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BIELE-008

B.Tech. – VIEP – ELECTRONICS AND COMMUNICATION ENGINEERING (BTECVI)

00675

Term-End Examination

June, 2019

BIELE-008 : OPTO ELECTRONICS COMMUNICATION SYSTEMS

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. All questions carry equal marks. Missing data, if any may be suitably assumed. Use of scientific calculator is permitted.*

1. Give the solution of Maxwell's equation in a circularly symmetric step indexed optical fiber. *10*

2. Define the term V-number. What is its significance in the field of optical communication ? *10*

3. Explain the difference between single mode and multimode fibers with suitable examples. *10*

4. What do you mean by the term "Self-Phase Modulation" ? Explain the concept with necessary mathematical formulation. *10*

5. Give the operating principle of the following with the help of neatly labelled diagram : *5+5=10*

   (a) LED

   (b) Laser Diode

6. Explain the operation of a PN Detector with the help of diagram and necessary mathematical derivations. *10*

7. Define and explain the following terms : *5+5=10*

   (a) Amplifier Noise

   (b) Signal-to-Noise Ratio (SNR)

8. Differentiate between shifted dispersion and flattened dispersion with suitable example. *5+5=10*

9. What would be the combined effect of dispersion and self-phase modulation ? Explain. *10*

10. Write short notes on any ***two*** of the following : *2×5=10*

    (a) Polarization

    (b) Graded Index Fibres

    (c) Crosstalk