

Code: R7222305

R07
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B.Tech II Year II Semester (R07) Supplementary Examinations, April/May 2013

**ENGINEERING PHYSICS**

(Biotechnology)

Time: 3 hours

Max. Marks: 80

Answer any FIVE questions  
All questions carry equal marks

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- 1 (a) Differentiate interference and diffraction.  
(b) Briefly explain the single slit diffraction pattern.  
(c) What are the different methods of obtaining polarization?
- 2 (a) Explain magnetostriction method of producing ultrasonic waves.  
(b) What are the factors that affect the acoustics of a hall? How are they remedied?
- 3 (a) Explain the magnetic moment of an electron due to its orbital and spin motions.  
(b) State and explain Meissner effect.  
(c) Write any four applications of superconductors.
- 4 (a) What is a Bravais lattice? List seven crystal systems and their features.  
(b) Obtain an expression for the separation between any two successive planes.
- 5 (a) What is numerical aperture? Derive an expression.  
(b) Distinguish between photography and holography.  
(c) The refractive indices of core and cladding of a fibre are 1.45 and 1.4 respectively. Find the numerical aperture and acceptance angle.
- 6 (a) Outline briefly the characteristics of laser light.  
(b) What are Einstein's coefficients? State the relation between them.
- 7 (a) Explain internal field in dielectrics. Derive Clausius-Mossotti relation.  
(b) Compare the assumptions and results of Einstein and Debye theories.
- 8 (a) What are nano materials? Why do these materials exhibit properties different from those of its classical counterparts?  
(b) Explain some of the properties of nano materials.

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