Hall Ticket Number:

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VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

B.E. (CBCS) II-Semester Backlog Examinations, June-2019

Applied Physics

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. Write any four differences between crystalline and amorphous materials.
2. Explain Schottky defect with neat diagram.
3. What is the physical significance of wave function "ψ"?
4. What is time dilation?
5. Define Hall effect.
6. Define fill factor and efficiency of solar cell.
7. Write different types of electric polarization.
8. Explain about dielectric loss.
9. Distinguish Hard and Soft magnetic materials.
10. Type-I and Type-II superconductors.

Part-B (5 × 8 = 40 Marks)

11. a) What are Miller indices? [3]
    b) Explain powder diffraction method to determine inter planner spacing. [5]
12. a) Derive the Einstein's mass and energy relation ($E = mc^2$). [4]
    b) Find the wave length and energy of an electron which is moving in 10 V potential difference. [4]
13. a) Explain the salient features of Koring- penny Model and write its conclusions. [4]
    b) Explain construction and working principle of LED. [4]
14. a) Explain phase transition of $BaTi0_3$ with Structure. [4]
    b) Explain Classisus Mosseotti equation. [4]
15. a) Explain B-H curve of a ferromagnetic material. [4]
    b) Calculate the transition temperature for lead, if the critical magnetic field is $1/20^{th}$ of that at 0K if $T_c = 4.8K$. [4]
16. a) Derive the Braggs law. [4]
    b) Calculate de Broglie wave length of neutron of energy 12.8 Mev. [4]
17. Answer any *two* of the following:
    a) Derive carrier concentration in Intrinsic Semiconductors. [4]
    b) Derive expression for electronic polarizability. [4]
    c) T_c of $_{80}Hg^{200.59}$ superconductor is 4.153K then find T_c of $_{80}Hg^{204}$ Superconductor. [4]

Values of Important Physical quantities

(h = 6.625×10^{-34} J.S, e = 1.6×10^{-19} C, $M_e = 9.11 \times 10^{-31}$ Kg , $M_N = 1.6 \times 10^{-27}$ Kg.)

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