STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI – 600 086
(For candidates admitted during the academic year 2019 – 2020 and thereafter)

B.Sc. DEGREE EXAMINATION – APRIL 2024
BRANCH III– PHYSICS
FOURTH SEMESTER

COURSE : MAJOR – ELECTIVE
PAPER : COMMUNICATION SYSTEMS
SUBJECT CODE : 19PH/ME/CS45
TIME : 3 HOURS **MAX MARKS: 100**

SECTION – A

ANSWER ALL QUESTIONS: **(10 x 3 = 30)**

1. Define Amplitude modulation. What is the role of phase angle in the modulation process?
2. Define pulse-coded modulation.
3. What is an electromagnetic wave? How it is propagated through the space?
4. State the salient features of the ionosphere propagation.
5. State the basic principles of RADAR.
6. Write the uses of RADAR.
7. Distinguish between optical fibers and wired communication.
8. Define meridinial and skew rays.
9. List the frequencies that are used in wireless communication.
10. Define multiple access techniques.

SECTION – B

ANSWER ANY FIVE QUESTIONS: **(5 x 5 = 25)**

11. Discuss how the energy is distributed in amplitude modulated wave?
12. Write short notes on (i) Ground waves (ii) sky waves.
13. Explain doppler radar systems.
14. Describe the basic structure of an optical fibre.
15. Explain cellular concept in detail.
16. Obtain an expression for modulation factor.
17. What is microwave? How is it produced?

SECTION – C

ANSWER ANY THREE QUESTIONS: **(3 x 15 = 45)**

18. Describe the mathematical analysis of frequency modulated (FM) signal.
19. With neat block diagram explain the working principle of pulsed radar system. Derive an expression for radar range.
20. Describe working principle of Klystron oscillator.
21. Describe different type of fibre losses. Obtain an expression for acceptance angle and acceptance cone of a fibre cable.
22. Explain third generation networks.

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