

A-1184

Total Pages : 3

Roll No.

MSCPH-521

M.Sc. Physics (MSCPH)

Digital Electronics and Communication System

Examination February, 2026

Time : 2:00 Hrs.

Max. Marks : 70

Note :- This paper is of Seventy (70) marks divided into Two (02) Sections 'A' and 'B'. Attempt the questions contained in these Sections according to the detailed instructions given therein. *Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.*

Section-A

(Long Answer Type Questions) (2×19=38)

Note :- Section 'A' contains Five (05) Long-answer type questions of Nineteen (19) marks each. Learners are required to answer any *two* (02) questions only.

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(1)

P.T.O.

1. Describe the conversion process with solved examples from :
 - (a) Decimal to Binary
 - (b) Binary to Decimal
 - (c) Binary to Octal, and
 - (d) Binary to Hexadecimal
2. What is a magnitude comparator ? Explain the working of a 2-bit comparator with logic diagram and truth table.
3. Name the different types of antennas used for radio and TV transmission. Explain the working of any one of them with the help of a neat diagram.
4. Derive the expression for the signal- to-noise ratio (SNR) and discuss its importance in communication system.
5. Write short notes on any *three* of the following :
 - (a) Shift register applications
 - (b) Synchronous counter
 - (c) Universal shift register
 - (d) Digital clock unit

Section–B

(Short Answer Type Questions) (4×8=32)

Note :- Section 'B' contains Eight (08) Short-answer type questions of Eight (08) marks each. Learners are required to answer any *four* (04) questions only.

1. Derive the relationship between orbital period and radius of the orbit for a geostationary satellite.
2. What is a full Adder ? Draw its logic circuit.
3. Compare different types of ADCs based on speed, accuracy and cost.
4. Define pair, quad and octet in a k-map. What are advantages of a k-map over Boolean algebra simplification ?
5. What is an encoder ? What is a priority encoder ? Explain with an example.
6. Explain the noise sources in a satellite link and name the methods to minimize them.
7. Explain the block diagram of an FM receiver.
8. What is a Binary weighted resistor network ? What is the advantage of the R-2R ladder network over a Binary weighted DAC ?
