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[5057]-234

S.E. (Electrical) (First Semester) EXAMINATION, 2016

ANALOG AND DIGITAL ELECTRONICS

(2012 PATTERN)

Time : Two Hours

Maximum Marks : 50

N.B. :— (i) Answer Q. 1 or Q. 2, Q. 3 or Q. 4, Q. 5 or Q. 6 and
Q. 7 or Q. 8.

(ii) Neat diagrams must be drawn wherever necessary.

(iii) Figures to the right side indicate full marks.

(iv) Use of calculator is allowed.

(v) Assume suitable data, if necessary.

1. (a) Perform the following arithmetic operations : [6]

(i) $(3A.2F)_{16}$ into decimal

(ii) $(0.00011110101101)_2$ into hexadecimal

(iii) $(0.BF85)_{16}$ into octal.

(b) Explain the operation of JK flip-flop with truth table. What do you mean by race round condition in JK flip-flop ? [6]

P.T.O.

Or

2. (a) Represent the following four variable logic function using K map. [6]

$$F(A, B, C, D) = \Sigma m(0, 1, 2, 3, 5, 7, 8, 9, 11, 14)$$

- (b) What is the difference between asynchronous and synchronous counter ? [6]
3. (a) Explain the function of 78XX and 79XX voltage regulator. [6]
- (b) Explain working of OP-AMP as a instrumentation amplifier. State applications. [7]

Or

4. (a) Explain working of IC555 as Monostable Multivibrator. [6]
- (b) Draw a neat diagram and explain operation of OP-AMP as sine wave generator with output waveforms. [7]
5. (a) Derive equation for DC load line and show Q point on DC load line. [6]
- (b) Describe operation of transformer coupled two stage amplifier with advantages and disadvantages. [7]

Or

6. (a) Write a short note on Push Pull amplifier with waveforms. [7]
- (b) Draw and explain JFET output characteristics. [6]

7. (a) Explain working of single phase full wave bridge rectifier with RL load. [6]
- (b) Draw a neat diagram of three phase full wave bridge rectifier with R load and explain its working. [6]

Or

8. (a) Explain single phase full wave centre tapped diode rectifier with input and output waveforms. State limitations of it. [6]
- (b) A single phase full bridge diode rectifier is supplied from 230 V, 50 Hz source. The load consists of $R = 10 \Omega$ and a large inductance so as to keep load current constant. Determine :
- (1) Average values of output voltage and current.
- (2) Average and rms value of diode current. [6]