বিদ্যাসাগর বিশ্ববিদ্যালয়

VIDYASAGAR UNIVERSITY

Question Paper

B.A./B.Sc./B.Com. Part-III (1+1+1) Examination 2020

3rd Year (Honours)

Subject: CHEMISTRY

Paper: VI

Full Marks: 80 (Theory)
Time: 4 Hours (Theory)

Candiates are required to give their answer in their own words as far as practicable.
Questions are of equal value.

Answer any **one question** [within 250 words] from each Group.

Group : A

[Organic Chemistry (Theory)]

1. Give definition, classification and characteristic feature of pericyclic reaction.
2. Explain the term mutarotation with example and mechanism.
3. Explain the term isoelectric point with example.
4. Which positions at pyridine are reactive towards the electrophile and nucleophile considering charge distribution and stability of the σ complex?
5. Establish the configuration of D-glucose.

6. Write a short note on shielding and deshielding of protons.
7. Give the C-terminal and N-terminal determination of peptides.
8. Discuss how the factors hydrogen bonding and ring size effect the stretching frequency.
9. Give the definition at FGI, FGA, synthon, synthetic equivalent and latent polarities.
10. [4+2]cyclic addition is allowed reaction under heating condition but [2+2] cyclo addition reaction is photochemically allowed. Explain with the help of FMO approach.
11. Discuss the solvent effect at $n \rightarrow \pi^*$, $n \rightarrow \sigma^*$, $\pi \rightarrow \pi^*$ transitions.
12. Discuss the high dilution technique for the synthesis of large ring compound.

Group : B

[Inorganic Chemistry (Theory)]

1. Write short note on trans effect.
2. Write a short note on Ziegler Natta catalyst.
3. Briefly discuss the structure and bio-function of haemoglobin and myoglobin.
4. Write a short note on biological nitrogen fixation.
5. Briefly discuss the mechanism of photosynthesis.
6. Discuss the magnetic and spectral properties of lanthanides.
7. Describe the structure and bonding in Ziese's salt.
8. Write a short note on 18-electron rule.
9. Comment on catalytic and magnetic properties of d-block elements.
10. Briefly discuss the Guoy method for the determination of magnetic moment.
11. Write a short note on Jahn-Teller distortion.
12. Write down detection and estimation procedure of any two of the following in water sample: As, Hg, Cd, Pb.