

B.E (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV/DEC 2012  
PRINTING TECHNOLOGY BRANCH  
SECOND SEMESTER  
PH 9166 PHYSICS FOR PRINTING TECHNOLOGY

Time: 3 hours

Max Marks: 100

PART A (10x2=20)

Answer all questions

1. Write short notes on Reynolds number, viscosity and velocity gradient?
2. What are the properties of UV durable inks?
3. What is surfactant and what are different types of surfactants?
4. Compare phase change recording and Magneto optic recording?
5. What are advantages and disadvantages of inkjet printer?
6. Compare holographic and photographic storage?
7. Write short notes on electrode luminescence?
8. What are different types of photodetectors and what are its advantage?
9. Write short notes on Fourier Transform?
10. Define Huygens principle?

PART A (5x16=80)

Answer all questions

11. Explain in detail angle of contact of a liquid and explain the theory of capillary rise to find the surface tension?
12. Derive Poiseuille's formula for flow of liquid through capillary tube and derive the expression for pressure correction?

OR

State Stokes law and apply it to derive an expression for terminal velocity of a sphere falling through a fluid and explain the terms laminar flow, turbulent flow and critical velocity and how will you determine critical velocity

(P.T.O)

13. Explain why the pressure on the concave side of a liquid surface is greater than its convex side. Derive an Expression for the excess pressure inside the spherical soap bubble of radius  $r$ ?

OR

In a jaegar type of experiment to measure the ST of a liquid the vertical capillary tube of radius  $0.0005\text{ m}$  was dipped inside a liquid of density  $1100\text{ kg/m}^3$  to a depth  $0.04\text{ m}$  below its surface. When an air bubble was formed at the end of the capillary tube dipping inside the liquid it was observed from manometric reading that the pressure inside the bubble exceeded the atmospheric pressure by  $0.00547\text{ m}$  of Hg. Calculate the ST of the liquid.

14. Explain in detail about for electro optic modulator and derive an expression?

OR

Explain in detail about action and characteristics of liquid crystal materials?

15. With a neat diagram explain Abbe-Porter experiment and derive wave and Helmholtz equation in time and frequency domain?

OR

With a neat block diagram explain in detail the steps involved in digital image processing?

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21/01/5