

S.Y. Diploma : Sem. III
[EJ/ET/EN/EX/EQ]
Principles of Electronics Communication
Prelim Question Paper

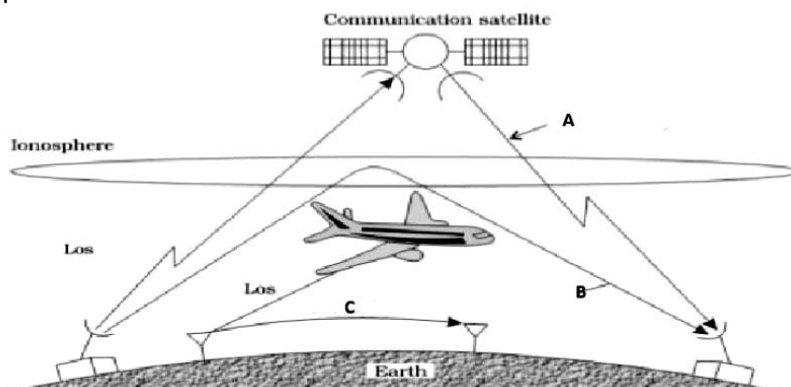


Time: 3 Hrs.]

[Marks : 70

- Instructions :** (1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

1. Attempt any **FIVE** of the following : [10]
- (a) Define modulation index of FM.
 - (b) Define (i) MUF (ii) Critical frequency.
 - (c) List application of ground wave.
 - (d) Draw Radiation pattern of yagi uda antenna.
 - (e) Draw circuit diagram of phase discriminator.
 - (f) Compare between simplex and full duplex communication on the basis of :
 - (i) Definition
 - (ii) Sketch
 - (g) Define sensitivity with graph.
2. Attempt any **THREE** of the following : [12]
- (a) Draw block diagram of basic communication system. State function of transmitter and receiver.
 - (b) Compare sky wave propagation and space wave propagation w.r. to following points :
 - (i) Application
 - (ii) Polarization
 - (iii) Frequency range
 - (iv) Effect of fading
 - (c) Write short note on phase lock loop of FM.
 - (d) Sketch AM signal (i) Time domain (ii) Frequency domain
3. Attempt any **THREE** of the following : [12]
- (a) A 10 kw carrier is amplitude modulated by two sine to a depth of 0.5 and 0.6 respectively. Determine total power of modulated carrier.
 - (b) Explain virtual height with respect to wave propagation with neat sketch.
 - (c) Explain pre emphasis and emphasis Network in FM.
 - (d) Draw radiation pattern of resonant dipole antenna
 - (i) $l = \lambda/2$
 - (ii) $l = \lambda$
 - (iii) $l = 3\lambda/2$
 - (iv) $l = 3\lambda$
4. Attempt any **THREE** of the following : [12]
- (a) Explain structure of rectangular micro strip antenna with its radiation pattern.
 - (b) Explain electromagnetic spectrum in brief.
 - (c) Identify wave propagation mode for A, B, C shown in the figure and write the one application of each mode.



- (d) Write frequency band used for (i) Mobile communication (ii) TV communication
- (e) The equation of FM wave is given by $AFM = 20 \sin(10^8 t + 4 \sin 10^3 t)$
 - (i) carrier frequency
 - (ii) Modulation frequency
 - (iii) Modulation Index
 - (iv) Power dissipated in 10Ω resistor.

5. Attempt any **TWO** of the following : [12]

- (a) Draw block diagram of super heterodyne receiver. Write disadvantage of TRF over super heterodyne.
- (b) Explain the concept of virtual height with sketch.
- (c) Draw and explain block diagram of electronic communication system.

6. Attempt any **TWO** of the following : [12]

- (a) (i) Define (1) Bandwidth (2) Fidelity
- (ii) Explain skip distance
- (b) State and explain types of AGC.
- (c) Describe duct propagation with neat diagram.

□ □ □ □ □

S.Y. Diploma Sem-III: Paper Discussion Schedule

Branches	Date	Day	Timing	Centres
Electronics Group	8 Nov. 2018	Thursday	9 a.m. to 11 a.m.	Dadar