

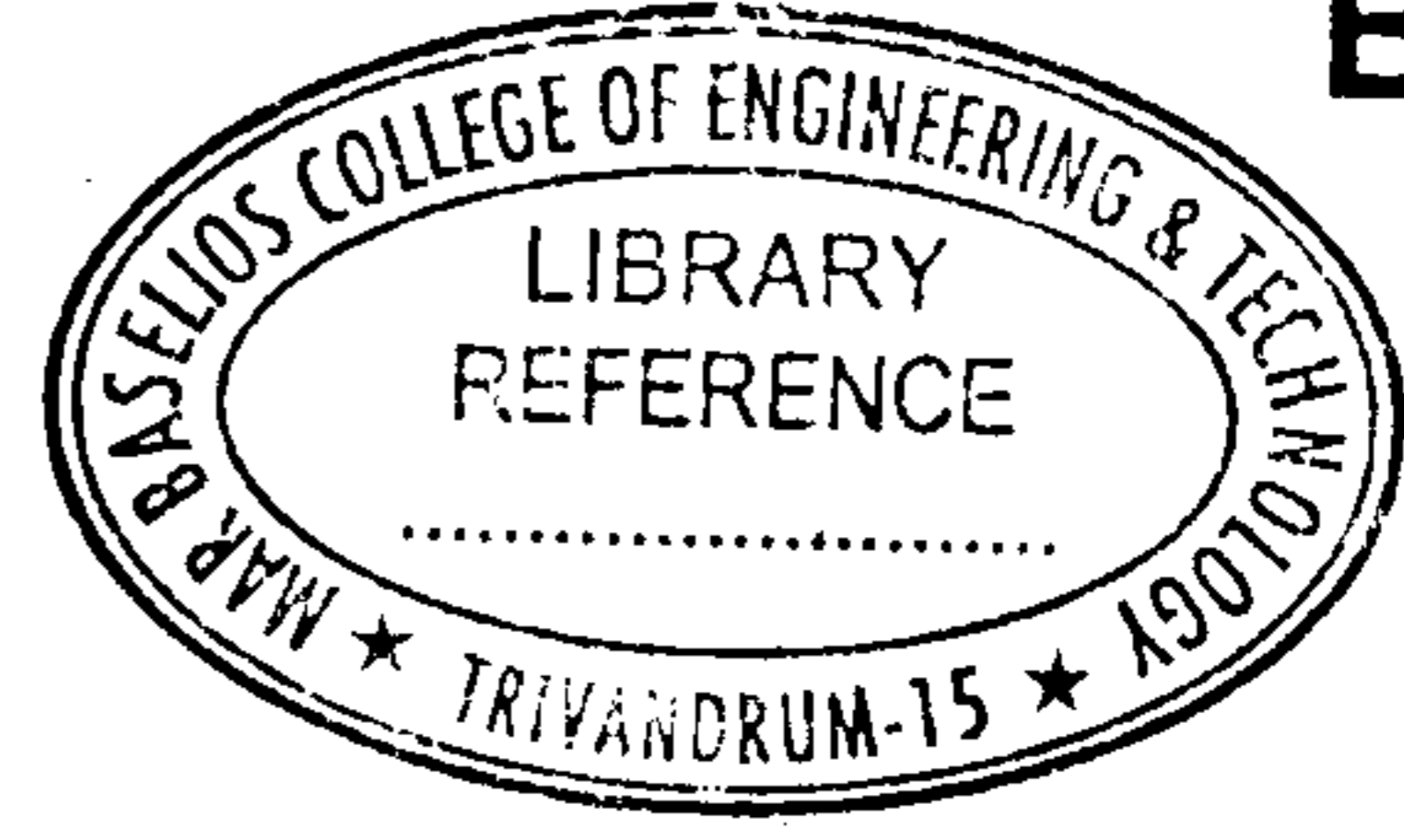


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**B – 5227**

Reg. No. : .....

Name : .....



**Combined First and Second Semester B.Tech.  
Degree Examination, February 2017  
(2008 Scheme)  
08-102 – ENGINEERING PHYSICS  
(CMNPHEARUFBS)**

Time : 3 Hours

Max. Marks : 100

**PART – A**

Answer **all** questions. **Each** question carries **4** marks.

1. Write down the differential equation of a S.H.M. and obtain its solution.
2. Derive the equation of continuity of a time-varying field.
3. Mention the important applications of super conductivity.
4. Explain spatial coherence and temporal coherence.
5. Monochromatic light of wavelength  $6560 \times 10^{-8}$  cm falls normally on a grating 2 cm wide. The first order spectrum is produced at an angle  $18^{\circ}14'$  from the normal. What is the total number of lines on the grating ?
6. Derive Bragg's law.
7. What are positive and negative crystals ?
8. Derive the expression for time dilation.
9. Briefly explain Quantum Mechanical tunnelling.
10. Explain the action of an optical resonator.

P.T.O.



PART – B

Answer **any two** questions from **each** Module. **Each** question carries **10** marks.

**Module – I**

11. Derive an expression for fundamental frequency of transverse vibrations of a stretched string.
12. a) Show that Electromagnetic waves are transverse in nature.  
b) What is poynting vector ?
13. a) What is superconductivity ? Explain the magnetic behaviour of a superconductor.  
b) What are Type – I and Type – II superconductors ?

**Module – II**

14. Give the theory of formation of interference bands in a thin film under reflected system.
15. Explain Michelson-Morley experiment in relativity and discuss the negative results.
16. a) Explain the construction and working of a quarter wave plate and a half wave plate.  
b) Distinguish between isoclinic and isochromatic fringes.

**Module – III**

17. a) What are operators in Quantum mechanics ? Obtain the expressions for momentum and energy operators.  
b) Explain briefly the postulates of Quantum mechanics.
  18. What is phase space ? Compare the Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac statistics.
  19. a) Explain how the recording and reconstruction of a hologram can be achieved.  
b) What are the advantages of a hologram over a photograph ?
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