

**[4261]-5A**

First Year Engineering (2012 Course)

**104012 : Basic Electronics Engineering**

Q1 A) Compare performance of half wave rectifier and full wave rectifier w.r.to following parameters

- 1)  $I_{DC}$  2)  $V_{DC}$  3)  $I_{rms}$  4) Rectifier efficiency 4) Ripple factor 5) TUF  
6) PIV of diodes used

[6 Marks]

B) Draw constructional details and explain operation and characteristics of n-channel

MOSFET (enhancement type)

[6 Marks]

OR

Q2 A) Determine the minimum and maximum load currents for which the Zener Diode in figure 1 will maintain regulation. What is the minimum value of  $R_L$  that can be used? For Zener Diode  $V_Z=12\text{ V}$ ,  $I_{ZK}=1\text{ mA}$  and  $I_{ZM}=50\text{ mA}$ . Assume  $Z_Z=0\ \Omega$  and  $V_Z$  remains constant  $12\text{ V}$  over the range of current values.

[6 Marks]

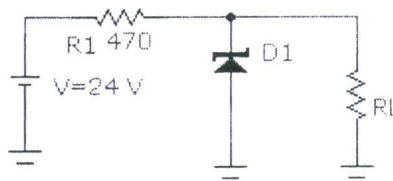


Figure 1

B) Explain with a circuit diagram a single stage common emitter amplifier. State the function of each component in the circuit.

[6 Marks]

Q3 A) What is op-amp? Draw and explain the functional block diagram of an op-amp.

[6 Marks]

B) State and prove the De-Morgan's Theorems. Use De-Morgan's theorem to simplify the following Boolean expression.

$$Y = \overline{\overline{AB} + AB}$$

[6 Marks]

OR

Q4 A) With the help of block diagram of IC 555 explain its operation in astable mode.

[6 Marks]

B) Give a comparison between the microprocessor and microcontroller.

[6 Marks]

Q5 A) Draw construction diagram and explain the working with the help of transistor equivalent circuit of SCR. Also draw its V-I characteristics.

[7 Marks]

B) With a neat diagram explain the construction and working of LVDT. Give its advantages and disadvantages.

[6 Marks]

OR

Q6 B) Draw construction diagram and explain the V-I characteristics of a TRIAC. What are the applications of a Triac?

[7 Marks]

B) Explain with a block diagram an electronic weighing machine.

[6 Marks]

Q7 A) Draw and explain the block diagram of an electronic communication system. [7 Marks]

B) What is the need of modulation? What are the different types of modulation? [6 Marks]

OR

Q8 A) Draw waveforms explain Amplitude Modulation technique. Write the expression of AM and Define modulation index.

[7 Marks]

B) Draw and explain the block diagram of GSM.

[6 Marks]