

JK LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Regular/Backlog), NOV-DEC 2017

B. Tech in Chemical Engineering, Semester ... III...

Roll No.....

COURSE CODE: 304

Time: 3 hours

Max. Marks: 100

COURSE TITLE: Unit process 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. Zeosilicates process is related to
 - a- Air purification
 - b- water purification
 - c- Air purification
 - d- Both a & c
- ii. SN₂ stand for
 - a- Substitution Nucleophilic bimolecular reaction
 - b-Substitution Non liner bimolecular reaction
 - c- saturated nucleophilic bimolecular reaction
 - d- All of these
- iii. EBT is ?
 - a) Erichrome Black T
 - b) It is indicator For hardness determination
 - c) Erichrome Blue T
 - d) Both a & b
- iv. EDTA method involve
 - a- complex formation with Ca & Mg
 - b- unstable complex formation with Ca & Mg
 - c- stable complex formation with Ca & Mg
 - d-None.
- v. Crystallization is process
 - a- for purification of compounds
 - b- separation and purification technique
 - c- supersaturated solution
 - d- None
- vi. Unit of the rate of reaction
 - a- g/mol
 - b- mol/L x min
 - c- g/L
 - d- None
- vii. Bond angle of ammonia after sp³ hybridization
 - a- 107
 - b- 111
 - c- 109
 - d- 201
- viii. Bond order of oxygen molecule
 - a- 2
 - b- 8
 - c- 4
 - d- 6

- ix Chemical nature of Enzyme is called
a- Protein b- Carbohydrate
c- Lyposome d- Both b & c
- x Draw the chemical structure of di sodium salt of EDTA

Q.2	Short answer type questions (4 questions @ 2.5 marks)	10
1	Write note on hybridization with suitable example	
2	Give short note of crystallization	
3	Pseudo order reaction	
4	Energy level diagram of boron molecule	
Q.3A	Discuss the tacticity in polymer with suitable example.	05
Q.3B	Discuss the SN2 reaction & mechanism with suitable example.	05
Q.4A	Discuss the important industrial catalyst with important industrial catalyst process.	05
Q.4B	Give note on (a) Inductive effect (b) resonance effect in benzene ring	05
Q.5A	Calculate the de-broglie wavelength of the alpha particle which are associated with an energy of 100mev ; $h = 6.626 \times 10^{-27}$ erg sec.	05
Q.5B	Discuss the conducting polymer with example.	05
Q.6A	Discuss the SN1 reaction of mechanism with example	05
Q.6B	(a) Heisenberg uncertainty principle (b) optical isomerism	05
	OR	
Q.6B	Discuss the molecular orbital theory for hydrogen molecule	05
Q.7A	Calculate the uncertainty in momentum of an electron if it is confined to a linear region of length 1×10^{-10} m. ($h = 6.6 \times 10^{-34}$ kg m/sec)	05
Q.7B	Calculate the temporary and permanent hardness of water sample containing Mg(HCO3)= 7.3 mg/l Ca(HCO3)= 16.2 mg/l MgCl2= 9.5 mg/l CaSO4= 13.6 mg/l (* molecular wt for , Mg(HCO3)= 146; Ca(HCO3)= 162; MgCl2= 95; CaSO4= 136)	05
	OR	
Q.7B	Note on (a) meso compound (b) geometrical isomerism	05
Q.8A	Give short note on (a) free radical polymerization with example (b) Friedal craft reaction	10
Q.9A	Explain and calculate the rate of the second order reaction when reactant are same.	10
Q.9B	Explain the corrosion and explain the pilling bedworth rule for corrosion	10
	OR	
Q.9B	Give short note on (a) sulphonation (b) find Arrhenius equation for temperature depended reaction	10