SATHYABAMA UNIVERSITY
(Established under section 3 of UGC Act,1956)

Course & Branch: B. E/B. Tech - Common to ALL Branches
Title of the paper: Applied Physics – II

Semester: II	Max. Marks: 80
Sub.Code: 203B (2002/2003/2004/2005)	Time: 3 Hours
Date: 05-12-2006	Session: AN

PART – A   (10 x 2 = 20)
Answer ALL the Questions

1. Define Coefficient of viscosity.

2. Differentiate streamline and turbulent motion.

3. What is cascade process?

4. State principles of refrigeration.

5. In an experiment using a photo-elastic bench, the difference between the principal stresses is 8×10^9 N/m^2. The photo-elastic material has its relative stress optic coefficient as 2 brewsters (1 brewster $= 10^{-12}$ m^2/N). Calculate the difference between the refractive indices along the principal stresses.

6. Give the applications of photo-elasticity.

7. Write the reactions of proton-proton cycle and explain.

8. Calculate the power output of a nuclear reactor which consumes 10 kg of U^{235} per day assuming the average energy released per fission is 200 MeV.

9. What is phonocardiography?

10. Discuss the differences between radiography and fluoroscopy.

Answer ALL the Questions

11. State Bernoulli's theorem and derive Bernoulli's equation.
(or)
12. Derive Poiseulle's formula for flow of liquid through a capillary tube. Using this formula how will you determine the coefficient of viscosity of water experimentally.

13. Give the elementary theory of Joule-Thomson effect.
(or)
14. Write notes on adiabatic demagnetization.

15. Explain photo-elasticity and discuss stress-optic law.
(or)
16. Derive the theoretical conditions for observing iso-chromatic and osoclinic fringes.

17. (a) What are the fissile nuclides? Calculate the energy released per fission of U^{235}.   (7)

    (b) Mention the difference between fission and fusion.   (5)
(or)
18. (a) Draw a schematic diagram of a nuclear reactor and explain the functions of important parts in it.   (8)

    (b) Discuss different types of nuclear reactors.   (4)

19. (a) What is the principle of ultrasound used in diagnosis?   (4)

    (b) Explain the instrumentation for diagnostic X-rays.   (8)
(or)
20. (a) How a gamma camera is used for diagnosis?   (7)

    (b) Discuss photomultiplier tube.   (5)