6. Explain surface characterization techniques. 3

Define elastic scattering. 2

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B.Tech Even (Mid) Semester Examination-2021

Computer Science & Engineering / Agricultural Engineering / Electronics & Communication Engineering

Course No.: ASH-201

(Engineering Chemistry)

Full Marks: 30

Pass Marks: 09/15

Time: 1½ hours

Note:
1. All questions are compulsory.
2. Answer parts of a question at a glance.
3. Assume reasonable data whereever required
4. The figures in the right margin indicate full marks for the question.

1. (a) Which of the following molecules will show IR spectrum, and why: H_2, HCl, H_2O, CO_2? 1+1

   (b) What is MRI and how does it work? 3

2. (a) Explain critical temperature (T_c) and critical pressure (P_c). 2

   (b) Calculate the critical constants of C_2H_2 gas using the vanderwaals constants a = 4.390 $dm^6 atm\ mol^{-2}$ and b = 0.05136 $dm^3\ mol^{-1}$. 3

3. Describe vanderwaals interaction with suitable example. 5

4. Explain selection rules with example. 5

5. How many fundamental Vibrational degrees of freedom are expected for the following molecules? (i) CO_2 (linear) (ii) $CHCl_3$ (iii) H_2O (bent) (iv) C_2H_2OH (v) C_2F_2 (linear) 5