(Model Paper) **C –23, EC -403**

State Board of Technical Education and Training, A. P

Diploma in Electronics and Communication Engineering (DECE)

IV Semester

Subject Name: **Microwave & Satellite Communication Systems**

Sub Code: **EC - 403**

Time: 90 minutes **Unit Test I** Max.Marks:40

Part-A **16Marks**

Instructions: (1) Answer **all** questions.
(2) First question carries **four** marks, each question of remaining carries **three** marks

1. Fill the following blanks with one word

   a) Critical frequency is the highest magnitude of frequency above which the waves penetrate the ionosphere and below which the waves are reflected back from the ionosphere (State True/False) (CO 1)

   b) Ionosphere propagation is also called as tropspheric propagation (State True/False) (CO 1)

   c) Maximum directivity of an antenna is indicated with which term_____ (CO 2)
   d) The radiation pattern of end fire array is bi directional (State True/False) (CO 2)

2. Classify the layers of Ionosphere (CO 1)
3. Describe briefly about tropospheric scattering (CO 1)
4. State the parameters of antenna (CO 2)
5. State the need of antenna arrays (CO 2)

Part-B **3×8=24**

Instructions: (1) Answer **all** questions.
(2) Each question carries **eight** marks
(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

6. (a) Explain the Ground wave propagation and ground effects on EM waves (CO1)
   or
   (b) Explain Space wave propagation and factors affecting space wave propagation (CO1)

7. (a) Explain Horn antenna and give its applications (CO2)
   or
   (b) Explain the concepts of: i) Skip distance & ii) Skip zone (dead zone) (CO2)

8. (a) Explain energy absorption and wave path in the ionosphere (CO1)
   or
   (b) Explain the working principle of Travelling Wave Tube and state its applications (CO2)

-o0o-

(Model Paper) **C –23, EC -403**

State Board of Technical Education and Training, A. P

Diploma in Electronics and Communication Engineering (DECE)

IV Semester

Subject Name: **Microwave & Satellite Communication Systems**

Sub Code: **EC - 403**

Time: 90 minutes **Unit Test II** Max.Marks:40

Part-A **16Marks**

Instructions: (1) Answer **all** questions.
(2) First question carries **four** marks, each question of remaining carries **three** marks

1. Fill the following blanks with one word

   a) Write any one microwave passive device (CO3)

   b) In radar and radio communications systems, duplexer isolates the receiver from the transmitter while permitting them to share a common antenna **(State True/False)** (CO4)

   c) Write the full form of DTH (CO5)
   d) Write the full form of GPS (CO5)

2. Describe various modes of operations of wave guides (CO3)
3. Classify different types of waveguides (CO3)
4. State the factors affecting range of a RADAR (CO4)
5. Interpret the advantages of satellite communication system over terrestrial communication systems (CO5)

Part-B **3×8=24**

Instructions: (1) Answer **all** questions. (2) Each question carries **eight** marks
(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

6. (a)Explain the working principle of Magnetron and state its applications (CO3)
   or
   (b)Explain the working principle of Travelling Wave Tube and state its applications (CO3)

7. (a)Draw and explain the block diagram of Continuous Wave (CW) RADAR (CO4)
   or
   (b)Draw and explain the Moving Target Indicator (MTI) RADAR (CO4)

8. (a) Draw and explain block diagram of a satellite communications system (CO5)
   or
   (b)Explain the application of satellite in GPS (Global Position System) (CO5)

-o0o-

MODEL PAPER
BOARD DIPLOMA EXAMINATIONS
C-23, EC-403, MICROWAVE & SATELLITE COMMUNICATION SYSTEMS
IV SEMESTER
SEMESTER END EXAMINATION

TIME: 3 HOURS MAX MARKS:80

Part-A **10×3=30**

Instructions: (1) Answer **all** questions. (2) Each question carries **three** marks
(3) Answer should be brief and straight to the point and shall not exceed five simple sentences.

1. Define critical frequency and maximum usable frequency (CO1)
2. Classify the layers of Ionosphere (CO1)
3. Define beamwidth and bandwidth of an atenna (CO2)
4. State the need for antenna arrays (CO2)
5. Define dominant mode and cut-off wavelength of a waveguide (CO3)
6. Write the function of Microwave Twist and Taper (CO3)
7. Write the need for Duplexer in Pulsed RADAR (CO4)
8. Define Blind Speed (CO4)
9. List the advantages of satellite communication system over terrestrial communication systems (CO5)
10. Write functions of Satellite Transponder (CO5)

Part-B **5×10=50**

Instructions: (1) Answer **any Five** questions. (2) Each question carries **TEN** marks
(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. Explain Space wave propagation and factors affecting space wave propagation (CO1)
12. Explain the working principle of microwave dish antenna (CO2)
13. Explain the working principle of GUNN diode and state its applications (CO3)
14. Explain the working principle of Travelling Wave Tube amplifier (CO3)
15. Draw and explain the block diagram of Continuous Wave (CW) RADAR (CO4)
16. Draw and explain the Moving Target Indicator (MTI) RADAR (CO4)
17. Draw and explain block diagram of a satellite communications system (CO5)
18. a) Derive the relation between reflection coefficient and SWR (5 Marks) (CO2)
    b) Write short notes on smart antennas (5 Marks) (CO2)

-o0o-