

Fifth Semester B. E. (Electronics Engg.) (CGS) Examination

ELECTRONIC DEVICES AND CIRCUITS - II

Paper - 5 XN 01

(USC - 10668)

P. Pages : 3

Time : Three Hours]

[Max. Marks : 80

- Note :** (1) Separate answer book must be used for each section in the subject Geology, Engineering material of civil branch and Separate answer book must be used for Section A and B in Pharmacy and Cosmetic Tech.
- (2) Assume suitable data wherever necessary.
- (3) Illustrate your answer wherever necessary with the help of neat sketches.
- (4) Use pen of Blue/Black ink/refill only for writing the answer book.

SECTION A

1. (a) Discuss the response of RC Low Pass circuit to step input. Also derive the expression for rise time in terms of upper 3 dB frequency. 8
- (b) Draw the transfer characteristics for the circuit shown in Figure 1 (b). Also draw the output waveform for sinusoidal input of amplitude 20 volt.

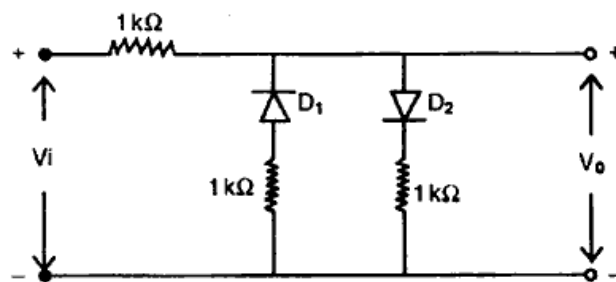


Figure 1 (b)

6

OR

2. (a) State and prove clamping circuit theorem. 6
- (b) Explain the response of RC high pass circuit to square wave input. 8

3. (a) Explain the operation of transistor as a switch. Why CE configuration is used ? 7
(b) Realize NOT, OR, AND gate using NAND and NOR gate only. 6

OR

4. (a) Explain minority charge carrier concentration in forward and reverse bias diode with the help of neat sketch. 7
(b) Simplify using K-map :
 $Y(A, B, C, D) = \sum m(0, 1, 2, 4, 6, 7, 8, 10, 13)$ 6
5. (a) Draw the circuit and explain the operation of collector coupled monostable multivibrator using transistor. Also derive expression for pulse width. 7
(b) Perform the following :—
(i) Convert $(274.247)_{10}$ into octal.
(ii) Convert $(46)_{10}$ to grey code.
(iii) Find the value of base $(114)_b = (160)_{10}$. 6

OR

6. (a) Derive an expression for the output frequency of astable multivibrator. Draw the neat waveforms. 7
(b) Perform the following operations using 2's complement method :—
(i) $58 - (-23)$ (ii) $-29 - 16$ (iii) $48 - 18$. 6

SECTION B

7. (a) Explain the following characteristics of digital ICs :—
(i) Speed of Operation.
(ii) Figure of merit.
(iii) Noise Immunity. 6

- (b) What is tri state logic ?
Draw and explain TSL inverter. 8

OR

8. (a) Explain the working of TTL gate with active pull-up. 8
(b) Draw and explain the operation of 2 input CMOS NAND gate and NOR gate. 6
9. (a) Explain the operation of 3 bit UP/DOWN asynchronous counter with the help of waveforms. 7
(b) Explain R-2R ladder digital to analog converter. 6

OR

10. (a) What is full adder ? Realize it using two half adders. 6
(b) Explain working of 4 bit bidirectional shift register using D flip flop. 7
11. (a) Explain charge transfer mechanism in CCD memory. 6
(b) Explain different types of memories according to principle of operation. 7

OR

12. (a) Draw and explain two phase ratioless shift register. 7
(b) Compare :
(i) Static RAM and Dynamic RAM.
(ii) Sequential Access Memory and Random Access Memory. 6

