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SB—31—2022

FACULTY OF SCIENCE

B.Sc. (Sixth Semester) EXAMINATION

JUNE/JULY, 2022

(CBCS/Old Course)

PHYSICS

Paper XV

(Digital and Communication Electronics)

(Thursday, 9-6-2022)   **Time : 10.00 a.m. to 12.30 p.m.**

Time—2½ Hours   *Maximum Marks—40*

N.B. :—   (i)   *All* questions are compulsory.

       (ii)   Figures to the right indicate full marks.

       (iii)   Non-programmable calculators are allowed.

1.   Explain K-map for two, three and four variables and simplify the following Boolean expression :   15

$$Y = \overline{A}B\overline{C}D + A\overline{B}\,\overline{C}\,\overline{D} + \overline{A}\,\overline{B}\,\overline{C}D + AB\overline{C}D + AB\overline{C}\,\overline{D} + ABCD.$$

Or

(a)   Explain Binary coded decimal (B.C.D.) and convert the following : 8

   (i) $(4579)_{10} = (?)_{8421}$

   (ii) $(10101101000111)_{8421} = (?)_{10}$

(b)   Explain sensitivity of radio receiver and its measurement.   7

2.   Derive expression for frequency modulated voltage. Explain modulation index and frequency deviation.   15

Or

(a)   Draw the block diagram of Basic Communication system and explain each block.   8

P.T.O.

(*b*) Explain Hexadecimal number system and convert the following : 7

$$(786.86)_{10} = (?)_{16}.$$

3. Write notes on (any *two*) : 10

(*i*) Grey code

(*ii*) Ex-OR Gate

(*iii*) Power output in AM waves

(*iv*) Need of Modulation.