

Enrolment Number:

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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- April 2019

B.Tech II Semester

COURSE CODE: 18B11PH211

MAX. MARKS: 25

COURSE NAME: ENGINEERING PHYSICS II

COURSE CREDITS: 03

MAX. TIME: 1Hr 30 Min

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Attempt all the questions in sequence.

1. Using field of a point charge , prove Gauss Law implies Coulomb Law. [2]
2. Calculate (a) Divergence of a given vector field $G = e^x i + \ln(xy) j + e^{xyz} k$
(b) Curl of Vector field $F = \frac{xi+yj+zk}{\sqrt{(x^2+y^2+z^2)}}$ [1+2]
3. Calculate the number of modes in a 50/125 Step-index fiber having $n_1 = 1.485$ and $n_2 = 1.460$ at an operating wavelengths of 820 and 1300 nm. [3]
4. What is the importance of threshold in non linear scattering loss of optical fibers? Write down the threshold limits [3]
5. Derive the relation to calculate numeric Aperture and Acceptance angle in a step index fiber. Draw the ray diagram to represent the multimode motion in step index fibers. [2+1+1]
6. Write down Maxwell electromagnetic equations in free space? Derive one divergence and one curl Maxwell equations? [4]
7. What is pointing vector? Write the expression to calculate $E \times H$ from a unit area of a volume V . Explain the significance of each term? [2]
8. Prove $\nabla^2 H = \frac{1}{\sqrt{\epsilon_0 \mu_0}} \frac{\partial^2 H}{\partial t^2}$, also prove that electromagnetic waves are transverse in nature? [4]