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# SB-2704

## M. Sc. (Sem. II) Examination

### March / April – 2011

### Chemistry : Paper-IV

*(Recent Trends in Chemistry)*

Time : **3** Hours] [Total Marks : **70**

**Instruction :**

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
**Fillup strictly the details of ☛ signs on your answer book.**

Name of the Examination :

☛ **M. Sc. (Sem. II)**

Name of the Subject :

☛ **Chemistry : Paper - IV**

☛ Subject Code No. : **2 7 0 4** ☛ Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

(2) Figures to the right indicate full marks of the questions.

**1** Answer any **THREE** of the following: **18**

(a) Define the terms: Photochemistry and Photochemical reactions. Explain the different modes of dissipation of energy.

(b) Discuss the Norrish type-I and Norrish type-II reactions with mechanism.

(c) Explain dimerization of olefins using acetone as photosensitizer.

(d) Write a note on Paterno-Buchi reaction.

**2** Answer any **THREE** of the following: **18**

(a) Write a note on supramolecular chemistry.

(b) What are crown ethers ? Explain their properties.

(c) Give an account of nanotechnology and its applications.

(d) What special properties are shown by nanoparticles and why ?

3 Answer any **THREE** of the following: **18**

(a) Define ionic liquids. Write a note on twelve principles of green chemistry.

(b) What are supercritical Fluids ? Discuss applications of supercritical $CO_2$ in dry cleaning and decaffeination of coffee.

(c) Defferentiate conventional and michrowave synthesis. Give a brief account of biodegradable polymers.

(d) Explain Knoevenagel condensation and Baeyer-Villiger oxidation in context to green chemistry.

4 Answer any **FOUR** of the following: **16**

(a) Explain in brief fluorescence and phosphorescence.

(b) Describe H-bonding and hydrophobic interactions as noncovalent interactions.

(c) Describe the atom economy with suitable illustrations.

(d) Discuss the photoisomerization of stilbene in presence of and in absence of a sensitizer.

(e) Write the green synthesis for :

(i) Adipic acid

(ii) Catechol