

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1163
FACULTY OF SCIENCE AND TECHNOLOGY
S.Y. B.Tech. (ETC) CBC & Grading System (Sem-IV)
Electromagnetic Engineering
[Revised]

[Time: Two Hours]

[Max. Marks: 40]

Please check whether you have got the right question paper.

- N.B
1. Q.1 and Q.6 are compulsory.
 2. Solve any two questions from reaming from each section separated.

Section A

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|-----|--|----|
| Q.1 | Solve any two
a) Compare dot product with cross products.
b) Derive relation between \vec{E} & \vec{D} .
c) State and prove Gauss's law. | 06 |
| Q.2 | Converts A (2,3,-2) is to spherical coordinates and $\beta(8, 25^\circ, \phi = 140^\circ)$ into Cartesian coordinates. | 07 |
| Q.3 | Find D is the region about a inform line charge of $8n\text{ c/m}$ lying along the Z axis is free space if $r=3m$. | 07 |
| Q.4 | Determine whether or not the following potential fields satisfy the Laplace's equations.
i) $V = x^2 - y^2 + Z^2$,
ii) $V = r \cos \phi + Z$
iii) $V = r \cos \theta + \phi$ | 07 |
| Q.5 | Derive Boundary conditions between conductor and free space. | 07 |

Section – B

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|-----|---|----|
| Q.6 | Solve any three.
i) State Biot – savart law
ii) Write Maxwell's equation is free space.
iii) Define uniform plane wave & phase velocity.
iv) State Faraday's law and Lenz's law | 06 |
| Q.7 | Evaluate both side of stoke's theorem for the field $\vec{H} = 6xy \hat{a}_x - 3y^2 \hat{a}_y \text{ A/m}$ and the rectangular path along the region $2 \leq x \leq 5, -1 \leq y \leq 1, Z = 0$ let the positive direction of ds be \hat{a}_z . | 07 |

Q.8 If $E_y = 10.4e^{j(2\pi \times 10^9 t - \beta x)} \mu V/M$ in free space find.

- i) Phase velocity (V)
- ii) Phase constant (B)
- iii) Angular velocity (w)
- iv) Hm by property

07

Q.9 Explain Maxwell's equation is Harmonically varying field?

07

Q.10 State and prove stoke's theorem?

07