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[5252]-543

**S.E. (Electrical) (First Semester) EXAMINATION, 2017**  
**ANALOG AND DIGITAL ELECTRONICS**  
**(2015 PATTERN)**

**Time : Two Hours**

**Maximum Marks : 50**

**N.B. :—** (i) Attempt Q. 1 or 2, Q. 3 or 4, Q. 5 or 6, Q. 7  
or Q. 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.

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

(1) Add 72 and 47 BCD numbers

(2) Convert  $(1357)_8 = (?)_2 = (?)_{16}$

(B) (1) Convert  $(111011)_2$  to Gray Code

(2) Encode (2345) in BCD and Excess-3 Code. [6]

*Or*

2. (A) Simplify the following expression using K-map : [6]

$$X = \bar{A}\bar{B}\bar{C} + A\bar{C}\bar{D} + A\bar{B} + ABC\bar{D} + \bar{A}BC$$

(B) Draw and explain Asynchronous Up-Down counter. [6]

3. (A) Explain the function of LM 317 as adjustable voltage regulator. [6]

(B) Explain High pass filter using op-amp with its frequency response. [7]

P.T.O.

*Or*

4. (A) Explain working of IC 555 as Monostable Multivibrator. [6]  
(B) Explain operation of Op-amp as sine wave generator. [7]
5. (A) Explain the importance of load line. Draw and explain DC load line. [6]  
(B) Explain operation of RC coupled two-stage amplifier with advantages, disadvantages and applications. [7]

*Or*

6. (A) Write short note on Push Pull amplifier with waveforms. [7]  
(B) Explain the characteristics of JFET. [6]
7. (A) Explain working of full wave bridge rectifier with R-L load. [6]  
(B) Draw and explain half wave precision rectifier. [6]

*Or*

8. (A) Compare single phase half-wave and full-wave rectifier. [6]  
(B) A 220V, 50 Hz ac voltage is applied to the primary of 4 : 1 stepdown transformer, which is used in bridge rectifier, having a load resistance of 1 K ohm. Assuming the diodes to be an ideal, determine the following : [6]  
(i) DC output voltage  
(ii) DC power delivered to the load  
(iii) PIV of each diode.