

**Final Year M.Sc. Degree Examination
August 2009
(Freshers)**

**APPLIED CHEMISTRY
APP.CHEM-2.04 - Selected Topics in Industrial Chemistry**

Time : 3 Hours

Max. Marks : 85

- Note :**
1. Answer any ELEVEN question from Part-A, THREE questions from Part-B and any THREE full questions from Part-C.
 2. Numbers to the right indicate marks.

PART-A

Answer any ELEVEN of the following.

11x2=22

1. a) What are unit operations?
b) What is the SI unit of power?
c) Define the term mole fraction.
d) Define Reynold number.
e) What is diffusion?
f) Define latent heat?
g) Define humidity.
h) Define the term quality.
i) What is meant by tolerance?
j) Define ISO.
k) Convert 1/cm.sec to 1b/f min.
l) Define the term stoichiometric coefficient.
m) What are heat exchangers?
n) Define the term Nucleation.
o) Define the term steam efficiency.

PART-B

Answer any THREE of the following.

3x8=24

2. a) Write a note on quality control process in any industry.
b) Explain the mechanism of drying.
3. a) Explain the Stefan-Boltzmann law.
b) What is quality assurance? Explain.

4+4

4+4

4. An evaporator is used to concentrate cane sugar solution. A feed of 10000 kg per day containing 38% sugar is evaporated producing 74% solution. Calculate the weight of solution produced and amount of water removed. 8
5. a) Explain the advantages and disadvantages of setting ISO 9000 certification.
b) Explain the term quality function. 4+4
6. Write a note on ISO-14000 series. 8

PART-C

Answer any THREE of the following.

3x13=39

7. a) Explain the mechanism of drying.
b) Write a note on the techniques of material balance. 7+6
8. a) Explain the Fick's law of diffusion.
b) What are the factors affecting the quality of design? 7+6
9. a) Explain the term quality of design.
b) Write a note on ISO-9000 series. 7+6
10. a) A gas mixture contains 0.13 mol N_2 , 1.27 mol NH_3 and 0.1 mol H_2O is contained at a total pressure of 830 mm of Hg and 321 K. Calculate a) Mole fraction and mass fraction of each component. b) Its density
b) Explain the principle of material balance with chemical reaction. 7+6
11. a) Explain Fourier's law of heat conduction.
b) Write a note on heat exchangers. 8+5

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