Total No. of Questions : 8] [Total No. of Printed Pages :2

Roll No .....

PH - 110

B.E. (All Branches) I Year I Semester

Examination, December 2015

Choice Based Credit System (CBCS)

Physics

Time : Three Hours

Maximum Marks : 60

Note: Attempt any five questions. All questions carry equal marks.

1. a) Deduce Maxwell's equation for free space and prove that the Electromagnetic waves are transverse. 6

   b) State and prove that Stoke's theorem. 6

2. a) What do you mean by laser and its working principal, important requirements and applications? 6

   b) Explain with the help of a neat diagram the principal and working of a He-Ne laser. 6

3. a) Describe schematically the basic element of optical fiber communication system. 6

   b) What are optical fibers? Give their classification. 6

4. a) Derive time depending Schrodinger wave equation. 6

   b) Define phase velocity and group velocity. Show that for non-relativistic free particle the phase velocity is halt of the group velocity 6

5. a) Explain the mathematical treatment of Newton's rings. Describe an experiment to determine the refractive index of liquid with the help of Newton's rings. 6

   b) What do you understand by the resolving power of grating? Derive the necessary expression. 6

6. a) What is meant by fill factor of a solar cell and what is its significance? 6

   b) Explain the V-I characteristics of Zener diode. 6

7. a) How does a nucleus behave like a liquid drop? State the postulates of liquid drop model and point out the success and unsuccess of this model. 6

   b) What are the difference and similarities between nuclear fission and nuclear fusion? 6

8. Short note (Any Two) 6+6=12

   a) Crystalline and Amorphous solids

   b) Energy Band in solid

   c) Hall effect

   d) Crompton effect

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