

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI – 600 086.
(For candidates admitted during the academic year 2015-16 and thereafter)

SUBJECT CODE : 15PH/ME/CS55
B.Sc. DEGREE EXAMINATION APRIL 2019
BRANCH III - PHYSICS
SIXTH SEMESTER

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

SECTION – A

(10 x 3 = 30)

I ANSWER ALL QUESTIONS:

1. Define the term Modulation factor.
2. Mention the advantages of frequency modulation over amplitude modulation.
3. What is meant by Skip distance?
4. What is the need for modulation?
5. Give the Principle of Radar.
6. Write any three applications of micro waves.
7. Define acceptance angle
8. Give the principle of fiber optic communication
9. Write any three name of the mission in Mars and Moon in ISRO
10. Give the 3 different types of applications with respect to satellite systems.

SECTION – B

ANSWER ANY FIVE QUESTIONS:

(5 x 5 = 25)

11. The total power content of an AM wave is 1.5 kW at a depth of modulation of 80%. Calculate the power content of the carrier and each sideband.
12. Find the relation for power in an amplitude modulated wave.
13. Explain how electromagnetic waves help in propagation
14. With a block diagram explain Radar system.
15. Explain the difference between stepped index and graded index fibres.
16. A step-index optical fiber with $\mu_{\text{core}} = 1.5$ and $\mu_{\text{cladding}} = 1.4$ is used in water environment ($\mu = 1.33$). Calculate the numerical aperture and the acceptance angle.
17. What are geostationary satellites? Give the advantage of geostationary orbit.

SECTION – C

ANSWER ANY THREE QUESTIONS:

(3 X 15 = 45)

18. Write a note on extra-terrestrial communication.
19. With a block diagram explain fibre optic communication system and discuss the advantages.
20. Give the construction and working of magnetron oscillator.
21. With a diagram, explain tropospheric scatter propagation. Explain how ground, sky and space wave is used for propagation.
22. What is amplitude modulation. Analyse the amplitude modulated wave and explain the side band frequencies.
