(d) Paramagnetism

(e) Ferromagnetism.

(vii) Write down the basic principle of Holography? Describe Holography.

Write down the application of Holography.

What is extrinsic semiconductor and what is intrinsic semiconductor?   3+5+4+3=15

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Ex/PRN/T/126/131/2007

FIRST ENGG. (PRINTING) EXAMINATION, 2007

(2nd Semester)

PRINTING MATERIAL SCIENCE – I

Time : Three hours   Full Marks : 100

1. Answer any 5 questions (Each carry 3 marks).   3×5=15

(a) What is surface tension? What is the limit of surface tension?

(b) What is viscosity coefficient? What is the limit of it?

(c) What do you mean by Holography?

(d) What is the difference between conduction and convection?

(e) Write down the less of Lasers.

(f) Write down the application of Fibre optics.

2. Answer all questions. (Each carry 1 mark)   10×1=10

(i) What is the limit of Stefan - Boltzmann's constant?

(ii) Write down Poiseuille's equation?

(iii) What is fluidity?

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(iv) Write down Stoke's law.

(v) What is paramagnetic substance?

(vi) What is forbidden gap in energy band?

(vii) Give example of piezoelectric materials.

(viii) What is hysteresis?

(ix) What is the full form of LASER?

(x) What are the regions of optical fibre?

3. Answer any 5 quesitons. (Each carry 15 marks)

(i) Write down the relation between surface tension and temperature. Derive the relation between surface tension and vapor pressure. A drop of water, 0.5 cm in diameter, is split up into 125 times drops. Find the increase in surface energy (v_{H_2O} = 70 dynes/cm).   2+6+7=15

(ii) What is the relation between viscosity and temperature for liquid and gases ?

Heptane (ρ=0.72) flows through a viscometer in 60 sec while some volume of water requires 105 sec at 20°C. Calculate the absolute viscosity of heptane if that of water is 0.01002 poise.

What is Reynold's no. ; what is turbulent type of flow?   4+7+4=15

(iii) What do you mean by conduction?

Determine the rate of heat loss Q, through a wall of red brick (k = 0.5W/mK) ; 5 m in length, 4 m in height and 0.2 m in thickness, if the wall surfaces are mentained at 90°C and 30°C respectively. What absorbing power of a substance? What is emission and absorption of radiation?   2+7+2+4=15

(iv) Write down the difference between semiconductor and insulator in respect of bond theory.   4

Write down the working principle of laser.   3

Write down the characteristics of laser.   4

Briefly describe stimulated emission of light laser   4

(v) Write down the specially of optical Fibres.   5

Write down the working principle of optical Fibre.   5

What is acceptance cone and numerical aperture of optical Fibre.   5

(vi) Write short notes on : (any *three*)   5×3=15

(a) Ferrimagnetism

(b) Hysteresis

(c) Diamagnetism

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