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# SATHYABAMA UNIVERSITY

(Established under section 3 of UGC Act, 1956)

Course & Branch: B.E/B.Tech- All Branches

Title of the Paper: Applied Physics

Max. Marks: 80

Sub. Code: 6C0003 (2006/07/08/09)

Time: 3 Hours

Date: 03/12/2010

Session: FN

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PART - A

(10 X 2 = 20)

Answer ALL the Questions

1. What are the different modes of heat transfer?
2. Define the coefficient of thermal conductivity of the material.
3. What is the f-ratio of photographic camera?
4. What is astigmatism?
5. State Weber – Feckner Law.
6. What should be the total absorption in a hall of volume  $10000\text{m}^3$ , if it is required to have a reverberation time of 1.4 seconds?
7. Define Young's modulus of elasticity.
8. What is the Bending moment of a beam?
9. What are matter waves?
10. Calculate the de Broglie wavelength of an electron, accelerated by a potential difference of 100 volts.

PART – B

(5 x 12 = 60)

Answer All the Questions

11. (a) Explain the process of ice formation on ponds.  
(b) Explain the process of the heat conduction in a compound medium arranged in parallel.  
(or)
12. Describe with relevant theory, the method of determining the coefficient of thermal conductivity of a bad conductor by Lee's disc method.
13. (a) What is achromatism. (2)  
(b) Discuss the condition for achromatism when two lenses are in contact. (10)  
(or)
14. Discuss in detail, the different types of monochromatic aberrations and the ways of minimizing them.
15. Derive Sabine's formula for reverberation time.  
(or)
16. (a) What is meant by sound absorption coefficient? (2)  
(b) Explain the experimental method used to measure the absorption coefficient of a material. (10)
17. Derive an expression for the Young's modulus of the cantilever by statical method, when the beam is loaded at the center.  
(or)
18. Derive an expression to find the depression in a cantilever loaded at the free end.
19. Explain with a neat sketch, the experimental determination of matter waves using Davisson – Germer experiment.  
(or)
20. Derive Schrödinger time independent and dependent wave equation.