Hall Ticket No | | | | | | | | | | |

Question Paper Code: AEC018

INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

B.Tech VI Semester End Examinations (Regular), November– 2020

Regulation: IARE–R16

OPTICAL COMMUNICATION

Time: 2 Hours **(ECE)** **Max Marks: 70**

Answer any Four Questions from Part A
Answer any Five Questions from Part B

PART – A

1. List the advantages of optical fibers with explanation. **[5M]**
2. What are the factors that produce dispersion in optical fibers? **[5M]**
3. Contrast PIN diode and avalanche photo diode. **[5M]**
4. Find noise figure for optical amplifier. **[5M]**
5. List out the benefits of SONET over PDH networks. **[5M]**
6. Differentiate between step index and graded index fiber. **[5M]**
7. Explain in detail about source to fiber power launching **[5M]**
8. With proper sketch explain the structure of RAPD diode. **[5M]**

PART – B

9. Sketch and explain different types of fiber structures. **[10M]**
10. Discuss about the propagation of light in a cylindrical dielectric rod. **[10M]**
11. With the help of neat diagram explain distributed feedback laser diode. **[10M]**
12. Determine the expression for lasing condition and hence optical gain in LASERS. **[10M]**
13. A silicon APD has a quantum efficiency of 65% at a wavelength of 900nm.Suppose 0.5 W of optical power produces a multiplied photocurrent of 10 A. Find multiplication factor. **[10M]**
14. List out the operating wavelengths and responsivities of Si, Ge, and in GaAs photodiodes. List the benefits and drawbacks of avalanche photo diodes. **[10M]**
15. Explain with the aid of neat diagram, three possible EDFA configurations. **[10M]**
16. Consider a spectral band of 0.8mm with in which lasers with narrow line widths are transmitting. Hoe many of such signal channels fit into the C- band (C-band ranges form 1530-1565mm) **[10M]**
17. Discuss about wavelength routed networks. Summarize about soliton communication system. **[10M]**
18. Draw the frame format of SONET, What are the basic performance criteria of WDM technique? **[10M]**