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**[5668]-153**

**S.E. (Electrical) (First Semester) EXAMINATION, 2019**

**ANALOG AND DIGITAL ELECTRONICS**

**(2015 PATTERN)**

**Time : Two Hours**

**Maximum Marks : 50**

**N.B. :—** (i) Attempt Q. Nos. 1 or 2, Q. Nos. 3 or 4, Q. Nos. 5 or 6,  
Q. Nos. 7 or 8.

(ii) Figures to the right indicate full marks.

1. (a) (i) Perform the following BCD addition :  $(167)_{10}$  and  $(396)_{10}$ . [6]

(ii) Write a short note on Excess-3 code with suitable example.

(b) Explain ring counter with neat circuit diagram. Draw the timing diagram if the initial data loaded is  $(0001)_2$ . [6]

*Or*

2. (a) Explain Mod-8 asynchronous counter with timing diagram and transition table. [6]

(b) Minimize the following logic function using K-map.

$$f(A,B,C,D) = \Pi M(4,6,10,12,13,15). \quad [6]$$

P.T.O.

3. (a) What is the difference between fixed and variable voltage regulator? Explain the function of LM317 as adjustable voltage regulator. [7]

(b) Explain V to I converter with grounded load. [6]

*Or*

4. (a) Explain the working of Op-Amp as Zero Crossing Detector with circuit diagram and waveforms. [7]

(b) Explain working of IC 555 astable multivibrator. [6]

5. (a) What is DC load line? Derive equation for DC load line and show Q-point on DC load line. [6]

(b) Draw RC coupled amplifier. Also draw its frequency response. [6]

*Or*

6. (a) Write a short note on push pull amplifier. [6]

(b) Explain drain and transfer characteristics of JFET. [6]

7. (a) Explain the construction and working of three-phase full wave bridge rectifier connected to R-load with neat diagram. [7]

(b) Draw the circuit diagram and state the expression of the following for single-phase full wave centre tap rectifier : [6]

(i) Average output voltage

(ii) RMS output voltage

(iii) Ripple factor.

Or

8. (a) A voltage of  $220 \sin (100 \pi t)$  is applicable to a half wave rectifier with a load resistance  $10 \text{ k}\Omega$ . Calculate the maximum current, RMS current, average current, ac power output and ripple factor. [7]
- (b) Compare diode rectifier with precision rectifier. [6]