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University Roll No.....

FIRST Mid Term Examination, 2016 – 2017
B. Tech. I Year I Semester
AHC – 1001: ENGINEERING CHEMISTRY

Time: - 1 ½ Hrs.

Max. Marks:- 20

Section – A

Note : Attempts all Questions

1 X 5 = 5 Marks

- I. Arrange N_2 , F_2 and O_2^+ in increasing order of their bond length.
- II. What is necessary condition for showing a molecule to form diastereomer? Write any one structure of diastereomer.
- III. Write Dulong Pettit formula for calculating HCV of fuel.
- IV. Why methanol is soluble in water while carbon tetra chloride is insoluble in water?
- V. Write two examples of insulating lubricating oil.

Section – B

Note : Attempt any Three Questions

2 X 3 = 6 Marks

- I. How calorific value of a fuel is determined by bomb calorimeter? Explain with diagram.
- II. How synthetic petrol is prepared by Fischer Tropsch method?
- III. What is metallic bond? Write electron sea model theory of metallic bond.
- IV. What is geometrical isomerism? Explain with E-Z configuration of geometrical isomers.

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Section – C

Note : Attempt any Three Questions

3 X 3 = 9 Marks

- I. What are conformers? With the help of Newmann projection explain the conformers of a molecule in which Gauche (or Skew) conformer exist.
- II. Explain Molecular orbital Theory. With the help of M.O. Theory draw M.O. Diagram of CO molecule.
- III. A fuel sample has following composition :-Ethane – 10 %, Isobutane = 30 %, Propene = 20 %, Carbon Monoxide = 5 %, Nitrogen = 5% and oxygen = 30%. Calculate the volume of air required of 100 m³ of fuel sample if 40 % excess air is required.
- IV. What are ceramics? How are they classified? What are the main constituents of ceramics?