INDIAN INSTITUTE OF TECHNOLOGY DHARWAD
Dharwad, 580 011

Wednesday 18th Nov. 2021	**EE 202: Introduction to Analog Circuits** Endsem - Part C & D	Time: 1040 to 1100 for Part C Time: 1100 to 1200 for Part D Marks: 30

Make suitable assumptions where you deem necessary and state them in the answerbook.

PART C

1. We need to characterize a diode. For this, we need to design a voltage to current converter using which we can change the input voltage to control the current flowing through the diode. Design the circuit using an opamp based current to voltage converter which can generate the required currents ranging from 0 to 2 mA using μA741 opamp. [10]

   Work out your design on a paper. Show the circuit diagram you will use, and compute the values of all resistors and capacitors in your circuit.

   You have to scan your solution and upload it as a submission on moodle by 1100 Hrs. The link will automatically close at 1100 Hrs. If you do not submit this part, your simulation exercise of the next question will not be evaluated.

PART D

2. Write the netlist of your circuit design in NGspice. Use the UA741 model for the opamp. Perform a transient simulation of your design for a ramp input which generates the required current of 0 to 2 mA. Plot the waveforms of the input voltage, the diode current and diode voltage. Submit the netlist, the waveform plots on moodle. **The moodle link will automatically close at 1200 noon.** [20]