Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Summer Examination-2016

Subject Name: Antennas & Wave Propagation

Subject Code: 4TE06AWP1 Branch: B.Tech (EC)

Semester: 6 Date: 09/05/2016 Time: 2:30 To 5:30 Marks :70

Instructions:

(1) Use of Programmable calculator & any other electronic instrument is prohibited.
(2) Instructions written on main answer book are strictly to be obeyed.
(3) Draw neat diagrams and figures (if necessary) at right places.
(4) Assume suitable data if needed.

Q-1 **Attempt the following questions:** **(14)**

a) Define Radiation Intensity.
b) Define Directivity of an antenna.
c) Define resonant and non resonant antenna.
d) Explain Field and Power Radiation pattern of an antenna.
e) Define skip Distance.
f) Explain Maximum Usable Frequency (MUF).
g) What are the types of Radio wave Propagation.
h) Define virtual height
i) How does an antenna radiate?
j) State different types of polarization of an antenna.
k) Define radiation resistance.
l) What is meant by pattern multiplication.
m) How can the directivity of an antenna be increased?
n) In which antenna is the polarization of EM wave circular?

Attempt any four questions from Q-2 to Q-8

Q-2 **Attempt all questions** **(14)**

(a) Explain (i) Binomial array (ii) Arrays with Parasitic elements **08**
(b) Compare Hertzian Dipole and Folded Dipole **06**

Q-3 **Attempt all questions** **(14)**

(a) For uniform linear array of ‘n ‘ isotropic sources,obtain the expression for relative electric field at a far point.Find nulls and maximas of an array pattern formed by four isotropic antenna fed in phase and spaced λ/2 apart **07**
(b) Discuss the use of Dolph-Tchebysheff distribution and polynomials in detail in antenna array design. **07**

Q-4		**Attempt all questions**	**(14)**
	(a)	Explain the construction and working principle ,advantages and disadvantages of following antennas: (i) Rhombic antenna (ii) Microstrip antenna	**07**
	(b)	State and explain Skelkunoff's theorems for antenna arrays.	**07**
Q-5		**Attempt all questions**	**(14)**
	(a)	What is the function of a horn antenna? Discuss various types of rectangular and circular horn antennas	**07**
	(b)	Describe the structure and the Characteristics of Ionospheric layers	**07**
Q-6		**Attempt all questions**	**(14)**
	(a)	Explain Spacewave Propagation .State the factors determining the range of propagation.For this mode of propagation obtain expression for electric field at the receiver neglecting earth curvature	**08**
	(b)	Derive Friss Transmission Formula.	**06**
Q-7		**Attempt all questions**	**(14)**
	(a)	Obtain the beam width of broadside array and end-fire array.	**07**
	(b)	Obtain the expressions of far fields of circular loop antenna.	**07**
Q-8		**Attempt all questions**	**(14)**
	(a)	A circular loop antenna has a diameter of 1.5 λ. Find its directivity and radiation resistance	**07**
	(b)	Explain the Babinet's principle for slot antenna.	**07**