

**Kandi Raj College**  
**CHEMISTRY DEPARTMENT**  
**B.Sc. 4<sup>th</sup> Semester Hons. Internal Assessment Examination**

**Paper- CHEMHT-8(Physical Chemistry)**

Answer any five

2 x 5=10

1. What is van't Hoff factor  $i$ ?
2. A 5% solution of cane sugar is isotonic with an 8.77% solution of urea. Calculate the molecular weight of urea (the molecular weight of cane sugar is 342).
3. Battery acid is 4.22 M  $\text{H}_2\text{SO}_4$  solution, having  $\rho_{\text{solution}}$  (density) = 1.21 gm/cm<sup>3</sup>. What is the molality of  $\text{H}_2\text{SO}_4$ ?
4. In a cell,

$$E_{\text{Sn}^{2+}/\text{Sn}}^0 = -0.14\text{V}$$

$$E_{\text{Pb}^{2+}/\text{Pb}}^0 = -0.13\text{V}$$

Find the equilibrium constant of the cell reaction at 25 °C; mention the reaction occurring in the cell.

5. Evaluate the commutator:  $[\hat{L}_x, \hat{L}_y]$ .
6. Write down the selection rule for two particle rigid rotor.

# Kandi Raj College

Department of Chemistry  
Internal Assessment-2022

B.Sc. (Hons) Sem-IV  
Paper-CHEMTH-9(Inorganic)

1. Answer any five

5x2=10

- a) What is Transmutation reaction? Give an example.
- b) Half-life of  $\text{Co}^{60}$  5.27 years, find out the activity (dpm) of a 2g sample.
- c) Write the identification test of phosphate ( $\text{PO}_4^{3-}$ ) with supporting balance equation.
- d) What happen  
 $\text{AsCl}_3 + \text{H}_2\text{O} \rightarrow$   
 $\text{SbCl}_3 + \text{H}_2\text{O} \rightarrow$
- e) What is wackenroder solution?
- f) How perxenate is prepared?
- g) What happen when two molar  $\text{XeF}_2$  react with  $\text{AsF}_5$  and draw the structure of the cationic part.
- h) What is inorganic diamond?

# KANDI RAJ COLLEGE

DEPARTMENT OF CHEMISTRY

4th SEMESTER HONORS INTERNAL EXAMINATION 2022

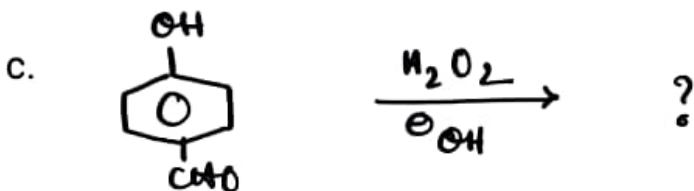
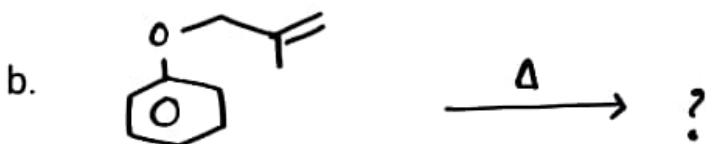
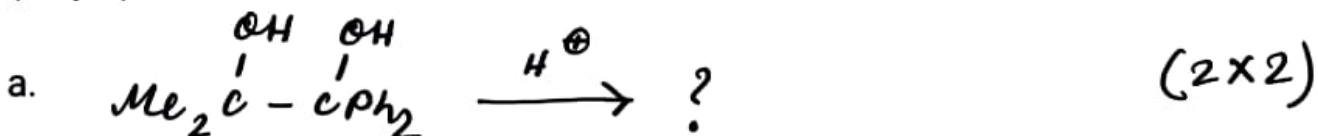
PAPER- CHEM-HCC-10

