



WEST BENGAL STATE UNIVERSITY
B.Sc. Programme 5th Semester Examination, 2021-22

ELSGDSE02T-ELECTRONICS (DSE1)

ANTENNA THEORY AND WIRELESS NETWORKS

Time Allotted: 2 Hours

Full Marks: 50

*The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.
All symbols are of usual significance.*

GROUP-A

1. Answer any *five* questions from the following: 2×5 = 10
- (a) What do you mean by equivalent noise resistance?
 - (b) What is effective aperture of an antenna?
 - (c) What is antenna temperature?
 - (d) What are near and far field regions of an antenna?
 - (e) Define effective height of an antenna.
 - (f) Define critical frequency and MUF.
 - (g) What do you mean by directivity of an antenna?
 - (h) Define Radiation intensity and Beam efficiency of Antennas.

GROUP-B

Answer any *eight* questions from the following 5×8 = 40

2. What do you mean by the term 'Antenna Gain' and 'Power gain'? 5
3. Derive the relationship between directive gain and effective aperture of an antenna. 5
4. Derive an expression for radiation resistance of a short electric dipole. 5
5. Write short notes on: 5
- (i) Yagi-Uda array, (ii) Parabolic reflector

6. Explain the construction and field patterns for microstrip line. 5
7. Starting from electric and magnetic potentials, obtain the far field components of a loop antenna. 5
8. Show that the radiation resistance of a half wave dipole antenna is 73Ω . 5
9. Define virtual height and skip distance. Obtain the relation between MUF and skip distance. 2+3
10. Write a short note on space wave propagation. 5
11. Differentiate between 3G and 4G networks. List the key features of 4G networks from the user point of view. 5
12. Write short notes on wireless PAN. 5
13. What are the advantages of wireless LAN? Mention some of the disadvantages of WLANS. 5

N.B. : *Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.*

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