



**QP CODE: 21000715**



21000715

**Reg No** : .....

**Name** : .....

**M Sc DEGREE (CSS) EXAMINATION, JULY 2021**

**Fourth Semester**

Faculty of Science

M Sc PHYSICS

**Elective - PH800403 - COMMUNICATION SYSTEMS**

2019 Admission Onwards

CDFF78AA

Time: 3 Hours

Weightage: 30

**Part A (Short Answer Questions)**

Answer any **eight** questions.

Weight **1** each.

1. How to reduce quantisation noise in PCM system?
2. Differentiate analog and digital signals.
3. Discuss on phase shift keying.
4. Explain different mobile radio transmission system.
5. How footprints are set in cellular system?
6. What is the effect of a rain on the uplink and downlink of satellite systems?
7. List any four areas where optical waveguides are used.
8. What are photonic crystal fibers and on what principle are they based? In what aspect are they superior to conventional optical fibers?
9. What are the functions of radar system?
10. Differentiate between lobe switching and conical scanning in tracking of radar.

(8×1=8 weightage)

**Part B (Short Essay/Problems)**

Answer any **six** questions.

Weight **2** each.

11. Discuss the generation of PPM with diagrams.
12. What is the importance of Network and Switching Subsystem (NSS) and operation Support subsystem (OSS) in GSM?





13. Explain capacity expansion techniques.
14. List out the geostationary satellite communication parameters.
15. Obtain the uplink and downlink carrier to noise ratio equations.
16. (i) Using appropriate diagrams, explain Total internal reflection. (ii) An optical fiber has a numerical aperture of 0.20 and a cladding refractive index of 1.59. Determine: (a) the acceptance angle for the fiber in water which has a refractive index of 1.33 (b) the critical angle at the core-cladding interface.
17. Describe what is meant by the fusion splicing of optical fibers. Discuss the advantages and drawbacks of this jointing technique.
18. An MTI radar operates at 10 GHz with a PRF of 3000 pps. Calculate its lowest blind speed.

(6×2=12 weightage)

### **Part C (Essay Type Questions)**

Answer any **two** questions.

Weight **5** each.

19. What is multiplexing? Explain different multiplexing techniques?
20. Discuss about the Spread Spectrum Multiple Access technique and its types.
21. Explain how pulse broadening occurs due to intermodal dispersion. Compare and contrast the same for a Multimode step index and Multimode graded index fiber.
22. Explain the working of a CW Doppler radar with the help of a block diagram. Illustrate how CW Doppler radar is advantageous over CW radar.

(2×5=10 weightage)

