

Total No. of Questions—**12**][Total No. of Printed Pages—**4**

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[5057]-54**S.E. (Electrical) (First Semester) EXAMINATION, 2016****ANALOG AND DIGITAL ELECTRONICS****(2008 PATTERN)****Time : Three Hours****Maximum Marks : 100**

N.B. :— (i) Answer three questions from Section I and three questions from Section II.

(ii) Figures to the right indicate full marks.

(iii) Assume suitable data, if necessary.

SECTION I

1. (a) With neat circuit diagram, input and output characteristics explain CE configuration of BJT amplifier. [9]

(b) Write a short note on Field Effect Transistor. [9]

Or

2. (a) Explain with neat diagram, working of Push Pull amplifier. [9]

(b) Draw and explain transformer coupled BJT amplifier. [9]

3. (a) Draw block diagram of OPAMP and explain each block. [8]

(b) Explain OPAMP as a : [8]

(1) Schmitt trigger

(2) Differentiator.

P.T.O.

Or

4. (a) Explain OPAMP as a : [8]
 (1) Instrumentation amplifier
 (2) Comparator.
- (b) What is open loop and closed loop configuration of Op-amp? Compare them. [8]
5. (a) Draw neat diagram and explain OPAMP as a triangular wave generator. [8]
- (b) Explain 78XX and 79XX voltage regulator with circuit diagram and give range of output voltages. [8]

Or

6. (a) Draw and explain frequency response of active filters for different configuration. [8]
- (b) Draw neat diagram and explain IC 555 as monostable multivibrator. [8]

SECTION II

7. (a) Represent the decimal numbers : [9]
 (A) 396 and
 (B) 4096 in binary form in :
 (i) Binary
 (ii) BCD code
 (iii) Excess 3 code.

(b) Prove the following using the Boolean algebra theorems : [9]

$$(i) \quad A + \bar{A} \cdot B + A \cdot \bar{B} = A + B$$

$$(ii) \quad A \cdot B + \bar{A} \cdot B + \bar{A} \cdot \bar{B} = \bar{A} + B$$

$$(iii) \quad \bar{A}BC + A\bar{B}C + AB\bar{C} + ABC = AB + BC + CA$$

Or

8. (a) Minimise the logic function in POS form using K map : [9]

$$f(A, B, C, D) = \pi M(4, 6, 10, 12, 13, 15)$$

(b) Write short notes on : [9]

(1) BCD code

(2) Gray code

(3) Excess-3 code

9. (a) Design and explain the operation of MOD 7 asynchronous counter with related timing diagram. [8]

(b) Explain the operation of D flip-flop with truth table. [8]

Or

10. (a) What is the difference between asynchronous and synchronous counter ? [8]

(b) Draw and explain working of 4 bit Johnson's ring counter. [8]

- 11.** (a) Explain SAR ADC in detail. [8]
(b) Draw and explain working of 4-bit twisted ring counter. [8]

Or

- 12.** (a) Explain the operation of 1 : 4 demultiplexer with truth table and neat diagram. [8]
(b) Explain : [8]
(i) PROMS
(ii) EPROMS
(iii) EEPROMS.

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