

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI – 600 086
(For candidates admitted during the academic year 2019 – 2020 and thereafter)
SUBJECT CODE : 19PH/ME/CS45
B.Sc DEGREE EXAMINATION APRIL 2022
BRANCH III – PHYSICS
SIXTH SEMESTER

COURSE : MAJOR – ELECTIVE
PAPER : COMMUNICATION SYSTEMS
TIME : 3 HOURS **MAX MARKS: 100**

SECTION – A

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

1. What is the need for modulation?
2. Write the principle of pulse amplitude modulation.
3. Write brief note on ground waves
4. What is meant by Skip distance?
5. What is RADAR? What are the applications of RADAR.
6. Mention any three applications of microwave.
7. Find the numerical aperture (NA) and the acceptance angle θ_a for a step index fibre for which $n_1 = 1.5$, $n_2 = 1.48$, $n_0 = 1$.
8. What is the basic principle of fibre optics?
9. Distinguish between cellular and local area network.
10. What are advantages of wireless communications.

SECTION – B

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

11. Draw the waveform of AM wave for the following values of modulation factor :
(i) 0 (ii) 0.5 (iii) 1 (iv) 1.5
12. Distinguish between FM and AM.
13. Discuss sky wave propagation.
14. With a block diagram explain Radar system
15. What are the various causes of loss in fibre communication?
16. With suitable diagram explain, meridional and skew ray.
17. Explain the process in making a call in mobile communication.

SECTION – C

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

18. What is amplitude modulation (AM)? Analyze the AM wave and derive the voltage equation of AM wave.
19. Explain the propagation of the space wave and explain the stratification in ionosphere during day time.
20. Describe the construction and working of magnetron oscillator.
21. Write short note on basic structure of optical fibre and explain the propagation of light through the optical fibre.
