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**Question Paper Code : 40066**

B.E. DEGREE EXAMINATION, APRIL/MAY 2018

Second Semester

Bio Medical Engineering

PH 8253 – PHYSICS FOR ELECTRONICS ENGINEERING

(Common to : Computer and Communication Engineering/Electrical and Electronics Engineering/Electronics and Communication Engineering/Electronics and Instrumentation Engineering/Electronics and Telecommunication Engineering/Instrumentation and Control Engineering/Medical Electronics Engineering)  
(Regulations 2017)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. Distinguish between Mean free path and Collision time.
2. Define density of energy states.
3. What are n-type and p-type semiconductors ? Give examples.
4. Distinguish between Ohmic and Schottky contacts.
5. Define the terms intensity of magnetization and flux density.
6. Mention the energies involved in origin of domains in ferromagnetic material.
7. What is recombination process in semiconductors ?
8. List out any four advantages of LED in electronic display.
9. Define the term quantum well and quantum wire.
10. What is spintronics ?



## PART – B

(5×16=80 Marks)

11. a) Deduce mathematical expressions for electrical conductivity and thermal conductivity of a conducting material and hence obtain Wiedemann-Franz law.  
(OR)
- b) Explain the band theory of solids in detail and classify solids into conductors, semiconductors and insulators with neat diagram.
12. a) Write a note on carrier transport in n-type and p-type semiconductors.  
(OR)
- b) Explain with necessary theory the Hall Effect and the experimental method to determine the electrical conductivity of a semiconductor. Explain any four applications.
13. a) What are ferrites? Describe the different types of ferrites structure with suitable diagrams and mention its applications.  
(OR)
- b) Describe the working of magnetic hard disc based on GMR sensor. Mention its advantages and disadvantages.
14. a) Explain absorption and emission of light in metals, insulators and semiconductors.  
(OR)
- b) Describe in detail, the principle construction and the working of OLED with a neat diagram.
15. a) Discuss in detail quantum confinement and quantum structures in nano materials.  
(OR)
- b) Explain the synthesis mechanism and physical properties of CNTs with a neat sketch and mention its application.
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