

**I B. Tech I Semester Supplementary Examinations, May - 2018**  
**ENGINEERING PHYSICS-I**  
(Com. to All Branches)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions  
All Questions carry **Equal** Marks

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1. a) Describe and explain the formation of Newton's rings in reflected monochromatic light. Explain why Newton's rings are circular. (8M)
- b) What are the coherent sources? How are they obtained in practice? (7M)
2. a) What do you understand by the resolving power of grating? Derive the necessary expression. (8M)
- b) A grating has 6000 lines per cm drawn on it. If its width is 10 cm, calculate (7M)
  - (i) The resolving power in the second order.
  - (ii) The smallest wavelength that can be resolved in the third order in 6000 Å wavelength region.
3. a) What is polarized light? Discuss various methods to produce it. (8M)
- b) Write a short note on Quarter Wave Plate. (7M)
4. a) Obtain the relations between the edge of the unit cell and atomic radius for the BCC and FCC lattices. (8M)
- b) Explain the terms 'primitive cell' and 'unit cell'. (7M)
5. a) Describe Laue's method of determination of crystal structure. (8M)
- b) Deduce Bragg's law of diffraction in crystals. (7M)
6. a) What is a laser? Explain the construction and working of ruby laser with neat diagram. (8M)
- b) Discuss the industrial and medical applications of laser. (7M)
7. a) Derive the expression for the numerical aperture of an optical fibre. (8M)
- b) List the differences between step index and graded index optical fiber. (7M)
8. a) What are the objectives of NDT? Discuss the ultrasonic inspection method. (8M)
- b) Write a short note on different types of scans. (7M)