

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST-2 EXAMINATION-2022
B.Tech-III Semester (ECE/CSE/IT/CE)

COURSE CODE (CREDITS): 18B11PH211

MAX.MARKS: 25

COURSE NAME: ENGINEERING PHYSICS-II

COURSE INSTRUCTORS: SKK

MAX.TIME: 1 HR 30 MIN

Note: All questions are compulsory. Marks are indicated against each question

1. Derive the following Maxwell's relations (a) $\nabla \times E = -\frac{\partial B}{\partial t}$ (b) $\nabla \times H = J + \frac{\partial D}{\partial t}$ (5)
2. What is Poynting Vector and show that $E \times H$ represents Poynting Vector (5)
3. If $A = x^2z\mathbf{i} - 2y^3z^2\mathbf{j} + xy^2z\mathbf{k}$, Find Divergence of A at (1,-1,1) (2)
4. If $\phi = 2x^2y^3z^4$ find $\nabla \cdot (\nabla \phi)$ (3)
5. Distinguish between Step index and Graded index fibre. (4)
6. At a distance of 1 km, spot size = 9800 cm, calculate cut off parameter and also the number of modes for a fibre of core diameter 50 micro meters, refractive index of core = 1.47 and cladding = 1.45 and operating wavelength 0.85 micrometer (3)
7. What are the conditions for propagation of light through optical fibres. (3)