Total No. of Questions—**8**] [Total No. of Printed Pages—**3**

Seat No.	

[5459]-153

S.E. (Electrical) (I Sem.) EXAMINATION, 2018

ANALOG AND DIGITAL ELECTRONICS

(2015 PATTERN)

Time : Two Hours **Maximum Marks : 50**

N.B. **:—** Attempt Q. No. **1** *or* **2**, Q. No. **3** *or* 4, Q. No. **5** *or* **6**, Q. No. **7** *or* **8**.

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

(1) Add 37 and 46 BCD numbers

(2) Subtract using 2's Complement :

11011 – 10100

(*b*) (1) Convert the following number into desired base $(630.4)_8 \rightarrow (?)_{10}$

2. Convert $(2345)_{10}$ in BCD and Excess-3 code. [6]

Or

2. (*a*) With the help of a neat circuit diagram, explain the operation of ring counter. If the initial data loaded is $(0001)_2$, then draw timing diagram for the same. [6]

(*b*) Convert $A\bar{B}C + BCD + ACD + \bar{A}B$ into POS form using K-Map. [6]

P.T.O.

3. (*a*) Explain the difference between fixed and variable regulator. Draw suitable circuit diagram of IC-317 and derive formula for variable voltage available at the output in terms of circuit parameters. [7]

(*b*) Write a short note on V to I converter with grounded type load. [6]

Or

4. (*a*) Design a low pass filter at a cut-off frequency of 1 kHz with passband gain of 2. Assume [C = 0.01 microfarad] [7]

(*b*) Draw neat diagram and explain IC 555 as Astable multi-vibrator. [6]

5. (*a*) Explain direct coupled amplifier. Why direct coupling amplifier is not suitable for amplification of high frequencies signals ? [6]

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

Or

6. (*a*) Draw construction of FET and explain transfer characteristics and drain characteristics of FET. [6]

(*b*) Discuss relative merits and demerits of R-C coupled, transformer coupled and direct coupled multistage amplifiers. Draw their frequency response curve. [6]

7. (*a*) Compare the performance of half-wave rectifier and full wave uncontrolled rectifier. [6]

(*b*) Draw the circuit diagram and state the expression of the following for the 1-phase full wave Center tap rectifier : [7]

(1) Average output voltage

(2) RMS output voltage

(3) Ripple factor.

Or

8. (*a*) A three-phase bridge uncontrolled rectifier is connected to an R load. Draw neat diagram and explain with waveforms. [6]

(*b*) A voltage of 220 sin (100 πt) is applied to a half-wave rectifier with a load resistance 10 k-ohm. Calculate the maximum current, rms cuffent, average current, ac power input, dc power output and ripple factor. [7]