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B.E (FULL TIME) DEGREE END SEMESTER EXAMINATIONS, NOV/DEC 2012
MATERIALS SCIENCE AND ENGINEERING
EIGHTH SEMESTER (R 2008)
ML 9034-LASER PROCESSING OF MATERIALS

TIME: 3 Hrs.

Max. Marks: 100

Answer all-questions

Part-A (10 x 2 = 20 marks)

1. What do you understand by Fabry-Perot resonator?
2. Distinguish simulated and spontaneous emissions.
3. What are the different modes by which energy have been transferred from laser beam to the work piece?
4. What do you meant by Gaussian Heat source?
5. What are the zones in laser surface melting?
6. Mention the advantages of laser ablations.
7. What do you understand by sublimation laser cutting?
8. Mention the method adopted in laser drilling of highly reflective materials?
9. Define the term spiking.
10. What is the limitation in welding of ceramics?

Part – B (5x 16 = 80 marks)

11. Explain the principle involved Excimer laser with suitable example.
12. (a). Obtain an expression for heat flow in thick plate with point heat source.
(OR)
12. (b). Discuss the principle, steps and process parameters of laser surface heat treatment.
13. (a). Explain the process parameters and methods of coating in laser physical vapour deposition.

(OR)

13. (b). Discuss with schematic the laser shock hardening process and its industrial applications.

14. (a) Discuss briefly the various forms and components of laser drilling process.

(OR)

14. (b) Describe the principle, components and defects in laser cutting process.

15. (a) Discuss the various laser welding process parameters and its significance.

(OR)

15. (b) Explain the mechanisms involved in laser welding.