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[5152]-543

**S.E. (Electrical) (First Semester)**

**EXAMINATION, 2017**

**ANALOG & DIGITAL ELECTRONICS**

**(2015 PATTERN)**

**Time : Two Hours**

**Maximum Marks : 50**

**N.B. :-** (i) Attempt Q. no. 1 or 2, Q. no. 3 or 4, Q. no. 5 or 6,  
Q. no. 7 or 8.

(ii) Figures to the right indicate full marks.

(iii) Neat diagram must be drawn wherever necessary.

(iv) Use of non-programmable calculator is permitted

(v) Use suitable data, if necessary.

1. (A) Convert the following numbers into its equivalent numbers :  
[6]

(i)  $(7BC. A3)_{16} = ( )_8$

(ii)  $(12.125)_{10} = ( )_2$

(iii)  $(754.51)_8 = ( )_{10}$

(B) Write the truth table and derive excitation table for SR, JK  
and D flip-flops. [6]

Or

2. (A) Draw and explain 4-bit controlled buffer register. [6]

(B) Simplify using Boolean algebra : [6]

$$D(\bar{A} + B) + \bar{B}(C + AD)$$

3. (A) Draw and explain the frequency response characteristics of an  
ideal and practical low pass filter. [7]

P.T.O.

(B) Draw neat diagram. Explain OPAMP as a peak detector. [6]

*Or*

4. (A) List important characteristics of Comparator. What is the difference between zero crossing detector and comparator ? [7]

(B) Explain working of IC 555 as Astable Multivibrator [6]

5. (A) Write a short note on Push Pull Amplifier. [6]

(B) Draw and explain RC coupled amplifier and state its applications. [6]

*Or*

6. (A) Draw and explain the construction of FET with its characteristic. [6]

(B) Explain the Darlington connection and how it improves the current gain. [6]

7. (A) Draw neat diagram of the single phase half wave rectifier with R load. Define :

(i) Efficiency

(ii) Form factor

(iii) Ripple factor

(iv) Transformer utilization factor

(v) Peak inverse voltage and

(vi) Rectification efficiency. [7]

(B) With neat diagram, explain the working of full wave precision rectifier. [6]

Or

8. (A) A single phase full wave rectifier is supplied from 230 V, 50 Hz source. The load resistance is 100 ohm and diode resistance is 1 ohm, calculate :
- (i) Average value of load voltage
  - (ii) DC output power
  - (iii) AC input power
  - (iv) Rectification efficiency. [7]
- (B) Explain the working of single phase half wave rectifier with RL load with neat sketch and draw its waveform. [6]