



DE-1295
M. Sc. (Part - I) (Sem. I) (Reg., Eve. & S. F.)
Examination
March / April - 2016
Chemistry : Paper - IV
(Instrumental & Chemical Analysis)

Time : 3 Hours]

[Total Marks : 70

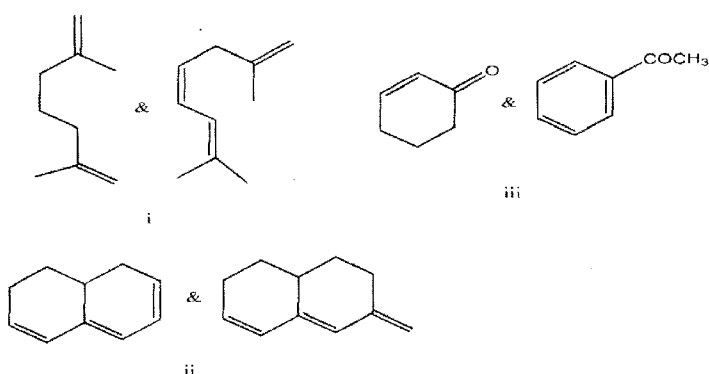
Instructions :

(1)

<p>नीचे दशांशके निशानीवाणी विगतो उत्तरवडी पर अवश्य कभवी. Fillup strictly the details of signs on your answer book.</p> <p>Name of the Examination : M. SC. (PART - I) (SEM. I) (REG., EVE. & S. F.)</p> <p>Name of the Subject : CHEMISTRY : PAPER - 4</p> <p>Subject Code No. : 1 2 9 5 Section No. (1, 2,.....): Nil</p>	<p>Seat No. : □ □ □ □ □ □</p> <p>Student's Signature</p>
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- (2) All questions are compulsory.
(3) Figures to the right indicate full marks of the questions.

- 1 Answers any three of the following. 18
- a. Give the basic principle of IR spectroscopy. How the linear & nonlinear molecules are separated by IR. Explain with examples.
 - b. i. Differentiate $\sigma \rightarrow \sigma^*$ transition over $n \rightarrow \pi^*$ transition.
ii. Discuss the solvent effect and bathochromic effect.
 - a. i. Which spectral region is used to determine structure in IR?
Give its range, also describe the function group and finger print regions.
ii. How will you differentiate i. acetophenone & benzoic acid
ii. hexanol & phenol by IR.
 - d. Calculate the λ_{\max} and compare the following compounds and compare which one is absorb at higher wave length;



2. Answers any three of the following. **18**
- Discuss the basic principle of separation in TLC. Describe the spot detection methods in TLC. Explain the principle of gas chromatography and describe the Instrumentation of GC.
 - What is the role of carrier gas? Name the carrier gas used in GC and describe the sample injection system.
 - Write brief note on TCD.
 - Name the different detectors. Discuss the principle and working of ECD.
3. Answers any three of the following. **18**
- Explain accuracy and precision with suitable examples.
 - Give an account on Confidence limit and probability.
 - Discuss Least Square Method in detail.
 - An analyst reported the following percentage of BaO in a sample: 20.20, 20.10, 20.31, 20.40, 20.85, 20.68 and 20.45.
For this set of results, calculate mean, median, range, average deviation and relative average deviation.
4. Answers any three of the following. **16**
- Give the different applications of UV/Visible spectroscopy.
 - How TLC plate is prepared? Discuss two techniques of spotting used in TLC. Give the advantages and applications of TLC.
 - Explain with examples Q- test and %ge error.
 - Differentiate following pairs of compounds by IR spectroscopy;
n-hexanoic acid & benzoic acid; n- butyl acetate & ethyl benzoate;