Reg.No.									

INTERNATIONAL CENTRE FOR APPLIED SCIENCES

(Manipal University)

III SEMESTER B.S. DEGREE EXAMINATION – NOV. / DEC. 2016

SUBJECT: ELECTRONIC DEVICES AND CIRCUITS (EC241)

(BRANCH: E&C & E&E)

Monday, 28 Nov. 2016

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

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

1A. Explain the fixed bias circuit for BJT and determine the expressions for the operating point. Perform the load line analysis for the same for variations in V_{CC}, I_B and R_C.

1B With a neat circuit diagram explain the working of Differential amplifier. Also explain its transfer characteristics.

(10+10)

2A. Using simplified CE model, derive the expression for A_v, A_i, R_i & R_o of a CE amplifier.

2B. Explain any two biasing circuits for FET. Also derive expressions for determining "Q" point for these circuits.

(10+10)

3A. Discuss the input & output characteristics of a CE mode transistors. In which region the transistor has to operate to work as an amplifier, give reason.

3B. An AC voltage of 230V, 50Hz is applied to transformer having turns ratio 8:1. 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 should be the PIV rating of the diode? Load resistance is 1Kohm

(10+10)

4A. With a neat circuit diagram, explain the RC coupled amplifier. Also explain its frequency response

4B. For a BJT write h parameter model for CE, CB & CC configurations. Also write the input and output equations for the same.

(10+10)

5A. Describe the working of JFET with transfer and output characteristics.

5B. Design a zener voltage regulator for the following specifications: Output voltage 5 V, input voltage (12 ± 3) V, load current 10 mA, zener maximum wattage 500 mW and minimum zener current 1 mA. Also draw the circuit diagram of the Zener regulator and explain its working.

(10+10)

6A. Determine v_o for the network shown in Fig Q6A, for the input indicated. Explain the steps involved.

6B. Draw the circuit of emitter follower. Using exact h-parameter model, derive expressions for its A_v, A_i, R_i & R_o. (10+10)

7A. Describe n type and p type semiconductors. Show their energy band diagrams. Also explain drift and diffusion currents.

7B. With an appropriate model derive, expressions for A_v & R_o for CS and CD amplifiers. (10+10)

8A. Define CMRR and explain its significance.

8B. With circuit diagram, explain the working of Transistor switch.

8C. Derive relation between CE and CB dc current gains of BJT.

8D. With V-I characteristics, explain the operation of photo diode.

(5x4=20)

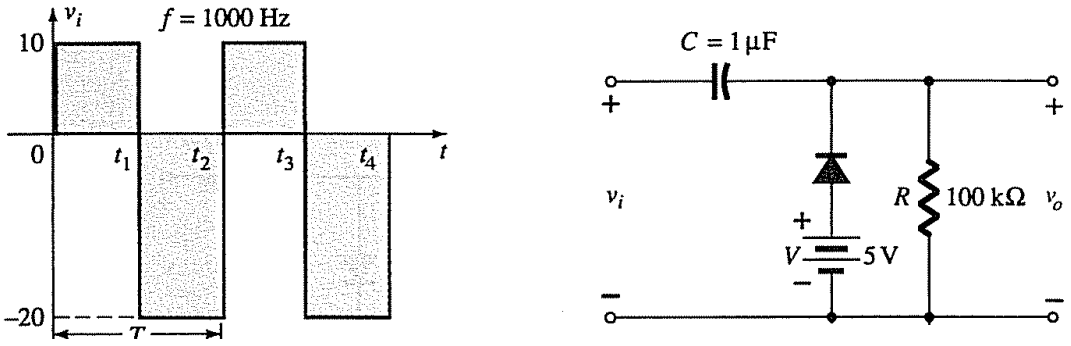

Fig 6A