

B. TECH. SEM –III (ELECTRICAL ENGG.) 2014 COURSE)
(CBCS) : SUMMER - 2018

SUBJECT : LINEAR & DIGITAL INTEGRATED CIRCUITS

Day : **Wednesday**
Date : **23/05/2018**

S-2018-2242

Time : **02.30 PM TO 05.30 PM**
Max. Marks : 60

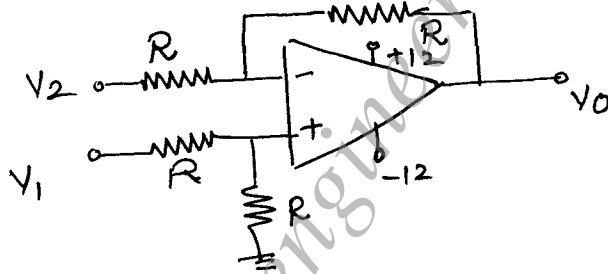
N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Use of non-programmable **CALCULATOR** is allowed.
- 4) Assume suitable data if necessary.

- Q.1** a) Define : i) CMRR ii) PSRR. What are its range of values for an operational amplifier? [04]
- b) Draw block diagram of an operational amplifier and explain function of each block. [06]

OR

- a) Define: i) Input offset voltage ii) Slew rate. [04]
What are its range of values for an op-amp?
- b) For the following circuit, find the value of output voltage: [06]



- Q.2** a) Draw circuit diagram of zero crossing detector and describe its operation with input and output waveforms. [04]
- b) Draw circuit diagram of Schmitt trigger and describe its operation with Lower Threshold Point (LTP) and Upper Threshold Point (UTP). [06]

OR

- a) Draw circuit diagram of integrator using operational amplifier. Draw input and output waveforms with mathematical equation. [04]
- b) Draw diagram of I to V convertor and explain. What are its applications? [06]
- Q.3** a) Draw diagram of three pin regulator. Define line regulation and load regulation. [04]
- b) What are the limitations of three terminal regulator? How these are overcome in IC 723 regulator? Draw functional block diagram of IC 723. [06]

OR

P.T.O.

- a) What are different types of active filters? Draw diagram of any one type of filter and sketch its frequency response. [04]
- b) Draw pin diagram of IC 723. What is current fold back feature of IC 723? [06]

- Q.4** a) State commutative, associative and distributive laws with example. [06]
- b) Convert the following binary numbers into decimal numbers: [04]
- i) $(11101)_2 = (\quad)_{10}$
 - ii) $(1010)_2 = (\quad)_{10}$
 - iii) $(1011010)_2 = (\quad)_{10}$
 - iv) $(1000001)_2 = (\quad)_{10}$

OR

- Write with example : [10]
- i) Binary to BCD conversion technique
 - ii) BCD to excess 3 conversion technique.

- Q.5** Draw a neat labeled block diagram of 4 bit full adder and explain its working with truth table. [10]

OR

- a) Explain R – 2R ladder DAC with neat circuit diagram. [06]
- b) What is Static RAM and Dynamic RAM? [04]

- Q.6** a) With neat diagram explain SR and JK flip-flop. Draw the truth tables. [04]
- b) Design mod 10 counter using IC 7490. [06]

OR

- a) Draw a neat diagram and explain working of 4 bit SISO and SIPO shift registers. [06]
- b) State the difference between combinational and sequential logic circuits. [04]

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