Code.No: RR310402 | RR | SET-1

III B.TECH – I SEM EXAMINATIONS, NOVEMBER - 2010
ANTENNAS AND WAVE PROPAGATION
(COMMON TO ECE, ETM)

Time: 3hours **Max.Marks:80**

Answer any FIVE questions
All questions carry equal marks
- - -

1.a) Prove that for a Hertizian dipole, the aperture area is $0.12\lambda^2$ and for a half wave dipole, it is $0.13\lambda^2$ and for an isotropic radiator, it is $0.08\lambda^2$. Explain relations used.
b) Define the following terms:
i) Gain.
ii) Directivity.
iii) Radiation resistance.
iv) Effective area. [8+8]

2.a) Explain radiation from a quarter wave monopole with sketches.
b) For a broad cast antenna of 20m height at 750KHz.Claculate the expressions of far fields E and H and radiation resistance for an input excitation of 1mA current. [8+8]

3.a) Prove that the directivity can be improved by using a number of antennas in any broad side or end fire array.
b) Differentiate between binomial and uniform broad side arrays. [8+8]

4.a) Write the design relations associated with Rhombic antenna. What are its applications?
b) Obtain an expression for the field strength of a wire type traveling wave antenna and sketch its pattern. [8+8]

5.a) Mention the frequency ranges of operation and applications of
i) Loop antenna
ii) Helical antenna
iii) Lens antenna.
b) Derive the EMF equation for a small loop antenna. [12+4]

6.a) Discuss the characteristics of an optimum horn. Calculate its gain and directivity, when the aperture dimensions are 30cm × 41.1cm at 10GHz.
b) With neat sketch explain basic set up and requirements, for antenna pattern measurement. [8+8]

7.a) Explain about following terms
i) Maximum of MUF
ii) Optimum frequency
b) Discuss the significance and requirement for polarization in surface wave propagation? [8+8]

8. Discuss about the following
   a) Duct formation and its significance
   b) Shadow zone
   c) Effective earth's radius
   d) Free space path lodes [16]

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Code.No: RR310402 | RR | SET-2

III B.TECH – I SEM EXAMINATIONS, NOVEMBER - 2010
ANTENNAS AND WAVE PROPAGATION
(COMMON TO ECE, ETM)

Time: 3hours **Max.Marks:80**

Answer any FIVE questions
All questions carry equal marks
- - -

1.a) Prove that the directivity can be improved by using a number of antennas in any broad side or end fire array.
b) Differentiate between binomial and uniform broad side arrays. [8+8]

2.a) Write the design relations associated with Rhombic antenna. What are its applications?
b) Obtain an expression for the field strength of a wire type traveling wave antenna and sketch its pattern. [8+8]

3.a) Mention the frequency ranges of operation and applications of
i) Loop antenna
ii) Helical antenna
iii) Lens antenna.
b) Derive the EMF equation for a small loop antenna. [12+4]

4.a) Discuss the characteristics of an optimum horn. Calculate its gain and directivity, when the aperture dimensions are 30cm × 41.1cm at 10GHz.
b) With neat sketch explain basic set up and requirements, for antenna pattern measurement. [8+8]

5.a) Explain about following terms
i) Maximum of MUF
ii) Optimum frequency
b) Discuss the significance and requirement for polarization in surface wave propagation? [8+8]

6. Discuss about the following
a) Duct formation and its significance
b) Shadow zone
c) Effective earth's radius
d) Free space path lodes [16]

7.a) Prove that for a Hertizian dipole, the aperture area is $0.12\lambda^2$ and for a half wave dipole, it is $0.13\lambda^2$ and for an isotropic radiator, it is $0.08\lambda^2$. Explain relations used.
b) Define the following terms:
i) Gain.
ii) Directivity.
iii) Radiation resistance.
iv) Effective area. [8+8]

8.a) Explain radiation from a quarter wave monopole with sketches.

b) For a broad cast antenna of 20m height at 750KHz.Claculate the expressions of far fields E and H and radiation resistance for an input excitation of 1mA current. [8+8]

