Hall Ticket Number:

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VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

B.E. (CBCS) II-Semester Advanced Supplementary Examinations, July-2019

Applied Physics

(Civil & Mech. Engg.)

Time: 3 hours Max. Marks: 60

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

1. Distinguish between spontaneous and stimulated emissions.
2. List any four applications of lasers.
3. What do you mean by total internal reflection?
4. An optical fibre has a Numerical aperture of 0.20 and a cladding refractive index of 1.59.Determine the acceptance angle for the fibre in water which has a refractive index of 1.33.
5. Define the intensity of sound.
6. What is Sabine's formula?
7. What is the difference between the inversion temperature and critical temperature?
8. Write the applications of cryogenic liquids
9. Write the properties of ferrites.
10. What is Meissner's effect?

Part-B (5 ×8 = 40 Marks)

11. a) Define the terms "population invention's Meta stable states" [4]
    b) Explain the construction and working of Ruby laser. [4]
12. a) Give the classification of optical fibres based on refractive index and modes of propagation. [3]
    b) Explain various signal losses in optical fibres. [5]
13. a) Write the requirements for good acoustics of a building. [3]
    b) Derive the expression for the reverberation time. [5]
14. a) Write the properties of cryogenic helium. [3]
    b) Explain the Joule-Kelvin effect for a Vander Wall's gas. [5]
15. a) Explain the Weiss theory of ferromagnetism and obtain the expression for magnetic susceptibility. [4]
    b) Explain the general properties of superconductors. [4]
16. a) Explain the construction and working of CO_2 laser. [4]
    b) Explain the propagation of light through an optical fibre and deduce the expression for the numerical aperture. [4]
17. Answer any *two* of the following:
    a) Write a note on sound absorbent materials. [4]
    b) Describe the Linde Process. [4]
    c) Hard and soft magnetic materials. [4]

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