Code No: R1631045 **R16** SET - 1

III B. Tech I Semester Regular Examinations, October/November - 2018

ANTENNA AND WAVE PROPAGATION

(Electronics and Communication Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1.	a)	Define polarization.	[2M]
	b)	Define radiation resistance.	[2M]
	c)	List out the different controls that can be used to shape the overall pattern of antenna array.	[2M]
	d)	Write short notes on characteristic impedance of patch antenna.	[3M]
	e)	Draw the geometrical configuration of plane reflector and corner reflector.	[2M]
	f)	Write short notes on Maximum Usable Frequency.	[3M]

PART -B

2.	a)	Explain the radiation mechanism in short dipole.	[7M]
	b)	Explain the following: (i) Main lobes and side lobes (ii) Beamwidth	[7M]
3.	a)	What is meant by retarded potentials? Explain.	[7M]
	b)	State reciprocity theorem and explain its use in antennas.	[7M]
4.	a)	Derive the expression for array factor of two-element array.	[7M]
	b)	Explain about Broad side array.	[7M]
5.	a)	Write the features of travelling wave antennas.	[7M]
	b)	Explain the design procedure of rectangular patch antenna.	[7M]
6.	a)	Explain the basic principle of lens antenna and write the applications of lens antenna.	[7M]
	b)	Draw the set-up for pattern measurements and explain it.	[7M]
7.	a)	Explain about tropospheric scattering.	[7M]
	b)	Explain about ionospheric abnormalities.	[7M]

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(Electronics and Communication Engineering)

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2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1.	a)	Define Gain and Resolution of an antenna.	[2M]
	b)	Write the applications of loop antenna.	[3M]
	c)	What is a uniform linear array?	[2M]
	d)	Write the applications of helical antenna.	[3M]
	e)	What is delay lens and fast lens?	[2M]
	f)	Define Skip distance.	[2M]

PART -B

2.	a)	Explain current distribution on linear dipoles.	[7M]
	b)	Explain about field regions of an antenna.	[7M]
3.		Explain about Radiation from a Quarter-wave monopole.	[14M]
4.	a)	Explain the concept of principle of pattern multiplication.	[7M]
	b)	Explain the concept of scanning arrays.	[7M]
5.	a)	Define microstrip antenna. Write its advantages and applications of it.	[7M]
	b)	What is an Inverted V antenna? Write its features.	[7M]
6.	a)	Explain the cassegrain feed system in parabolic reflector.	[7M]
	b)	Explain the Gain measurement by three antenna method.	[7M]
7.	a)	Explain the mechanism of ionospheric propagation.	[7M]
	b)	What is meant by Duct propagation? Explain.	[7M]

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Code No: R1631045 **R16** SET - 3

III B. Tech I Semester Regular Examinations, October/November - 2018

ANTENNA AND WAVE PROPAGATION

(Electronics and Communication Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1.	a)	What is meant by beam efficiency?	[2M]
	b)	An antenna whose radiation resistance is 300 Ω operates at a frequency of 1 GHz and with a current of 3 amperes. Find the radiated power.	[2M]
	c)	Define First Side Lobe Ratio.	[2M]
	d)	What are the drawbacks of patch antennas?	[2M]
	e)	Write the applications of Horn antenna.	[3M]
	f)	Write short notes on Radio Horizon.	[3M]

PART -B

2.	a)	Explain current distribution on a lossless two-wire transmission line, flared transmission line and linear dipole.	[7M]
	b)	Explain about radiation intensity of an antenna.	[7M]
3.		Explain about Radiation from a half-wave dipole.	[14M]
4.	a)	Derive the expression for field strength of a uniform linear array.	[7M]
	b)	Write the characteristics of Yagi-Uda arrays.	[7M]
5.	a)	Explain the operation of helical antenna in normal mode.	[7M]
	b)	What is Rhombic antenna? Write the salient features of it.	[7M]
6.	a)	Explain the operation of parabolic reflector.	[7M]
	b)	Explain the procedure for measurement of directivity.	[7M]
7.	a)	Derive the expression for field strength due to space wave.	[7M]
	b)	Write the salient features of ground wave propagation.	[7M]

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Code No: R1631045 **R16** SET - 4

III B. Tech I Semester Regular Examinations, October/November - 2018

ANTENNA AND WAVE PROPAGATION

(Electronics and Communication Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1.	a)	Define Directivity of an antenna.	[2M]
	b)	What is far field of an antenna?	[2M]
	c)	What is binomial array?	[2M]
	d)	List out the different shapes of patch antennas.	[2M]
	e)	Draw the geometry of parabolic reflector in transmitting mode and receiving mode.	[3M]
	f)	What is meant by Ground wave? Explain.	[3M]

PART -B

2.	a)	Explain about radiation mechanism in a single wire.	[7M]
	b)	Discuss about linear, circular and elliptical polarizations.	[7M]
3.	a)	Explain about radiation power and radiation resistance of current element.	[7M]
	b)	Define effective area and explain its significance	[7M]
4.	a)	Explain about ordinary End fire array.	[7M]
	b)	Explain about Folded dipoles and write its characteristics.	[7M]
5.	a)	Explain the operation of helical antenna in axial mode.	[7M]
	b)	What is V antenna? Write the salient features of it.	[7M]
6.	a)	Write the salient features of corner reflector antenna.	[7M]
	b)	Find the power gain and directivity of a horn whose dimensions are 10 x 5 cm operating at a frequency of 6 GHz.	[7M]
7.	a)	What is meant by wave tilt? Explain.	[7M]
	b)	Explain the effect of curvature of the earth on space wave propagation.	[7M]

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