B.Sc 4th Semester (Honours) Examination 2022

Subject: Chemistry

Paper: SEC -2

(Pharmaceutical Chemistry)

Time: 2 hours **Full Marks: 40**

The figures in the margin indicate full marks. Candidates are required to give their answers in their own wards as far as practicable.

1. *Answer any **five** questions from the following:* 2 × 5 = 10

(a) Name and draw the structure of one antifungal agent.

(b) How will you synthesize Aspirin?

(c) What do you mean by Antibiotics? Give one example.

(d) Mention two differences between aerobic and anaerobic fermentation?

(e) What is the role of Vitamin B2 in our body?

(f) Why is ibuprofen called anti-inflammatory drug?

(g) What is the structural feature of Penicillin responsible for its antibiotic activity.

(h) What is the chemical name of vitamin C and vitamin B12.

2. *Answer any **two** questions from the following.* 5 × 2 = 10

(a) How will you synthesize paracetamol and glyceryl trinitrate from appropriate starting materials? Give one use of Acyclovir. 2 + 2 + 1 = 5

(b) How do you obtain ethyl alcohol and citric acid.by fermentation procedure? 2.5 + 2.5 = 5

(c) What is the use of Phenobarbital? Describe the synthesis of Phenobarbital with plausible mechanism. Name one anti-leprosy drug. 1 + 3 +1 = 5

(d) What are the stages of drug developments? Mention the symptoms of lysine deficiency? What is the disease that streptomycin used to treat for? 2 + 2 + 1 = 5

3. *Answer any **two** questions from the following.* 10 × 2 = 20

(a)

i. Draw the chemical structure of cephalosporin. How does it work? What are the uses of this drug?

ii. What are the roles of Glutamic acid and Vitamin C in our body? (1.5 + 2.5 + 2) + (2 + 2) = 10

(b)

i. Name an antiviral agent and an HIV AIDS related drug. How will you synthesize them?

ii. What is the retrosynthetic approach for the synthesis of paracetamol? Mention one purpose of using paracetamol $(2 + 2 + 2) + (3 + 1) = 10$

(c)

i. Give a comprehensive account of Chloramphenicol.

ii. Choose from the following as antifungal agent, antiviral agent, antibiotic, Central Nervous System agents, anti-leprosy: Acyclovir, Dapsone, Diazepam, Trimethoprim, Chloramphenicol, Sulphanethoxazol.

iii. Give the chemical structure of two important sulphonamide drugs. Give a suitable synthetic route of any one of them. $3 + 3 + (2 + 2) = 10$

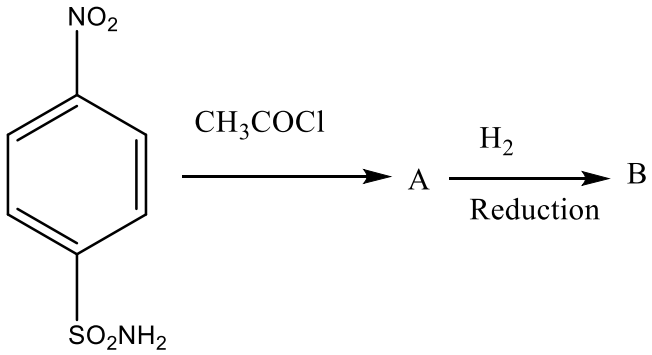
(d)

i. Name one cardiovascular drug and draw its structure.

ii. Explain how fermentation can be used for industrial production of Vitamin B_{12} and Vitamin C.

iii. Mention one difference between analgesic and antipyretic agents.

iv. Complete the following: $2 + 4 + 1 + 3 = 10$



B.Sc 4th Semester (Honours) Examination 2022(CBCS)

Subject: Chemistry

Paper: SEC-2

(Analytical Clinical Biochemistry)

Time: Two Hours **Full Marks: 40**

The figures in the right hand side margin indicate full marks.

Candidates are required to give answers in their own words as far as practicable

1. Answer *any five* questions from the following : **2 × 5=10**

a) What is packed cell volume?

b) What are the functions of blood?

c) What is Gene therapy?

d) Define heterolactic fermentation with example.

e) Identify the components that inhibit the activity of enzymes.

f) Why is glycolysis called EMP pathway?

g) What do you mean by polyunsaturated fatty acid? Give Example.

h) What is the biological importance of carbohydrate?

2. Answer *any two* questions from the following: **5 × 2 = 10**

a) Briefly describe the primary and tertiary structure of proteins. What is ribozyme? 4 + 1

b) What is Enzyme? How many types of enzymes are there? Name them and give example. 1 + 2 + 2

c) How can you determine the amount of cholesterol in a blood sample? Give example of two buffers present in blood. 3+2

d) Write a short note on Krebs cycle. How much ATP is produced in Krebs cycle? 4 + 1

3. Answer *any two* questions from the following: 10 × 2 = 20

a) (i) Write a short note on any process of blood sample collection.

(ii) What do you mean by extrinsic blood clots? What is Anaemia?

(iii) What happens if the amount of creatinine increases in blood? 5 + (2+1) + 2

b) (i) What is genetic code and how does it work? Explain Watson-Crick's base pairing rule.

(ii) Define Michaelis-Menten constant. Give an example of enzyme inhibition.

(iii) Mention the significance of glycolysis. (2+3) + (2+1) + 2

c) (i) Write at least four differences between normal and pathological urine.

(ii)What are the methods of preservation of urine?

(iii) Write down the process of estimation of constituents of normal urine.

(iv) What leads to cloudy urine? 3 + 3 + 2 + 2

d) (i) What is waxes? How do they differ from fats? Why lipids are important to humans?

(ii) Name the alkali components present in RNA. Give important uses of phospholipids? What is α-helix structure of protein.

(1+2+2) + (2+2+1)

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