

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 words 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)

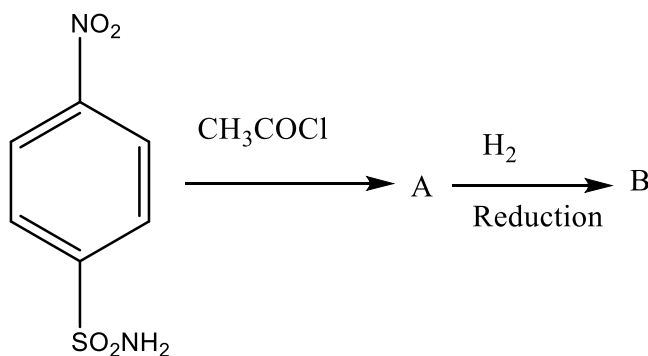
- i. Name an antiviral agent and an HIV AIDS related drug. How will you synthesize them?
- ii. What is the retrosynthetic approach for the synthesis of paracetamol? Mention one purpose of using paracetamol (2 + 2 + 2) + (3 + 1) = 10

(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 B₁₂ 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 are waxes? How do they differ from fats? Why are lipids 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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