BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)

B. Tech. Sem - II Computer Science & Engineering AI & ML : WINTER : 2023

SUBJECT : ORGANIC & ELECTROCHEMISTRY

Day : Wednesday

Date : 22-11-2023

Time : 10:00 AM-01:00 PM

W-23931-2023

Max. Marks : 60

N. B. :

1) All questions are **COMPULSORY**.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.
4) Draw neat and labelled diagrams wherever necessary.
5) Assume suitable data, if necessary.

Q. 1 a) Define bond order. Explain the stability of molecule on the basis of value of bond order. Give relationship between bond order and bond length. **(10)**

OR

b) Define molecular orbital. Explain the diamagnetic nature of nitrogen molecule on the basis of molecular orbital theory. **(10)**

Q. 2 a) Define green chemistry. Explain "use of renewable feedstock" principle in given chemistry. **(10)**

OR

b) Define the term green solvent. What is the supercritical CO_2? Give the applications of supercritical CO_2 as a green solvent. **(10)**

Q. 3 a) Define fuel-cell. Explain the construction and working of H_2 - O_2 fuel cell. Give the advantages of fuel-cell. **(10)**

OR

b) Define electrochemical cell. Explain the construction and working of Daniel cell. **(10)**

Q. 4 a) Define polymer. What do you mean by degree of polymerization? Explain addition polymerization with suitable example. **(10)**

OR

b) What are conducting polymers? Explain different types of conducting polymers with examples. **(10)**

Q. 5 a) Define semiconductor. Explain electrical conductivity in n-type and p-type semiconductor. **(10)**

OR

b) What is chalcogen photoconductors? Explain the principle of photocopying process by using selenium photoconductor. **(10)**

Q. 6 a) Define a chemical fuel. Give the complete classification of fuels with examples. What are the characteristics of a good fuel? **(10)**

OR

b) Define gross calorific value and net calorific value. A coal sample contains C = 70 %, H = 8 %, O = 20 %, S = 0.5 %, N = 0.2 %, ash = 1 %. Calculate the gross and net calorific values of coal. **(10)**

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