Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2021

Course: Organic Chemistry IV **Semester: V**
Program: B. Sc. Chemistry **Time 03 hrs.**
Course Code: CHEM3001 **Max. Marks: 100**

SECTION A

1. **Each question will carry 4 marks**
2. **Instruction: Complete the statement/ Select the correct answer**

S. No.	**Question**	**Marks**	**CO**
Q 1	Write the product for the reaction of pyrrole with nitric acid in presence of acetic anhydride.	**4**	**CO1**
Q 2	Convert pyridine into 3-pyridine sulfonic acid.	**4**	**CO1**
Q 3	Why amino acids exist in the form of zwitter ions.	**4**	**CO1**
Q 4	How is azadirachtin prepared? Provide the chemical reaction.	**4**	**CO3**
Q5	Explain the therapeutic uses and structure of Chloroquine.	**4**	**CO3**

SECTION B

1. **Each question will carry 10 marks**
2. **Instruction: Write short / brief notes**

Q 1	Why the electrophilic nitration of pyrrole always give C3 substituted product. Provide the mechanism. **OR** Draw and explain the curve showing the effect of pH and the temperature on the enzyme reactivity.	**10**	**CO1**
Q 2	What is the isoelectric point of amino acids. Calculate the isoelectric point for Lysine if the pKa for NH_3^+ at C6 is 10.53, at C2 8.95 and pKa for H at C1 is 2.18.	**10**	**CO1**
Q 3	Explain the importance of the glycolysis of the carbohydrates. Provide all the steps of the chemical changes involved.	**10**	**CO2**

Q 4	Calculate the free energy change for the reaction where Glucose is changing into Glucose-6-phosphate. Given that the ΔG^o for phosphorylation of glucose is +13.8 KJ/mol and ΔG^o for hydrolysis of ATP is -30.5 KJ/mol.	**10**	**CO2**
SECTION-C **1. Each question carries 20 marks** **2. Instruction: Write long answers**			
Q 1	**a.** Write the therapeutic uses of Paracetamol and provide the chemical reactions for its synthesis **OR** Write the synthesis of Ibuprofen. For what is it used?	**10**	**CO3**
	b. Provide the synthesis pathway for Ranitidine mentioning the reaction conditions clearly. **OR** Why are the antibiotics important? Provide the chemical reaction for the synthesis of chloramphenicol.	**10**	
Q2	a. Amino acid analysis of the peptide Angiotensin II shows the presence of eight amino acids in equimolar amounts: Arg, Asp, His, Ile, Phe, Pro, Tyr and Val. Partial hydrolysis of Angiotensin II provides the following fragments: 1. Asp-Arg-Val-Tyr 2. Ile-His-Pro 3. Pro-Phe 4. Val-Tyr-Ile-His What is the sequence in Angiotensin II.	**10**	**CO1**
	b. Analyze the separation technique "Electrophoresis" for the separation of the amino-acids.	**10**	