B. TECH.

(SEM. VI) EXAMINATION, 2006-07

LASER & FIBRE OPTICS IN MEDICINE

Time : 3 Hours] [Total Marks : 100

Note : Attempt all questions.

1 Attempt any four parts of the following : 5×4
   (a) What are the properties of laser ?
   (b) Explain the interaction of lasers with tissues.
   (c) What is photocoagulation?
   (d) What is a difference between photothermal ablation and photochemical ablation?
   (e) Explain with schematic diagram pulsed ruby laser.
   (f) Explain with schematic diagram Helium-Neon laser.

2 Attempt any four parts of the following : 5×4
   (a) Write a note on rays and model with respect to optical fibres.
   (b) Describe step index fiber structure.
   (c) Write a note on fibre materials.
   (d) Write a note on fibre fabrication.

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(e) What are optocouplers?
(f) Write a note on coherent and incoherent bundles.

3 Attempt any two parts of the following : 10×2
(a) Explain excimer lasers and semi-conductor lasers.
(b) Explain with block diagram fibre optic gastric photocoagulator.
(c) Explain in detail Argon-Ion laser photocoagulator.

4 Attempt any two parts of the following : 10×2
(a) Explain in detail light transmission systems in endoscopes.
(b) Write a note on image transmission systems in endoscopes and describe the advantages of using lasers in endoscopy.
(c) Write a note on application of lasers in endoscopy.

5 Attempt any four parts of the following : 5×4
(a) Explain the applications of lasers and fibre optics in tumor surgery.
(b) How are the lasers used in ophthalmology?
(c) Write a note on laser based neurosurgery.
(d) Explain applications of lasers in diagnosis, holography
(e) Describe in brief fibre optics sensors for biomedical applications.
(f) Describe various applications of lasers used in surgery.

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