CODE NO : 20280

2006 CALICUT UNIVERSITY

I / II SEMESTER B.TECH ENGINEERING DEGREE EXAMINATIONS

ENGINEERING CHEMISTRY

(CSE,IT,ECE,IC.BM)

JUNE 2006

TIME::3 HOUR
MARK:100

ANSWER ALL QUESTIONS

PART A [8*5=40]

I. 1. With a neat diagram, explain the voids in crystal structure.

2. Write short notes on (i) Ferro-electricity; and (ii) Piezoelectricity.

3. Explain the following terms :

(i) Calendering ; (ii) Die casting.

4. Give the significance of the following : (i) Aniline point ; (ii) Cloud point ; and (iii) Pour point.

5. Explain the function of salt bridge in e.m.f. measurement with a diagram.

6. Calculate the pH of a buffer solution containing 20ml. of 0.1 N acetic acid and 10 ml. of 0.1 N NaOH. If the Ka value of acetic acid is 1.75 X 10-5.

7. corrosion products can act as a protective layer. Explain the term with the help of pilling bed worth rule.

8. Write short notes on thermal pollution.

PART B [15*4=60]

II.A. (i) How are crystalline solids classified on the nature of forces binding the constituent units ?

(ii) Derive Braggs equation for diffraction of X-rays by crystal.

Or

B. (i) What are superconductors ? Explain their properties and uses.

(ii) Explain the following facts :-

(a) Copper is ductile and malleable but brass is not.

(b) Sodium chloride pieces are harder than sodium metal.

III. A. (i) Write a note on compounding of rubber.

(ii) How is vulcanization of rubber carried out ?

Or

B. (i) Write short note on extreme pressure lubrication.

(ii) How is the viscosity of a lubricating oil determined ? How the viscosity index of an oil can be improved ?

IV. A. (i) Write short notes on :

(a) Concentration cells.

(b) Over voltage.

(ii) How is neutralization reactions carried out by e.m.f. measurements ?

Or

B. (i) Explain the construction and working of Ni/Cd cell.

(ii) Suggest a suitable method to determine the e.m.f. of a cell with a neat sketch.

V. A. (i) Explain the mechanism of electrochemical corrosion.

(ii) List out few methods used to control air-pollution.

Or

B. (i) Explain the chemistry of chrome plating with a neat diagram.

(ii) Explain the secondary and tertiary treatment of sewage water.

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