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DUMKAL COLLEGE

P.O- Basantapur, P.S- Dumkal, Dist.- Murshidabad, West Bengal, PIN- 742406
(Govt. Aided, Affiliated to the: University of Kalyani Included under section 2(f) & 12 (B) of UGC Act.)

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Notice

18.11.2026

All the Students of Semester VII and V of Department of Chemistry are asked to submit the assignment given below on or before **01/12/2026.**

SEM VII (CCF-NEP)

CHEM-MAT-11 10 Marks

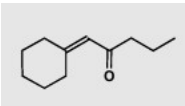
1. Draw the MO diagram of BH_3 and explain the structure of BH_3 with MO. In the MO diagram of BF3, the vacant orbital that accepts electron density from Lewis bases possesses a dominant contribution from which orbital?
2. What is heteropoly blue? Write the down the applications of polyoxometallate.
3. Explain the principle of chelation therapy with special reference to arsenic and lead detoxification. Why NaCaEDTA salt is used instead of Na_2H_2EDTA in chelation therapy.
4. Sketch the active site structure and write the function of Hemoglobin. State with experimental evidence about the chemical changes happen at the metal centre of the active site during the oxygenation of hemoglobin. What is cooperative interaction in hemoglobin? What is haematin?
5. Define biological Nitrogen Fixation. Explain the mechanism of Nitrogen Fixation by the nitrogenase enzyme complex.

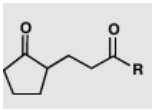
CHEM-MAT-12 10 Marks

1. Explain the primary, secondary, tertiary and quaternary structures of proteins with suitable examples. (5 Marks)
2. State and explain the laws of photochemistry. (5 Marks)

CHEM-MAT-13 10 Marks

1. Write a short note on a) Synthon, b) Synthetic Equivalent, c) FGI and d) Diels-Alder Reaction
2. Design a synthetic route showing retrosynthesis for





3. Predict whether the thermal ring-closure of (2E, 4Z, 6E)-octatetraene. Give the stereochemistry of the product**.**
4. Compare and explain the relative rate of elimination when both cis- and trans- 4-tert-butylcyclohexyl bromide are treated with sodium ethoxide in ethanol separately.
5. What is Merrifield resin synthesis? Explain with suitable example.

CHEM-MIT- 4 10 Marks

1.Discuss the general characteristics of 3d series transition elements with special reference to electronic configuration, variable oxidation states, colour, magnetic properties and Catalytic activity.

2. Compare Lanthanoids and Actinoids with respect to electronic configuration, oxidation states, colour, magnetic properties and chemical behaviour.

Head of the Department
Department of Chemistry
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