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MAR_APR 2026 SUMMER EXAMINATION

1154 B.Tech. CBCS

Sub. Name: Electromagnetic Engineering

Sub. Code: 63469/81065/80808

Day and Date: Saturday ,16-05-2026 **Total Marks: 70**

Time: 02:30 PM To 05:00 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. **[14]**

i. Gradient of a scalar gives:
- A. Rotation
- B. Rate of maximum change
- C. Flux
- D. Line integral

ii. Electric field lines originate from:
- A. Negative charges
- B. Positive charges
- C. Both
- D. None

iii. Magnetic flux density B = μH indicates:
- A. Linear medium
- B. Nonlinear
- C. Saturation
- D. Hysteresis

iv. Ampere's law applies to:
- A. Static E-field
- B. Static H-field
- C. Time-varying B-field
- D. None

v. Faraday's law deals with:
- A. Magnetic induction
- B. Displacement current
- C. Coulomb force
- D. Static field

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vi. A good conductor has:

A. Low σ
B. High σ
C. Zero σ
D. Infinite ε

vii. A lossless line has:

A. R = 0, G = 0
B. R = G = 0
C. L = 0
D. None

Q2) Attempt any two **[14]**

a. For $A = x^2 \hat{i} + y^2 \hat{j}$, find curl A. **[7]**

b. Explain Coulomb's law and electric field intensity. **[7]**

c. Derive H due to an infinite sheet of current. **[7]**

Q3) Attempt any two **[14]**

a. Explain coordinate systems used in EM. **[7]**

b. Define potential gradient. Derive relationship between E and V. **[7]**

c. Loop 10 turns, area 0.02 m^2, I = 4 A, B = 0.5 T. Find torque. **[7]**

Q4) Attempt any two **[14]**

a. Explain Maxwell's curl equations. **[7]**

b. Find wavelength in air at 2 GHz. **[7]**

c. Explain open and short-circuit conditions on a line. **[7]**

Q5) Attempt any two **[14]**

a. Explain continuity equation and charge conservation **[7]**

b. Describe EM wave polarization types. **[7]**

c. find required characteristic impedance for Match 50 Ω to 100 Ω **[7]**

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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] (101) Bachelor of Engineering (81065) Electromagnetic Engineering Part 3 SEM 5
2] (101) Bachelor of Engineering (63469) Electromagnetic Engineering Part 2 SEM 4
3] (1154) B.Tech. CBCS (80808) Electromagnetic Engineering Part 3 SEM 5

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