FULL MARKS- 10

TIME-

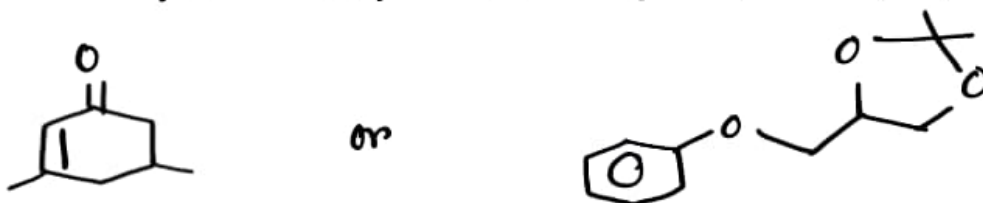
Answer the following questions:

1) Predict the pdt(s) for following reactions and suggest suitable mechanism ( any 2):

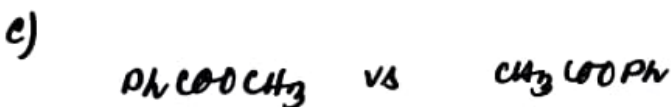
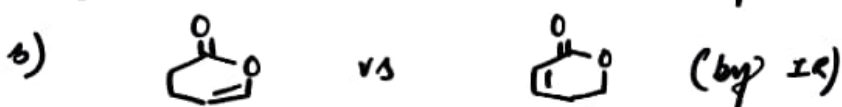


2) Nitration of anisole with acetyl nitrate mainly gives ortho nitro anisole - explain . (2)

3) Give retrosynthetic analysis of following compounds (any one): (2)



4) Distinguish the following pairs of compound by spectroscopy: (any 2)



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DEPARTMENT OF CHEMISTRY

4th SEMESTER HONORS INTERNAL EXAMINATION 2022

PAPER- CHEM-HS-2A

FULL MARKS- 5

TIME-

Answer following questions:

1) Give example of following types of drugs with their use ( any three)

- a. Anti-inflammatory b. Central nervous system c. Analgesics d. Antiviral  
e. Antifungal

(1+1+1)

2) write down preparation/production of following compound:

Penicillin or lysine

(2)

Kandi Raj College  
Internal Examination  
4th sem - H(GE)

Full Marks - 10

- ଅଧୋନୀତ 5  $10^2$  ପ୍ରଶ୍ନର ଉତ୍ତର ଦାଉ :- ( $5 \times 2 = 10$ )
1. ଚାର୍ଲସ୍ ମୁଣ୍ଡେଲେଙ୍କ ଓ ବ୍ରାଉନର ଉଦାହରଣ ଦିଅ।
  2. ଶୂନ୍ୟରେ ଶାନ୍ତ ରାଜ୍ୟ?
  3. ~~କେଉଁ~~ ପ୍ରାୟୋଗର ସାହାଯ୍ୟରେ ଶୂନ୍ୟରେ ଶାନ୍ତ ରାଜ୍ୟର ପ୍ରମାଣ ଦିଅ।
  4. ଶୂନ୍ୟର ଏକ ପ୍ରାୟୋଗର ସାହାଯ୍ୟରେ ଶୂନ୍ୟରେ ଶାନ୍ତ ରାଜ୍ୟର ପ୍ରମାଣ ଦିଅ।
  5. ଶୂନ୍ୟର ଶାନ୍ତ ରାଜ୍ୟ? ଶୂନ୍ୟର ଶାନ୍ତ ରାଜ୍ୟର ପ୍ରମାଣ ଦିଅ।  
Born-Landé ସମୀକ୍ଷାର ସାହାଯ୍ୟରେ ଶାନ୍ତ ରାଜ୍ୟର ପ୍ରମାଣ ଦିଅ।
  6. VSEPR ଓ ଶୂନ୍ୟର ଶାନ୍ତ ରାଜ୍ୟର ପ୍ରମାଣ ଦିଅ।  
- ଶୂନ୍ୟର ଶାନ୍ତ ରାଜ୍ୟର ପ୍ରମାଣ ଦିଅ।
  7. ଶୂନ୍ୟର ଶାନ୍ତ ରାଜ୍ୟର ପ୍ରମାଣ ଦିଅ।