Reg. No.										

INTERNATIONAL CENTRE FOR APPLIED SCIENCES

(MAHE, MANIPAL)

IV SEMESTER B.S. DEGREE EXAMINATION – APRIL / MAY 2018

SUBJECT: ELECTRONIC DEVICES AND COMPUTER INTERFACING (CS 241)

(OLD SCHEME)

Saturday, 28 April 2018

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

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

1A. A single phase full wave rectifier using center tapped transformer of 20-0-20 V has two diodes. The current rating of diode is I_{max}=1000mA and I_{av}=700mA. Determine a) The value of load resistance that can be connected across load terminals. b) The average value of output voltage c) The peak inverse voltage of each diode d) DC load current.

1B. Draw the circuit of positive and negative parallel clipper and briefly explain its operation with the input and output waveform (10+10)

2A. For a half wave rectifier derive an expression for a) Ripple factor b) The average value of load current c) The rms value of load current d) Efficiency of the rectifier

2B. Explain with neat diagram operation of a) Photo diode b) Varactor Diode

(10+10)

3A. Explain different types of biasing circuit in a transistor.

3B. In a transistor circuit, when the base current is increased from 0.32 mA to 0.48 mA the emitter current increases from 15 mA to 20 mA. Find α_{ac} and β_{ac} values.

3C. Explain the output characteristics of common base transistor. (12+4+4)

4A. Explain summer and subtractor circuit using OPAMP.

4B. Define CMRR. What is the equation of CMRR? What is the typical value of CMRR?

(12+8)

5A. Explain R-2R type of DAC with neat diagram.

5B. Explain with neat block diagram Dual Slope type of ADC. (10+10)

6A. Explain with circuit the working principle of a TRIAC. Draw the V-I characteristics of the TRIAC

6B. Design a symmetrical astable multivibrator using timer 555 for a time period of 1ms. Draw the circuit diagram. (10+10)

7A. a) State the operating principle of a crystal oscillator and write neatly the circuit of Crystal oscillator b) What are the advantages of crystal oscillator?

7B. Explain with the circuit how CMOS can be used as a NOT gate. (10+10)

8A. Draw the block diagram of multiple channel data acquisition system. Explain the functions of each element in the block.

8B. Explain with the circuit the operation of Instrumentation amplifier. What are the requirement of good instrumentation amplifier? (10+10)