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| Seat No. | |
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[5057]-2034

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

ANALOG AND DIGITAL ELECTRONICS

(2005 PATTERN)

Time : Two Hours

Maximum Marks : 50

N.B. :— (i) Attempt *All* questions.

(ii) Figures to the right indicate full marks.

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

(1) $(3A.2F)_{16}$ into decimal

(2) $(0.00011110101101)_2$ in hexadecimal

(3) $(0.BF85)_{16}$ 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]

Or

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

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

(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 the working of OP-AMP as an instrumentation amplifier. State applications. [7]

P.T.O.

Or

4. (a) Explain the working of IC 555 as Monostable multivibrator. [6]
(b) Draw 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 characteristic. [6]
7. (a) Explain the 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) Draw and explain full-wave precision rectifier. [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]