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Code.No: RR310402 | RR | SET-3

III B.TECH – I SEM EXAMINATIONS, NOVEMBER - 2010
ANTENNAS AND WAVE PROPAGATION
(COMMON TO ECE, ETM)

Time: 3hours **Max.Marks:80**

Answer any FIVE questions
All questions carry equal marks
- - -

1.a) Mention the frequency ranges of operation and applications of
i) Loop antenna
ii) Helical antenna
iii) Lens antenna.
b) Derive the EMF equation for a small loop antenna. [12+4]

2.a) Discuss the characteristics of an optimum horn. Calculate its gain and directivity, when the aperture dimensions are 30cm × 41.1cm at 10GHz.
b) With neat sketch explain basic set up and requirements, for antenna pattern measurement. [8+8]

3.a) Explain about following terms
i) Maximum of MUF
ii) Optimum frequency
b) Discuss the significance and requirement for polarization in surface wave propagation? [8+8]

4. Discuss about the following
a) Duct formation and its significance
b) Shadow zone
c) Effective earth's radius
d) Free space path lodes [16]

5.a) Prove that for a Hertizian dipole, the aperture area is $0.12\lambda^2$ and for a half wave dipole, it is $0.13\lambda^2$ and for an isotropic radiator, it is $0.08\lambda^2$. Explain relations used.
b) Define the following terms:
i) Gain.
ii) Directivity.
iii) Radiation resistance.
iv) Effective area. [8+8]

6.a) Explain radiation from a quarter wave monopole with sketches.
b) For a broad cast antenna of 20m height at 750KHz.Claculate the expressions of far fields E and H and radiation resistance for an input excitation of 1mA current. [8+8]

7.a) Prove that the directivity can be improved by using a number of antennas in any broad side or end fire array.
b) Differentiate between binomial and uniform broad side arrays. [8+8]

8.a) Write the design relations associated with Rhombic antenna. What are its applications?

b) Obtain an expression for the field strength of a wire type traveling wave antenna and sketch its pattern. [8+8]

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Code.No: RR310402 | RR | SET-4

III B.TECH – I SEM EXAMINATIONS, NOVEMBER - 2010
ANTENNAS AND WAVE PROPAGATION
(COMMON TO ECE, ETM)

Time: 3hours **Max.Marks:80**

Answer any FIVE questions
All questions carry equal marks

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1.a) Explain about following terms
i) Maximum of MUF
ii) Optimum frequency
b) Discuss the significance and requirement for polarization in surface wave propagation? [8+8]

2. Discuss about the following
a) Duct formation and its significance
b) Shadow zone
c) Effective earth's radius
d) Free space path lodes [16]

3.a) Prove that for a Hertizian dipole, the aperture area is $0.12\lambda^2$ and for a half wave dipole, it is $0.13\lambda^2$ and for an isotropic radiator, it is $0.08\lambda^2$. Explain relations used.
b) Define the following terms:
i) Gain.
ii) Directivity.
iii) Radiation resistance.
iv) Effective area. [8+8]

4.a) Explain radiation from a quarter wave monopole with sketches.
b) For a broad cast antenna of 20m height at 750KHz.Claculate the expressions of far fields E and H and radiation resistance for an input excitation of 1mA current. [8+8]

5.a) Prove that the directivity can be improved by using a number of antennas in any broad side or end fire array.
b) Differentiate between binomial and uniform broad side arrays. [8+8]

6.a) Write the design relations associated with Rhombic antenna. What are its applications?
b) Obtain an expression for the field strength of a wire type traveling wave antenna and sketch its pattern. [8+8]

7.a) Mention the frequency ranges of operation and applications of
i) Loop antenna
ii) Helical antenna
iii) Lens antenna.
b) Derive the EMF equation for a small loop antenna. [12+4]

8.a) Discuss the characteristics of an optimum horn. Calculate its gain and directivity, when the aperture dimensions are 30cm × 41.1cm at 10GHz.

b) With neat sketch explain basic set up and requirements, for antenna pattern measurement. [8+8]

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