B.Tech sem-III Electrical

B. Tech. Sem –III (Electrical Engg.) 2014 COURSE) (CBCS) :
SUMMER - 2019
SUBJECT : LINEAR AND DIGITAL INTEGRATED CIRCUTS

Day: Monday
Date: 13/05/2019
Time: 02.30 PM TO 05.30 PM
Max. Marks:60

S-2019-2563

N.B.

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Draw neat diagrams **WHEREVER** necessary.

Q.1 **a)** Draw neat diagram of instrumentation amplifier. Describe its operation and its applications. **(06)**

b) Define slew rate, PSRR. State its typical values. **(04)**

OR

Q.1 **a)** Draw circuit diagram of I to V converter and explain its operation **(06)**

b) Draw circuit diagram of adder for $V_1 = +1V$ and $V_2 = -0.5V$ and find output voltage. **(04)**

Q.2 **a)** Draw circuit diagram of triangular waveform generator and describe its operation with waveforms. **(06)**

b) What are clipping and clamping circuits? Describe by suitable waveforms. **(04)**

OR

Q.2 **a)** Draw neat diagram of differentiator and describe its operation with waveforms for square wave input. Write mathematical equation. **(06)**

b) Draw circuit diagram of zero crossing detector and explain. **(04)**

Q.3 Draw pin diagram and block diagram of IC 723. Describe its operation and state its specifications. Define line regulation and load regulation. **(10)**

OR

Q.3 Draw block diagram of IC 555 as monostable multivibrator. Describe its operation with all waveforms. Write down the equation of time delay provided. **(10)**

Q.4 **a)** Express the number $(-37)_{10}$ as an 8 bit number in sign magnitude. **(02)**

b) Reduce the following Boolean expressions using K- map. **(08)**

i) $f(A,B)=\overline{A}B+\overline{A}\,\overline{B}+AB$

ii) $f(A,B)=AB+\overline{A}B$

iii) $f(A,B,C)=\overline{A}\,\overline{B}\,\overline{C}+A\overline{B}C+\overline{A}B\overline{C}+\overline{A}\,\overline{B}C+ABC$

iv) $f(X,Y,Z)=\overline{X}\,\overline{Y}Z+X\overline{Y}\,\overline{Z}+\overline{X}Y\overline{Z}+XY\overline{Z}+\overline{X}YZ$

OR

Q.4 **a)** Find the sum of the following using 2's complement. **(04)**

i) - 1011 & - 0101
ii) + 0111 & - 0011

b) List the various laws stated in Boolean Algebra. **(06)**

P.T.O.

Q.5	**a)**	Explain the function of (n:1) multiplexer with block diagram and truth table.	**(06)**
	b)	Implement the given function using 8:1 multiplexer $F(A, B, C) = \Sigma M(0, 2, 3, 5)$	**(04)**

OR

Q.5	**a)**	Implement 1:8 demultiplexer using two 1:4 demultiplexers.	**(06)**
	b)	Implement the given function using 4:1 multiplexer $f(A, B) = \pi M(1, 3, 4)$	**(04)**
Q.6	**a)**	Design 3 bit asynchronous up counter with the help of JK flip flop and draw its logic diagram. Also show the timing waveforms.	**(08)**
	b)	Draw the symbol and write truth table of SR &JK flip flop.	**(02)**

OR

Q.6	**a)**	Explain the working of 4 bit twisted ring counter with neat block diagram.	**(06)**
	b)	What is master –slave JK flip flop? Explain its working with logic diagram & truth table.	**(04)**

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