

Reg. No. :

**Question Paper Code : Z 8418**

B.Sc. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

First Semester

Computer Technology/Information Technology

BCS 113 — APPLIED PHYSICS

(Regulation 2003)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define stress and strain.
2. What is the basic principle of pirani gauge?
3. Define absorption co-efficient of a meter %.
4. Mention a few applications of ultrasonic in Engineering and Medicine.
5. State second law of thermodynamics.
6. Find the efficiency of a Carnot's engine working between ice point and steam point.
7. What is photometry?
8. Write down the basic principle used in SEM.
9. Give any two advantages of optical communication over microwave communication.
10. State the characteristics of Laser light.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Describe Torsion pendulum. Derive the expression for the rigidity modulus of the material of a wire using torsion pendulum. (12)
- (ii) Write a note on effect of temperature and impurities on the elastic property of a material. (4)

Or

- (b) (i) Explain the construction and working of Rotary oil pump. (8)
- (ii) Describe Oswald Viscometer and explain how it can be used for comparison of viscosities of two liquids. (8)

12. (a) (i) What is reverberation time? Derive Sabine's formula for reverberation time. (12)
- (ii) A cinema hall has a volume of 7500 m<sup>3</sup>. It is required to have reverberation time of 1.5 sec. What should be the total absorption in the hall? (4)

Or

- (b) (i) What are ultrasonic waves? Explain Magnetostriction method of producing ultrasonic waves. (12)
- (ii) Write a short note on Noise pollution. (4)

13. (a) (i) Describe Lee's disc method to determine thermal conductivity of bad conductor. (12)
- (ii) Mention the properties of thermal insulation materials used in buildings. (4)

Or

- (b) (i) Describe the cycle of operations involved in an ideal diesel engine and derive an expression for its efficiency. (12)
- (ii) What is Entropy? Draw the entropy-temperature diagram of Carnot cycle. (4)

14. (a) (i) Describe the Lummer Brodhum photometer. How will you use it to compare the illuminating power of two sources? (12)
- (ii) Give an account of antireflection coating. (4)

Or

- (b) (i) Describe with a neat sketch the essential parts of a metallurgical microscope and how it is used to study microstructure of a specimen. (12)
- (ii) What is photo elasticity? Mention a few applications of photo elasticity. (4)
15. (a) (i) Explain the construction and working of He-Ne laser. (12)
- (ii) Distinguish between spontaneous and stimulated emission. (4)

Or

- (b) (i) Explain the light wave propagation through an optical fibre and derive an expression for numerical aperture of a fibre. (12)
- (ii) Discuss the classification of fibre on the basis of refractive index profile. (4)