

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III • EXAMINATION – WINTER • 2014****Subject Code: 2133605****Date: 30-12-2014****Subject Name: Organic Chemistry for Technologists****Time: 02.30 pm - 05.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

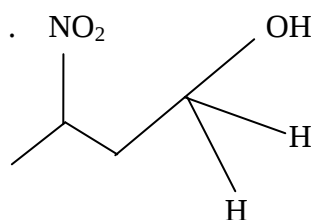
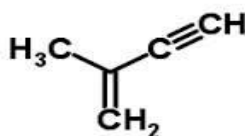
- Q.1 (a)** Define nucleophilic substitution reaction. Explain SN^1 & SN^2 reaction with mechanism. **07**
(b) Write a note on: Aldol and Cross aldol reaction with mechanism. **07**

- Q.2 (a)** How is phenol prepared? What happens when phenol react with following reagents: **07**
a. Zn/Heat d. HNO_2
b. Br_2/H_2O e. H_2/Ni
c. HNO_3 f. Conc. H_2SO_4
- (b)** Explain why, **07**
a. Aniline is less basic than methylamine.
b. p-nitroaniline is less basic than aniline.
c. p-toluidine is more basic than aniline.

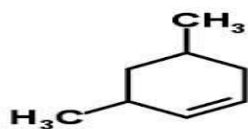
OR

- (b)** (i) How will you synthesize p-bromoaniline from aniline? **02**
(ii) Write a note on:
a. Kolbe reaction. **03**
b. Fries rearrangement. **02**

- Q.3 (a)** Write the IUPAC names for each of the following compounds: **07**
a. b.



c.



d.



- e. $CH_3CH_2CH(OCH_3)CH_2COCl$
f. $(CH_3CH_2)_2CHCN$
g. $CH_3COCH_2CH_2OH$

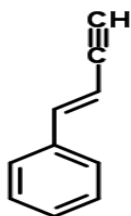
- (b)** (i) How will you synthesize Saccharin from toluene? **02**
(ii) How will you synthesize benzene sulfonic acid from benzene? **02**
(iii) Discuss the mechanism of sulfonation of benzene. **03**

OR

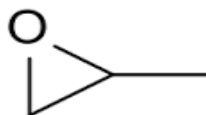
Q.3 (a) Write the IUPAC names for each of the following compounds:

07

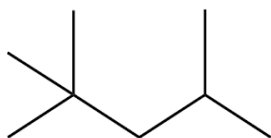
a.



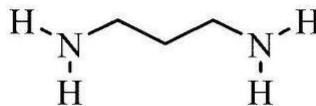
b.



c.



d.



e. $\text{OHCCH}_2\text{CH}_2\text{CHO}$

f. $(\text{CH}_3\text{CO})_2\text{O}$

g. $\text{CH}_3\text{CH}=\text{CHCOCH}_2\text{CH}_3$

(b) (i) How will you synthesize Chloramine – T from toluene?

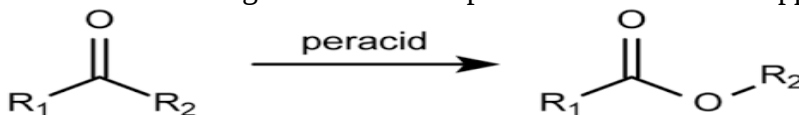
02

(ii) An aromatic compound (A), C_7H_8 , on sulfonation gives two compound (B) & (C). Compound (B), on fusion with KCN gives (D), $\text{C}_8\text{H}_7\text{N}$. Compound (D) on hydrolysis gives (E), $\text{C}_8\text{H}_8\text{O}_2$, which on hydrolysis gives phthalic acid. Identify (A), (B), (C), (D) & (E). Write equation for all the reaction.

05

Q.4 (a) Name the following reaction and Explain its mechanism & application.

07



(b) Write a note on:

a. Cannizzaro reaction

03

b. Hoffman reaction.

04

OR

Q.4 (a) Write a note on: Ardnst-Eister reaction with mechanism.

07

(b) (i) Why benzyl carbonium ion is more stable than propyl carbonium ion?

02

(ii) What are carbonium ions? Arrange the following according to their increasing stability. Explain your answer.

05

a. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2^+$

b. $(\text{CH}_3)_3\text{C}^+$

c. $\text{CH}_3\text{CH}_2(\text{CH}_3)\text{CH}^+$

Q.5 (a) Give only reaction for following conversion:

a. Nitrobenzene $\rightarrow$ m-nitroaniline

03

b. Nitrobenzene $\rightarrow$ p-aminophenol

04

(b) (i) How will you distinguish between aniline & Benzylamine?

02

(ii) How will you distinguish between aniline & N-methylaniline?

02

(iii) Explain the term Electrophile & Nucleophile.

03

OR

Q.5 (a) A compound $\text{C}_7\text{H}_5\text{O}_6\text{N}_3$, (A) undergoes oxidation with acidified potassium dichromate to give a mono carboxylic acid (B), $\text{C}_7\text{H}_3\text{O}_8\text{N}_3$. When (B) is heated in acetic acid solution, (C), $\text{C}_6\text{H}_3\text{O}_6\text{N}_3$ is formed. What are (A), (B), & (C)? Write equation for all the reaction.

07

(b) Name the following reaction and Explain its mechanism & application in detail.

07