QP CODE: 22001785

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Reg No : .....

Name : .....

M Sc DEGREE (CSS) EXAMINATION, AUGUST 2022

Fourth Semester

M Sc PHYSICS

Elective - PH800403 - COMMUNICATION SYSTEMS

2019 ADMISSION ONWARDS

7D2EC8CB

Time: 3 Hours Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. What is pulse amplitude modulation?
2. What are redundant codes?
3. Draw the schematic diagram of QPSK.
4. Write the basic concepts of cellular concept in solving the problem of spectral congestion and user capacity.
5. Draw and explain the TDMA frame.
6. Represent in diagram different types of antenna designed for satellite.
7. Waveguides cannot be used to operate at low frequencies. Why?
8. What are non-linear effects? How are they classified? Give any two of its applications for single mode fibers.
9. Explain the working of active switch modulator in radar transmitter.
10. Name the main problems with phased array radars?

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

11. Draw a waveform and show that how it is quantised using 8 levels in PCM.

12. Write short note on simplex, half duplex or full-duplex systems.

13. What are the factors influencing small scale fading?

14. What do you mean by Global Positioning Satellite System?

15. Discuss the different types of noise and their significance in the design of a satellitelink with necessary expression.

16. Estimate the maximum core diameter for an optical fiber with a relative refractive index difference of 1.5% and core refractive index 1.48, so that it may be suitable for single mode operation. The fiber is operating at a wavelength of 0.85μm.

17. With the aid of simple sketches outline the major categories of multi-port optical fiber coupler.

18. Explain the role of Doppler effect in moving target indication.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. Why different multiplexing techniques are needed in communication. Describe any one method?

20. Draw the GSM system architecture and explain. Discuss the various GSM services and its features.

21. Derive an expression for the acceptance angle and numerical aperture of an optical fiber.

22. How target properties and noise level can influence the performance of radar system?

(2×5=10 weightage)