[Total No. of Questions: 5] Seat No [ ] [Total No of Pages: 2]

G. H. Raisoni of Engineering and Management, Pune.

(An Autonomous Institution affiliated to Savitribai Phule, Pune University)

F. Y. B .Tech (Term -I) (AI/COMP/DS/IT)

ESE Winter – 2020 (2020 Pattern)

Introduction to Discrete Devices and circuits (UECL105)

[Time: 2 Hours] **[Max. Marks: 50]**

Course Outcome

CO1: Relate operation of diodes, types of diodes and their role in design of simple electronic applications.

CO2: Develop the capability to analyze and design simple circuits containing non-linear elements such as transistors using the concepts of load lines, operating points for various biasing methods.

CO3: Classify Power amplifiers, Oscillators & Display Devices.

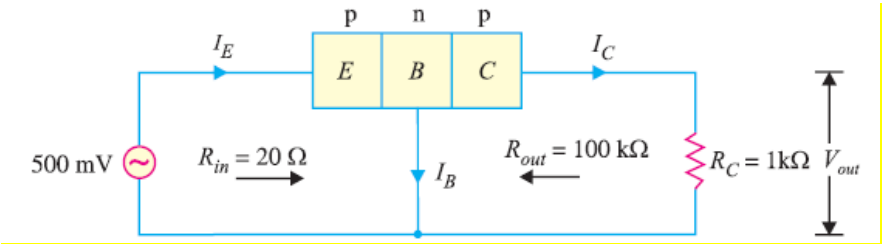
CO4: Interpret the operation of the Field Effect Transistor (FET), Metal Oxide Semiconductor Field Effect Transistor (MOSFET) and design FET circuits

CO5: Demonstrate familiarity with basic electronic components and use them to design simple electronic circuits

Instructions to the candidates:

1) ***All questions compulsory***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary***.

CO1	a)	Draw and explain Clippers and Clampers circuits.	[5]	L1
	b)	The applied input a.c. power to a half-wave rectifier is 100 watts. The d.c. output power obtained is 40 watts. (i) What is the rectification efficiency ? (ii) What happens to remaining 60 watts ?	[5]	L5
CO2	a)	Draw the CC configuration of BJT and explain its input and output characteristics.	[5]	L4
	b)	A common base transistor amplifier has an input resistance of 20 Ω and output resistance of 100 kΩ. The collector load is 1 kΩ. If a signal of 500 mV is applied between emitter and base, find the voltage amplification. Assume αac to be nearly one.	[5]	L4



CO3	a)	Draw the CE circuit and explain the DC load line and importance of Q point	[5]	L4
	b)	Explain on brief feedback Amplifier.	[5]	L2
CO4	a)	What is Pinch off voltage? Explain its significance.	[5]	L4
	b)	Draw the diagram of D-MOSFET and explain its working and characteristics.	[5]	L4
CO5	a)	Explain the working of passive sensors with proper example.	[5]	L2
	b)	Design the simple electronic circuit to measure the temperature of body and display in Digital format.	[5]	L6