

(FOR THE CANDIDATES ADMITTED

SUBJECT CODE

25 PPS 2E3

DURING THE ACADEMIC YEAR 2025-26 ONLY)

REG.NO.:

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : MAY– 2026

M.Sc. – PHYSICS

MAXIMUM MARKS: 75

II SEMESTER

TIME : 3 HOURS

ELECTRONIC COMMUNICATIONS AND CYBER SECURITY

SECTION – A

(10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

(K1)

1. In DSB-SC modulation, the carrier is
a) partially transmitted b) fully transmitted c) suppressed d) frequency shifted
2. Quantization error occurs due to
a) Sampling b) Encoding
c) Finite number of quantization levels d) Transmission noise
3. Microwaves occupy the frequency range
a) 300 Hz – 3 kHz b) 3 kHz – 300 kHz c) 300 MHz – 300 GHz d) Above 300 GHz
4. CIA in cyber security stands for
a) Control, Integrity, Availability b) Confidentiality, Integrity, Availability
c) Cyber, Information, Access d) Control, Information, Authorization
5. A firewall is used to
a) Encrypt data b) Detect viruses only
c) Control network traffic d) Store passwords

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES

(K2)

6. What is noise figure?
7. Define channel capacity.
8. State one application of magnetron.
9. Define worm in cyber security.
10. What is user authentication in web security?

(CONTD 2)

SECTION – B**(5 X 5 = 25 MARKS)****ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.****(K3)**

11. a) Explain the principle of Single Sideband (SSB) modulation. List its advantages.
(OR)
b) Explain thermal noise and shot noise.
12. a) State the sampling theorem and explain its significance in pulse modulation.
(OR)
b) Distinguish between baseband transmission and radio-frequency transmission with examples.
13. a) Explain the principle of operation of a multicavity klystron.
(OR)
b) Write short notes on colour TV transmission.
14. a) Explain the working of viruses and worms. Differentiate between them.
(OR)
b) Explain authentication and its importance in cyber security
15. a) Describe the working of Intrusion Detection Systems (IDS).
(OR)
b) Explain the concept of sandboxing with applications.

SECTION – C**(5 X 8 = 40 MARKS)****ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.****(K4 (Or) K5)**

16. a) With a neat block diagram, explain the working of a superheterodyne AM receiver. State its advantages.
(OR)
b) Explain the signal model of a communication system. Classify signals into energy and power signals with examples.
17. a) Describe the Pulse Code Modulation (PCM) system with a neat block diagram.
(OR)
b) Explain the fundamental concepts of Information Theory. Derive expressions for information content and entropy.
18. a) Explain the principle, construction, and operation of a Travelling Wave Tube (TWT). Compare TWT with klystron.
(OR)
b) Explain the block diagram of a radar system. Describe the function of each block in detail.
19. a) Explain Cyber Security in detail. Discuss the importance of Confidentiality, Integrity, and Availability in modern systems.
(OR)
b) Explain Windows security architecture. Discuss user authentication and access control mechanisms in Windows.
20. a) Explain firewalls in detail. Discuss their types, working principles, advantages, and limitations.
(OR)
b) Explain Intellectual Property Rights (IPR). Discuss copyright, patents, and trade secrets.
