K-421

Total Pages : 3   Roll No. ....

MSCPH-521

Digital Electronics and Communication System

M.Sc. Physics (MSCPH)

3rd Semester Examination, 2023 (Dec.)

Time : 2 Hours]   **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)

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.

(2×19=38)

1. (a) What is octal number system? How will you convert it to binary number system?

   (b) Convert the hexadecimal number AC3.BC in octal.

   (c) Convert the decimal number 76.548 into binary.

2. Explain the functioning and working of Multiplexer and De multiplexer along with truth tables.

3. What do you understand by counters? Explain the functioning and working of Asynchronous counters and synchronous counters.

4. What are Narrowband FM and Wideband FM? What will be their bandwidth and power requirements?

5. What are the elements of satellite communication? Explain each of them with a suitable block diagram.

SECTION–B
(Short Answer Type Questions)

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. (4×8=32)

1. Add the binary numbers 111101 and 101110.

2. Differentiate binary number system and Binary Coded Decimal.

3. Describe associative law and prove it using truth table.

4. What do you understand by flip flops?

5. What do you understand by shift register?

6. What are digital signals why do we convert digital to analog signals?

7. What will be the power efficiency for total power carried by the sidebands of the AM wave for tone modulation when (a) $\mu = 0.5$ and (b) $\mu = 0.3$.

8. A satellite is orbiting in an uniform circular orbit at a distance of 630 km from the surface of earth. Assuming the radius of earth equal to 6370 km, find the velocity of satellite in the orbit.

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