

M.Sc. Second Year (Electronics) New CBCS Pattern Semester-IV
PSELT401 - Core-II - Paper-I : Electromagnetic Fields and Antennas

P. Pages : 2

Time : Three Hours



GUG/W/23/11367

Max. Marks : 80

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- Notes : 1. All questions are compulsory and carry equal marks.
2. Draw neat and well labelled diagram wherever necessary.

Either:

1. a) Describe wave equations for a conducting medium. **8**
b) Explain the important contribution made by Maxwell in the form of modification of Ampere's circuital law and hence obtain Maxwell's first relation of electromagnetic field. **8**

OR

- c) Explain the following terms- **8**
i) Current density
ii) Electric displacement,
iii) Magnetic field strength, and
iv) magnetic field density
d) State and explain the Poynting's theorem. **8**

Either:

2. a) What function does an antenna fulfill? Explain the following terms related to antenna: **8**
i) Antenna gain, and
ii) Antenna resistance
b) How does antenna radiate electromagnetic energy? Explain. **8**

OR

- c) Explain different antenna field zones. **8**
d) Explain the following terms **8**
i) Aperture area, and
ii) Effective lengths of antenna.

Either:

3. a) What is antenna array? Describe the various arrays of antenna. 8
b) Describe construction and working of Yagi Uda array. 8

OR

- c) Explain the construction and working of Helical beam antenna. 8
d) Differentiate between Rhombic antenna and Horn antenna. 8

Either:

4. a) Explain the design considerations for a microstrip lines. Explain the losses and limitations of microstrip lines. 8
b) Explain antenna for terrestrial mobile communication. 8

OR

- c) Explain the construction and working of switched beam and beam forming antenna. 8
d) Explain compact antenna test range measurement. 8
5. a) Explain interpretation of EXH. 4
b) Explain antenna polarization. 4
c) What is parabolic reflector? Explain. 4
d) Discuss the significance of reciprocity theorem. 4
