45074–B

M.Sc. DEGREE EXAMINATION, MARCH/APRIL 2020.

FOURTH SEMESTER

PHYSICS

Paper IV — ELECTRONICS II : COMMUNICATION SYSTEMS

Time : Three hours | Maximum : 75 marks

(No additional sheet will be supplied)

PART A — (5 × 3 = 15 marks)

Answer any FIVE questions.

Each question carries 3 marks.

Each answer should not exceed 1 page.

1. Explain the concept of slotted ALOHA.
2. What is FDMA? Explain.
3. Sketch the optical receiver diagram and explain its functioning.
4. Explain coherent detection principle in brief.
5. Write about frequency reuse concept in mobile communication.
6. Write a brief note on hands off mechanisms.
7. Write briefly about satellite frequency bands.
8. What is QPSK modulation? Explain.

PART B — (4 × 15 = 60 marks)

Answer ALL questions.

Each question carries 15 marks.

Each answer should not exceed 6 pages.

9. (a) Write a detailed note on the architecture of ISDN in Computer Communication system.

   (b) What is multiplexer? Give a simple scheme to depict the multiplexing function.

Or

10. (a) What is CSMA Scheme? Discuss non-persistent, I-persistent and p-persistent CSMA with suitable examples.

    (b) Explain with CSMA/CD Cannot be used for wireless LANs.

11. (a) With the help of a block diagram, elaborate the major elements of an optical fiber transmission link.

(b) Explain in brief

(i) Total internal reflection

(ii) Plane of incidence.

Or

12. (a) With a neat block diagram explain the working of a coherent optical fiber system.

(b) Sketch ASK, FSK and PSK modulated carrier waveforms and explain the detection principle for ASK.

13. (a) Explain the architecture of GSM system.

(b) Explain the modeling of hands - off calls.

Or

14. (a) Write about Direct-Sequence and frequency hopped spread spectrum modulation techniques.

(b) Write briefly about the evolution of 1G, 2G, 3G, 4G and 5G networks.

15. (a) Define the following w.r.t Satellite communications :

(i) Look angles

(ii) Azimuth

(iii) Elevation.

(b) Briefly describe a TDMA frame illustrate by a simplified diagram, a TDMA frame for four transmitting earth stations and briefly explain.

Or

16. (a) What are the Keplar's three laws for planetary motion?

(b) What does the form EIPR stands for? Calculate the power received by the earth station using flux density and link equation.