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**Y—119—2019**

**FACULTY OF SCIENCE**

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

**NOVEMBER/DECEMBER, 2019**

**(CBCS Pattern)**

**PHYSICS**

**Paper XV (B)**

**(Linear and Digital Integrated Circuits)**

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

**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* (each of 2 marks) : 8

- (a) State ideal characteristics of Op-Amp.
- (b) What is CMRR ?
- (c) Draw Logic symbol for NOR and NAND gate.
- (d) Define flip-flop.
- (e) What is a counter ?
- (f) Define Multiplexer.

2. Attempt any *two* of the following (each of 4 marks) : 8

- (a) What is Op-Amp ? Explain Op-Amp as an inverting amplifier.
- (b) Explain basic gates.
- (c) Explain full adder in detail.

P.T.O.

3. Attempt any *one* of the following (each of **8** marks) : 8
- (a) Discuss Op-Amp as summing and difference amplifier.
  - (b) Explain universal properties of NAND and NOR gates.
4. Attempt any *two* of the following (each of **4** marks) : 8
- (a) Write a note on decoders.
  - (b) Explain JK flip-flop in detail.
  - (c) Explain ring counter.
5. Attempt any *one* of the following (each of **8** marks) : 8
- (a) Explain the Master-Slave JK flip-flop.
  - (b) Discuss in detail parallel-in-parallel out shift register.