

This question paper contains 2 printed pages]

**AO—89—2018**

**FACULTY OF SCIENCE**

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

**MARCH/APRIL, 2018**

**(New Course)**

**PHYSICS**

**Paper XV (A) (Phy.-305)**

**(Digital and Communication Electronics)**

**(Monday, 2-4-2018)**

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

**Time—2 Hours**

**Maximum Marks—40**

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

**(ii) All questions carry equal marks.**

**1. Attempt any four : 8**

- (a) Define frequency modulation.
- (b) Give truth table of NOR-gate.
- (c) State OR law.
- (d) Define decimal number system.
- (e) Give statement of deviation ratio.
- (f) Define fidelity of a radio receiver.
- (g) Explain position weighted number system.
- (h) Define base band signal.

**2. Attempt any two : 8**

(a) Perform the following conversions :

$$(654)_8 = (?)_2$$

$$(598)_{10} = (?)_2$$

$$(1AC)_{16} = (?)_2$$

$$(1111)_8 = (?)_{10}$$

- (b) State and explain De-Morgan's theorems.
- (c) Obtain an expression for F.M. voltage.

**P.T.O.**

3. Attempt any *two* : 8
- (a) Draw symbols of two input EX-OR and EX-NOR gates. Write their truth tables.
  - (b) Explain in detail gray code.
  - (c) Draw block diagram of basic communication system. Explain each block.
4. Attempt any *one* : 8
- (a) Give types of modulation. Derive an expression for A.M. voltage.
  - (b) Define demodulation. Explain working of super heterodyne receiver with neat labelled diagram.
5. Write short notes on (any *two*) : 8
- (a) Hexadecimal number system
  - (b) Double dabble method for decimal to binary conversion
  - (c) 8421 BCD code
  - (d) Logical expression for EX-NOR gate.