


Name: Enrolment No:		
UNIVERSITY OF PETROLEUM AND ENERGY STUDIES Endsem Examination (Online Mode), Jan 2021 Course: Chemistry Semester: I Program: B.Tech (Food Technology) Time: 3 Hrs Course Code: CHEM 1103 Max. Marks: 100		
SECTION - A 6 x 5 = 30 Marks 1. Each Question will carry 5 Marks 2. Instruction: Complete the statement / Select the correct answer(s)		
Q 1	Fill in the blanks (i) The reverse of adsorption process is called _____ (ii) The energy released in chemisorption is _____ KJ/mol (iii) Physical adsorption occurs rapidly at low temperature and decreased with _____ temperature. (iv) The adsorbed gas molecules remain _____ without any interaction between them. (v) At low pressures the amount of gas adsorbed is _____ proportional to pressure.	CO1
Q 2	Say TRUE or FALSE (i). Dichlorofluorescin is known as adsorption indicator. (ii). The surface of solid consists of fixed number of adsorption sites per unit area of the surface (iii) Adsorption of small quantity of electrolyte has a large effect on lyophilic sol. (iv) Langmuir adsorption isotherm holds good at low pressure but fails at high pressure. (v) The amount of gas adsorbed by a solid depends on the nature of as gas.	CO2
Q 3	A: Write any two significant differences of adsorption and absorption? B: Write any two limitations of using a catalyst in chemical reactions?	CO2

Q 4	A. Define order of reaction and give reason why order of reaction of a chemical reaction is not more than 3. B. Give the name of different variables that effect rate of reaction	CO2
Q 5	A. The wavelength range of visible radiation is _____ B. The wavelength range of microwave radiation is _____ C. the wavelength range of IR radiation is _____	CO1
Q 6	Write colligative properties and give their significance?	CO2
SECTION – B 10 x 5 = 50 Marks		
1. Each question will carry 10 marks 2. Instruction: Write short / brief notes		
Q 7	A: Classify the following into electrophiles or nucleophiles: NO_2^+ , Cl^- , NH_3 , $\text{CH}_2=\text{CH}_2$, BF_3 B: Discuss resonance effect with appropriate example(s)	CO1
Q 8	A. Discuss how extent of adsorption can be correlated with pressure in gas adsorption. Use appropriate formulas and illustrations B. write the name and chemical structure of polymers that are used in making the following (i) contact lenses (ii) cookware	CO1
Q 9	A: Classify polymers based on thermal stability B: Discuss how ultraviolet and visible radiation is used to explain the different electronic transitions in an atom	CO3
Q10	A. Discuss how infrared radiation is used to explain molecular vibrations. Use appropriate illustrations B. Define osmotic pressure of a solution? Derive the formula for finding molecular weight of a solute using osmotic pressure	CO2

Q11	<p>A. Draw neat sketch of UV-Visible spectrophotometer and name the components in that. Mention the source of Visible radiation.</p> <p>B. Define Beer's law and explain how it will be useful in measuring concentration of a chemical species.</p>	CO1
<p>Section – C 1 x 20 = 20 Marks</p> <p>1. Question carries 20 Marks. 2. Instruction: Write long answer.</p>		
Q 12	<p>Convert the following</p> <ol style="list-style-type: none"> Ethane to butane methane to acetylene. Ethylene to formaldehyde. Acetylene to benzene Acetylene to 2-butyne <p style="text-align: center;">OR</p> <p>Complete the following:</p> <ol style="list-style-type: none"> $(CH_3)_2COH - CH_2 - CH_3 \xrightarrow{conc. H_2SO_4} A + B$ $CH_3 - C \equiv CH \xrightarrow{CH_3MgBr}$ $CH_3 - CHBr - CH_3 + Na \xrightarrow{ether}$ $CH_3 - CHBr - CH_2Br \xrightarrow{alcoholic KOH}$ $CH_3 - C \equiv C - CH_3 \xrightarrow{Na/liquid NH_3}$ 	CO3