Reg. No.										

INTERNATIONAL CENTRE FOR APPLIED SCIENCES

(Manipal University)

IV SEMESTER B.S. DEGREE EXAMINATION – MAY 2016

SUBJECT: ELECTRONIC DEVICES AND COMPUTER INTERFACING (CS -241)

(NEW SCHEME)

20TH MAY, 2016

Time: 3 Hours **Max. Marks: 100**

- ✓ **Answer ANY FIVE full Questions.**
- ✓ **Missing data may be suitably assumed.**

1A. Explain with circuit diagram the working of PN junction diode along with diode current equation and it's V-I characteristics under different bias conditions.

1B. Explain a series and parallel clipper circuit with circuit diagram.

1C. A Si diode has reverse saturation current 13 nA at 20°C. (a) Find the diode current when it is forward biased by 0.7 V. (b) Find the diode current when the temperature rises to 125°C.

(8+6+6)

2A. Describe a square wave generator using OPAMP.

2B. Determine V_O for the network shown in Fig Q2B., for the input indicated. Show the steps involved.

(10+10)

3A. Describe with a neat circuit diagram, explain the RC coupled amplifier and its frequency response.

3B. Explain the construction, working and characteristics of enhancement MOSFET. Sketch drain and transfer characteristics.

3C. In a transistor, 99% of the carriers injected into the base cross over to the collector region. If collector current is 4mA and collector leakage current is 6 μA, calculate emitter and base currents.

(8+8+4)

4A A Zener voltage regulator provides a load current of 20mA when connected to an input of 10V supply. If V_Z = 5V and R_S = 100 Ω, calculate the load resistance R_L, current through Zener diode I_Z and the current drawn from the supply.

4B. For the circuit shown in Fig Q4B, determine I_{BQ}, I_{CQ}, V_{CEQ}, V_C, V_E, V_B.

(10+10)

5A. Explain with neat internal block diagram how 555 timer can be used as monostable multi vibrator with necessary waveform.

5B. Explain successive approximation type of ADC with neat block diagram.

(10+10)

6A. An AC voltage of 230V, 50Hz is applied to transformer having turns ratio 10:1. The secondary of transformer is connected to half wave rectifier. The diode has cut-in voltage 0.6V and forward resistance 10Ω. Determine average and rms values of output current and voltage. What is the PIV rating of the diode? Assume load resistance of 1 kΩ.

6B. Write a general data acquisition system block diagram and explain functions of these blocks. (10+10)

7A. Explain all the ideal characteristics and parameters of OPMAP.

7B. Explain with neat circuit diagram how TRIAC can be used as a full wave rectifier. How the output power is controlled?

7C. What is Barkhausen criteria? Write the circuit of Hartley oscillator and explain its working. (6+7+7)

8A. Explain the working of DIAC with the characteristics and mention its applications.

8B. Write notes on: Varactor diode and photo diode.

8C. Explain the two breakdown mechanism in PN junction diode with diagram (6+8+6)

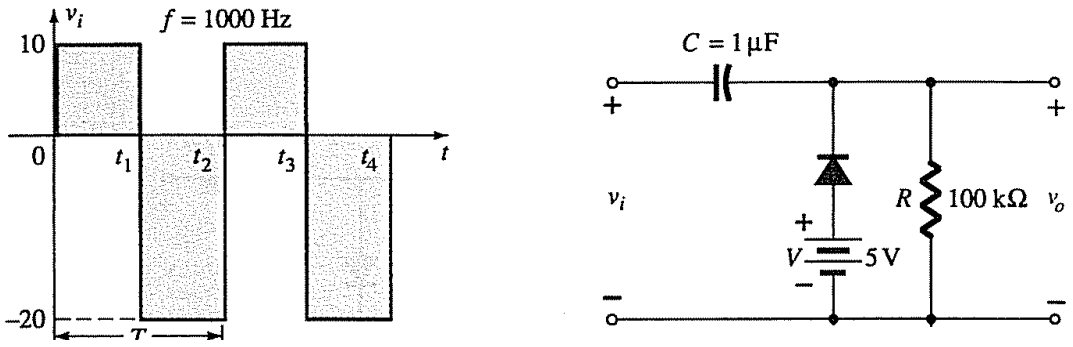

Fig Q2B.

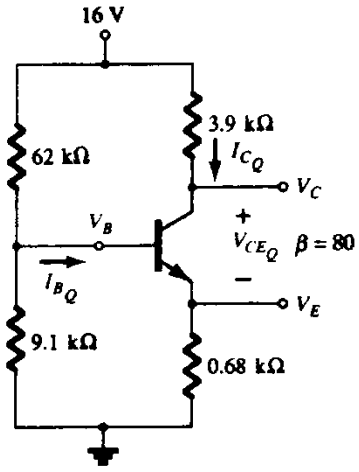

Fig.Q.4B