Seat No.

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MAR_APR 2026 SUMMER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Electromagnetic Engineering

Sub. Code: 119691/116018

Day and Date: Tuesday ,26-05-2026 **Total Marks: 60**

Time: 10:30 AM To 01:00 PM

Instructions:
1. **All questions are compulsory**
2. **Assume suitable data wherever necessary and mention it boldly**
3. **Draw neat labelled diagrams wherever necessary**
4. **Figures to the right indicate full marks**
5. **Use of Scientific calculator is allowed**

Q1) Solve following MCQ. **[12]**

i. According to Biot- Savart's law, which parameter is inversely proportional to the differential magnetic field intensity (dH)?

A. Current
B. magnitude of differential length
C. sine of angle between filament & line connecting differential length to point
D. square of the distance from differential element to point

ii. According to Maxwell's first equation in a point form for the static field, the electric flux per unit volume by leaving a small value is equal to

A. Zero
B. Volume charge density
C. Magnetic field intensity
D. Current density

iii. The Gauss Divergence theorem converts.

A. Line to surface integral
B. Line to volume integral
C. Surface to line integral
D. Surface to volume integral

iv. Ampere law states that,

A. Divergence of H is same as the flux
B. Curl of D is same as the current
C. Divergence of E is zero
D. Curl of H is same as the current density

v. Standing wave ratio is defined as the

A. Ratio of voltage maxima to voltage minima
B. Ratio of current minima to current maxima

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C. Product of voltage maxima and voltage minima
D. Product of current maxima and current minima

vi. The Smith chart consists of the
A. Constant R and variable X circles
B. Variable R and constant X circles
C. Constant R and constant X circles
D. Variable R and variable X circles

Q2) Solve any Two **[12]**

a. Derive and Explain Spherical coordinate system . **[6]**

b. Two identical Uniform line charge lie along the X and Y axis with charge densities 15uc find electric flux density D at (2,3,4). **[6]**

c. State and Derive Boundary conditions for magnetostatic field. **[6]**

Q3) Solve any Two **[12]**

a. Derive Maxwell equations for static field. **[6]**

b. Derive & Explain wave equation for electric & magnetic Field for lossless media **[6]**

c. Derive Transmission line Equation **[6]**

Q4) Solve any Two **[12]**

a. Derive Maxwell's Equation for time varying Field? **[6]**

b. Derive wave equation in free space **[6]**

c. write a note on i) VSWR **[6]**
ii) Characteristics Impedance
iii) Reflection Coefficient

Q5) Solve any Two **[12]**

a. write a note on i) Wavelength **[6]**
ii) Velocity of propagation
iii) Group Velocity

b. Explain the difference between field & circuit theory. **[6]**

c. A lossless transmission line is 50 cm long and operates at a frequency of 500 MHz. The line parameter are L = 0.025 µH/m and C = 50nF/m. Find the **[6]**

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Characteristics impedance (Z_0), the phase constant (β) & phase velocity (V_p).

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (11731) Bachelor of Technology (NEP-2.0) (116018) Electromagnetic Engineering Part 2 SEM 4
2] (1154) B.Tech. CBCS (119691) Electromagnetic Engineering Part 2 SEM 4

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