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Dec.-22-1351

PHY-101L (Applied Physics)

B.Tech. 1st (CBCS)

Time : 3 Hours

Max. Marks : 60

*The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.*

**Note :** Each question will be of 12 marks. The candidates will attempt five questions in all i.e. one question each from the sections A, B, C, D and the compulsory question from section E.

#### SECTION - A

1. What is reverberation? On what factors does reverberation time depend? What will happen if the reverberation time in a big hall is too long? (12)
2. Define Ultrasonic Wave. Discuss the production and detection of Ultrasonic waves. (12)

#### SECTION - B

3. Write down Maxwell's equations in Integral form. Explain the physical significance of each equation. (12)
4. Derive the expression for electromagnetic wave equation in conducting media. (12)

#### SECTION - C

5. Describe the interference fringes observed when a thin wedged shaped film is seen by reflected light normally. (12)

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6. Explain the formation of spectra by a diffraction grating. And deduce an expression for the dispersive power of grating. (12)

#### SECTION - D

7. Discuss the failure of classical mechanics to explain the Black body radiation. (12)
8. Obtain the time-independent one-dimensional Schrodinger wave equation. (12)

#### SECTION - E (Compulsory)

9. (i) Does electromagnetic damping employ eddy current?  
(ii) Write the expression for DEL operator.  
(iii) What is the value of skin depth for a perfect conductor?  
(iv) What were the results of Compton's effect?  
(v) How does the Uncertainty principle hint about the absence of electron in an atomic nucleus?  
(vi) What do you mean by resolving power of optical instruments? (6×2=12)