Printed Pages: 2
University Roll No...........
Mid-Term Theory Examination, 2019-20
Engineering Chemistry (BCHS 0101)

Course: B.Tech.
Time: 2 Hr

Year/ Semester: I/II
Maximum Marks: 30

Section A

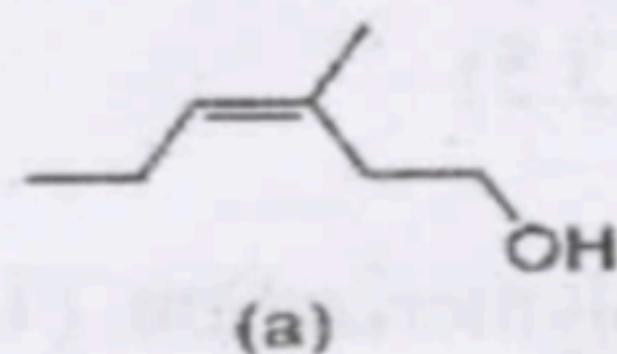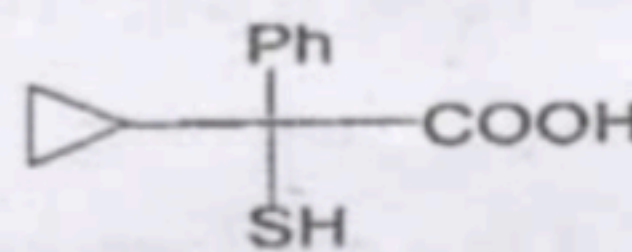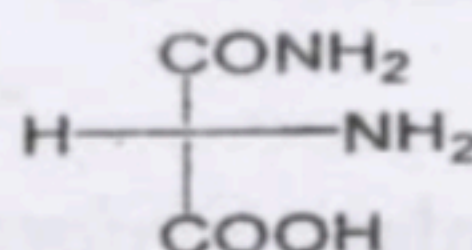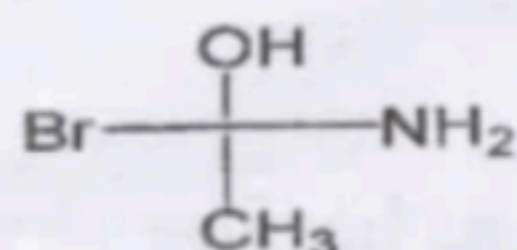*Note: Attempt all questions*
2 x 3 = 6 marks

1. Calculate the number of Chiral carbon atom and pairs of enantiomer in 3 Chloro-2 pentanol.
2. Suggest the role of flux used in ceramic industry. Discuss important industrial applications of ceramics.
3. What is metallic Bond? Explain it in term of the electron sea theory.

Section B

Note: Attempt all questions
3x 3 = 9 marks

1. Define is lubricant? Discuss the importance of oiliness and pour point of lubricants.
2. (a) Design preparation process and industrial application of any one polymer. (2.0)
   (i) Bakelite
   (ii) Poly β hydroy butyrate
   (b) If the average degree of polymerization of polystyrene is 10^6 calculate its average molecular weight. (1.0)
3. Assign R/S and E/Z to the following.

(a)   (b)   (c)
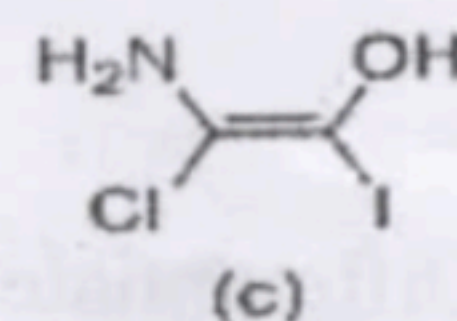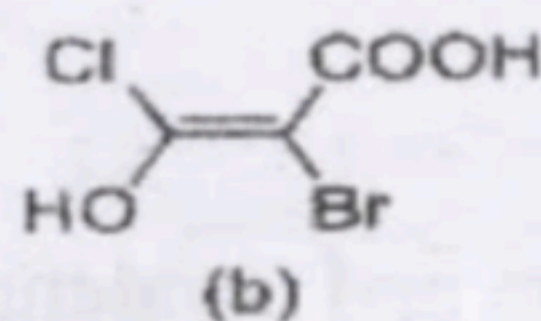
Section C

5 x 3 = 15 marks

1. (a) Differentiate Gross and Net Calorific value of a fuel.   (1.5)
   (b) Discuss the importance of Ultimate analysis of Coal.   (1.5)

   (c) On burning 0.83 gram of a solid fuel in a bomb calorimeter, the temperature of 3500 gram of water increased from $26.5°C$ to $29.2°C$. Water equivalent of calorimeter and latent heat of steam are 385 gram and 587 cal/gram respectively. If the fuel contains 0.7% hydrogen, calculate   its   gross   and   net   calorific   value.
   (2.0)

2. Using the concept of Molecular orbital theory, draw the molecular orbital diagram of O_2 molecule, find out bond order and also assign magnetic behavior.

3. (i) List composition and uses of any two of the glasses.   (3.0)
   (a) Flint
   (b) Pyrex
   (c) Hard glass
   (ii) Calculate the volume of air required, if 15% excess of air is used for   the complete combustion of 100 m^3 of gaseous fuel having composition:
   Propene=15%, CH_4=18%, H_2=10%, N_2=25% ,
   O_2 = 12%, C_2H_6=18 % and rest CO_2.   (2.0)

4. (i) What are conformers? Explain conformation in *n*- butane   with suitable diagrams. Discuss their stability order by giving Energy Level diagram.   (3.5)

   (ii) Differentiate addition and condensation polymerization. (1.5)