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Roll No

EI/IC-801 (GS)**B.E. VIII Semester**

Examination, May 2018

Grading System (GS)**Optical Instruments and Sensors***Time : Three Hours**Maximum Marks : 70**Note:* i) Answer any five questions.

ii) All questions carry equal marks.

iii) Assume any missing data.

1. a) Using simple ray theory, describe the mechanism for transmission of light within an optical fibre. Briefly discuss with the help of suitable diagram, what is meant by the acceptance angle for an optical fibre.
- b) Explain the theory of optical image formation.
2. a) What do you mean by Optical aberrations? Write different types of optical aberrations.
- b) Compare single mode fiber with multimode fibre. Calculate the numerical aperture of an optical fibre whose core refractive index is 1.54 and the cladding refractive index is 1.49.
3. a) Explain intermodal and intramodal dispersion in optical fibre.
- b) Briefly discuss the different reasons of attenuation in optical fibre and how they could be minimized.

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4. a) Explain link power budget designing technique of optical link design.
- b) How fiber optic sensors works? Write down its advantages and disadvantages.
5. a) Discuss the methods used for measurement of losses in an optical fiber.
- b) Describe OTDR technique for attenuation measurement.
6. a) Explain the principle of working of an optical spectrum analyzer. rgpvonline.com
- b) Explain the basic principle of operation of LASER. Distinguish between spontaneous emission and stimulated emission. Discuss the Fabry-Perot structures of a laser diode.
7. a) What are the requirement of photo detector and why photodiode is preferred in fiber optic communication system? Explain.
- b) What are the responsibilities of a detector in optical communication? Discuss integrated optical devices.
8. Write short notes on (any three):
 - i) Osages
 - ii) Optical switching
 - iii) Modulation techniques for sensors
 - iv) LED
