| Seat <br> No. |  |
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[4757]-1034
S.E. (Electrical) (I Sem.) EXAMINATION, 2015

ANALOG AND DIGITAL ELECTRONICS
(2012 PATTERN)
Time : Two Hours
Maximum Marks : 50
N.B. :- (i) Answer Q. No. 1 or Q. No. 2, Q. No. 3 or Q. No. 4, Q. No. 5 or Q. No. 6, Q. No. 7 or Q. No. 8.
(ii) Figures to the right indicate full marks.

1. (a) Using Boolean algebra simplify :
(i) $\mathrm{ABC}+\mathrm{A} \overline{\mathrm{B}} \mathrm{C}+\mathrm{AB} \overline{\mathrm{C}}$
(ii) $\overline{\mathrm{A}} \mathrm{B} \overline{\mathrm{C}} \mathrm{D}+\overline{\mathrm{A}} \mathrm{BCD}+\mathrm{ABD}$.
(b) Explain the operation of clocked SR flip-flop with truth table in detail.
2. (a) (i) Perform ( -4$)_{10}-(-6)_{10}$ using the 2's complement form. (ii) Perform ( -4$)_{10}-(-8)_{10}$ using 1's complement form. [6]
(b) Draw the diagram, timing diagram and write the truth table for twisted ring counter.
3. (a) Draw the block diagram of OPAMP 741. For an ideal OPAMP give the values of the following parameter :
(i) CMRR
(ii) Slew rate
(iii) Bandwidth
(iv) PSRR
(v) Offset voltage
(vi) Output impedance.
(b) Draw the diagram IC 555 configured in astable mode. Draw necessary waveforms. Give the formula for $\mathrm{T}_{\text {on }}$ and $\mathrm{T}_{\text {off. }}$ [6]

## Or

4. (a) Explain the application of OPAMP as comparator. Show how the same circuit can be used as ZCD.
(b) Explain first order low pass filter with neat circuit diagram and frequency response.
5. (a) Draw transformer coupled amplifier and write its advantages, disadvantages and applications.
(b) Explain DC load line analysis of CE configuration amplifier. [6]

## Or

6. (a) Explain the drain characteristics of FET.
(b) Explain Push Pull amplifier.
7. (a) What is the need of filter circuit ? Explain LC filters. [6]
(b) List the performance parameters of 1-phase bridge rectifier supplying RL load.

## Or

8. (a) With the help of circuit diagram and relevant waveforms, explain the operation of a 3 -phase bridge rectifier with resistive load.
(b) Draw the circuit diagram and state the expression of the following for a 1-phase half-wave rectifier :
(i) Average output voltage
(ii) RMS output voltage
(iii) Form factorww.sppuonline.com
(iv) Ripple factor.
