



GOVERNMENT COLLEGE OF ENGINEERING, JALGAON

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Name of Examination : **Winter 2020** - (Preview)

Course Code & Course Name : **IN405C - Elective-I-Optical Instrumentation**

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Maximum Marks : **60**

Duration : **3 Hrs**

[Edit](#) [Print](#) [View Answer Key](#) [Close](#) **Answer Key Submission Type:** Marking scheme with model answers and solutions of numerical

Instructions:

1. All questions are compulsory.
2. Illustrate your answer with suitable figures/sketches wherever necessary.
3. Assume suitable additional data; if required.
4. Use of logarithmic table, drawing instruments and non programmable calculators is allowed.
5. Figures to the right indicate full marks.

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|---|------|
| 1) Solve Three questions | [18] |
| a) Explain the principle and working of light propagation through optical fiber and list the characteristics of optical fiber | [6] |
| b) List the different losses present in optical fiber. How to calculate the losses in optical fiber | [6] |
| c) Explain the Principle, Construction, Working, Advantages, Disadvantages of light emitting diode LED | [6] |
| 2) Solve Three questions | [18] |
| a) Draw the block diagram of fiber dispersion methods and explain each block | [6] |
| b) State and explain the following terms: | [6] |
| i) Total internal reflection | |
| ii) Acceptance angle (θ_a) | |
| iii) Numerical aperture. | |
| c) Explain the link optical power budget and raise time budget with suitable diagram | [6] |
| 3) Solve any Two questions | [12] |
| a) Explain construction and working of He-Ne gas laser. Write any three application of gas laser | [6] |
| b) Write the classification of the laser. Explain the working, construction and application of solid laser | [6] |
| c) Draw the construction diagram for semiconductor diode and write the principle working and advantages | [6] |
| 4) Solve any Two questions | [12] |
| a) List the different laser mode and explain with appropriate diagram | [6] |
| b) Write and explain the principle use of laser in any medical application | [6] |
| c) Explain the principle and working of laser in imaging and holography applications | [6] |

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