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**Y—118—2019**

**FACULTY OF SCIENCE**

**B.Sc. (Sixth Semester) (Backlog) EXAMINATION**

**NOVEMBER/DECEMBER, 2019**

**(CBCS Pattern)**

**PHYSICS**

**Paper XV**

**(Digital and Communication Electronics)**

**(Saturday, 21-12-2019)**

**Time : 10.00 a.m. to 12.00 noon**

**Time—2 Hours**

**Maximum Marks—40**

- N.B. :—** (i) Attempt *all* questions.  
(ii) *All* questions carry equal marks.  
(iii) Non programmable calculators are allowed.

1. Attempt any *four* : 8
- (a) Convert the binary numbers (0111) & (01000) to Excess-3 code.
- (b) Draw the truth table of two input OR gate.
- (c) Define demodulation.
- (d) Define base band and band pass signal.
- (e) Give the weights of given binary digits in the number  $(1101)_2$ .
- (f) What is a logic gate ?
- (g) State modulation index.
- (h) What is ganged tuning in A.M. Receiver ?
2. Attempt any *two* : 8
- (a) Draw the truth table and logic symbol of EX-NOR Gate.

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- (b) Perform the following subtraction using 2's complement method
- (i)  $(1101)_2 - (1010)_2$
  - (ii)  $(1001)_2 - (1110)_2$
- (c) Draw the block diagram of basic communication system explain any one block.
3. Attempt any *two* : 8
- (a) What is hexadecimal number system ? Explain with suitable example.
  - (b) What is K-map ? Give the rules of looping or grouping.
  - (c) Define modulation and state types of modulation.
4. Attempt any *one* : 8
- (a) Define Amplitude modulation and give expression for amplitude modulated voltage.
  - (b) Draw the block diagram of super heterodyne receiver and explain each block.
5. Write notes on any *two* : 8
- (a) Selectivity measurement
  - (b) Excess-3 code
  - (c) Universal Properties of NAND Gate
  - (d) Power output in A.M. Wave.