1+2=8.

SHAHEED BHAGAT SINGH STATE TECHNICAL CAMPUS, FEROZEPUR

ROLL No: | | | | | | | | | | | | | **Total number of pages:[2]**

Total number of questions: 06

B.Tech. || ECE || 5th Sem

Antenna and Wave Propagation

Subject Code: BTEC-502A (RP)

Paper ID: M/18

(2015 batch)

Time allowed: 3 Hrs **Max Marks: 60**

Important Instructions:

- **All questions are compulsory**
- **Assume any missing data**

PART A (10x 2marks)

Q. 1. Short-Answer Questions:

(a) Define mutual impedance.
(b) Write a brief note on duct propagation.
(c) What is importance of scanning array?
(d) State Babinet's principle.
(e) Compare directive gain and power gain.
(f) Give names and heights of various ionosphere layers.
(g) What do you mean by virtual height?
(h) What is super directive array?
(i) What are applications of smith charts?
(j) What are causes of attenuation in parallel plane guides?

PART B (5×8marks)

Q. 2. Discuss concept of radiation in single wire, two wires and dipoles. CO1

OR

What do you mean by radiation pattern? Describe different radiation pattern and lobes? CO1

Q. 3. What is an antenna array? Explain behavior of broadside and end-fire arrays. CO2

OR

Explain Binomial and dolph-tschebyceff arrays in detail. CO2

Q. 4. Write a note on a) Horn antenna b) Rectangular aperture antenna CO3

OR

Write a note on a) Reflector antenna b) Slot antenna CO3

Q. 5. Discuss the propagation of radio waves through ionosphere. CO4

OR

a) Derive the general solution of transmission line terminated with any load impedance. CO4

b) Establish an analogy between transmission lines and waveguides.

Q. 6. a) Write a note on i) Antenna Beam area and width ii) Radiation Intensity CO1

b) Derive and discuss free space equation. CO4

OR

a) Draw the charge and current distribution for a chain of Hertzian dipole and explain how they contribute for radiations. CO1 CO4

b) How electromagnetic waves propagate through waveguides?