SATHYABAMA UNIVERSITY

(Established under section 3 of UGC Act,1956)

Course & Branch :B.E/B.Tech - AERO/BME/M&P/MECH
Title of the Paper :Applied Physics – II Max. Marks :80
Sub. Code :4ET203B-5ET203B Time : 3 Hours
Date :05/12/2009 Session :AN

PART - A (10 x 2 = 20)

Answer ALL the Questions

1. Write how a Venturimeter is used to measure the speed of flow of a fluid in a pipe.
2. What are streamline and turbulent flow?
3. State Joule – Thomson effect.
4. Mention the principle of refrigeration.
5. State stress – optic law.
6. What are isoclinic fringes? Write any two properties of isoclinic fringes.
7. What is nuclear fusion? Write any one fusion reaction.
8. What are the conditions for a material to be used as a modulator? Write any two names of modulators.
9. What is meant by X-ray radiography?
10. What is radioactivity? What is half life period of a radioactive material?

PART – B (5 x 12 = 60)

Answer All the Questions

11. (a) State Bernoulli's theorem and derive the Bernoulli's equation.
    (b) Write any two features of Bernoulli's equation.

(or)

12. (a) Derive the Poiseulle's formula for the flow of liquid through capillary tube.

(b) Explain about an experimental method used to find the viscosity of the liquid using Poiseulle's method.

13. Explain the phenomenon of adiabatic demagnetization. How will you employ this phenomenon to produce and measure very low temperature?

(or)

14. (a) With a neat sketch, explain the experimental arrangement of the cascade process for the liquefaction of oxygen. (10)
(b) Explain how this cascade process in extended to liquefy nitrogen. (2)

15. Derive a mathematical expression for the emergent beam from the analyzer of a plane polariscope and discuss how it enables us to determine the isochromatics and isoclinics.

(or)

16. (a) What is photoelastic effect? Mention any four photoelastic material used.
(b) Describe the basic elements of a photoelastic bench and explain the function of each.

17. Explain with neat sketch the principle, construction and working of a nuclear power reactor.

(or)

18. (a) Distinguish between nuclear fission and nuclear fusion with example. (8)
(b) What are the conditions to be satisfied for a sustained nuclear reaction? (4)

19. Explain with a neat sketch, the principle, construction and working of a scintillation counter.

(or)

20. Explain how ultrasonic wave is used for blood flow measurement with a neat sketch.