Code No: RT31045   **R13**   SET - 1

III B. Tech I Semester Supplementary Examinations, May -2016
ANTENNAS 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. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

*****

PART –A

1	a)	Distinguish between isotropic and directional radiators.	[3M]
	b)	What is a retarded potential?	[3M]
	c)	Why array antennas are preferred over a single radiator?	[4M]
	d)	Distinguish between resonant and non-resonant radiators.	[4M]
	e)	What are the applications of reflector antennas?	[4M]
	f)	What is the effect of earth's curvature on radio wave propagation?	[4M]

PART -B

2	a)	Explain antenna radiation mechanism with a two wire line.	[8M]
	b)	The radial component of the radiated power density of an infinitesimal linear dipole is given by $W_{av} = A_0 \sin^2\theta / r^2 \, a_r$ W/m^2. Find its maximum directivity.	[8M]
3	a)	Derive the expressions for field components of an alternating current element located at the origin?	[12M]
	b)	What are Radiative, inductive and electrostatic field components derived in the above expressions?	[4M]
4	a)	Prove that maximum of the first minor lobe is 13.46 db down from the maximum at the major lobe of an N-element linear array.	[8M]
	b)	What is broadside array and derive the expression for angles of nulls, maxima and half power points?	[8M]
5	a)	Give the construction details and radiation pattern of travelling wave antenna.	[8M]
	b)	Explain the working of helical antenna in axial mode?	[8M]
6	a)	What is aperture blocking and how to avoid it with cassegrain feed mechanism?	[8M]
	b)	Explain in detail about pyramidal horn antenna.	[8M]
7	a)	Write the expression for field strength of ground wave and explain all the terms.	[8M]
	b)	How earth's surface reflects radio waves?	[8M]

*****