Reg. No. : | | | | | | | | | | | | |

Question Paper Code : X20431

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020
Sixth/Seventh Semester
Electronics and Communication Engineering
EC 6016 – OPTO ELECTRONIC DEVICES
(Common to Medical Electronics Engineering)
(Regulations 2013)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions

PART – A **(10×2=20 Marks)**

1. Why semiconductor heterostructure is used in optoelectronic devices ?
2. What is the basic difference between quantum mechanical concept and wave theory ?
3. What is the operating principle of plasma display ?
4. List out any three applications of LASER.
5. Draw the energy band diagram of a photodiode.
6. Define quantum efficiency of a photodetector.
7. What is the principle behind electro-optic modulators ?
8. Compare electro-optic and acousto-optic modulators.
9. What is the need for optoelectronic ICs ?
10. What is the main advantage of hybrid ICs ?

PART – B **(5×13=65 Marks)**

11. a) Discuss in detail about the quantum mechanical concept.

(OR)

b) Give a brief review of developments in semiconductor physics.

12. a) Explain the principle of operation and features of any two display devices.

(OR)

b) With relevant diagrams, explain the operation of a LASER.

13. a) Explain the principle of operation of any two photodetectors.

(OR)

b) Explain how a thermal detector can be used as an optical detector.

14. a) Explain the working principle of any two electro-optic modulators.

(OR)

b) Give a brief account on optical switching and logic devices.

15. a) Discuss about the applications of optoelectronic ICs.

(OR)

b) Give a brief account on guided wave devices.

PART – C **(1×15=15 Marks)**

16. a) With an example case, explain the design issues pertaining to the integrated transmitter design.

(OR)

b) With an example case, show how the performance of an optical detector can be assessed.

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