a) Name the structural units of streptomycin and draw their structures. Why streptomycin is highly water soluble? How it works?

$$3+3+4=10$$

b) What product is produced in the glycolysis step of glucose? Write a short note on the production of Vitamin B<sub>12</sub> by fermentation process. Outline the synthetic route for the preparation of trimethoprim. Mention the side effects of sulphonamide drugs. For which purpose Penicillin G is used?  $1+3+2+2+2=10$

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