

JK LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Regular/Backlog), November 2016

B. Tech (as applicable) in Chemical branch Engineering, Semester IIIrd

Roll No.....

COURSE CODE: CHE 304

Time: 3 hours

Max. Marks: 100

COURSE TITLE: Unit process in organic synthesis

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A	Objective type multiple choice questions (10 questions @ 1 mark)	10
I.	Zeolite process is related to (a) purification technique of water (b) brine solution used for recharged of zeolite (c) only temporary hardness remove from water (d) Both a & b	
II.	Chromatography is a technique that is used A) separate and identify components b) only separation technique c) carbon used in this technique d) None	
III.	Synthetic tree like macromolecule called a) dendrimer b) branched macro polymer c) both a & b d) None	
IV.	The rate of reaction at a given temperature depend on the a) reactant consumed and product formed b) product formed c) reactant consumed d) all of the above	
V.	R _f is related to a) paper chromatography b) crystalization c) distillation of crude liquid d) None	
VI	SN ₂ reaction involving a) inversion of configuration b) retention of configuration c) first inversion and second step involve retention of configuration d) all of the above	
VII	Steam distillation is for a) temperature sensitive material b) for natural aromatic compound c) Both a & b d) None	
VIII	Solid waste can be biologically converted into a) Organic compost b) Inorganic compost c) methane gas d) Both a & b	
IX	EBT is a) it is acid indicator b) it formed complex with calcium c) EBT complex is stable d) all of the above	
X	Arrhenius equation's	

- a) $k = A \exp(-E_a/RT)$ b) $k = A \exp(E_a/RT)$ c) $k = A \exp(-E_a/RT)$
 d) Both a & c

Q.2	Short answer type questions (4 questions @ 2.5 marks)	10
1	Explain the R and S configuration with suitable example	
2	Explain the BF_3 hybridization	
3	Heisenberg uncertainty principle	
4	Vacuum distillation	
Q.3A	What is chromatography. Explain column chromatography.	05
Q.3B	Calculate the second order rate when both the reactant are same.	05
Q.4A	Explain the geometrical isomerism with suitable example.	05
Q.4B	Explain the cationic polymerization	05
Q.5A	Write a short note on heterogeneous catalyst.	05
Q.5B	What is electrophilic substitution reaction explain the sulphonation of benzene ring.	05
Q.6A	Explain the basic principle conformation of butane with energy diagram	05
Q.6B	A sample of water of analysis has been found to contain following impurities $Mg(HCO_3)_2 = 14.6 \text{ mg/L}$; $MgCl_2 = 19 \text{ mg/L}$; $Mg(NO_3)_2 = 29.6 \text{ mg/L}$; $CaCO_3 = 10 \text{ mg/L}$; $MgSO_4 = 36 \text{ mg/L}$; $NaCl = 29 \text{ mg/L}$. Calculate the temporary and total hardness of water sample	05
	OR	
Q.6B	Discuss the various of batteries	05
Q.7A	Write short note on (a) SN_2 reaction (b) fractional crystallisation	05
Q.7B	Explain energy level diagram for MO of nitrogen molecule.	05
	OR	
Q.7B	500ml of a sample of water on EDTA titration with erichrome black -T as indicator consumed 18ml of 0.045M EDTA till end point is reached calculate the hardness of water	05
Q.8A	Explain the Schrödinger equation and their application	10
Q.9A	Explain the nitration and friedel craft reaction	10
Q.9B	Discuss the corrosion. And explain the pilling bedworth rule for dry corrosion.	10
	OR	
Q.9B	Write the note of biodegradable polymer.	10