	Reg. No.:	
	Name :	

VIT BHOPAL
www.vitbhopal.ac.in

TERM END EXAMINATIONS (TEE) – December 2021- January 2022

Programme	:	**B.Tech.**	**Semester**	:	**Fall 2021-22**
Course Name	:	**Electric Circuits and Systems**	**Course Code**	:	**EEE1001**
Faculty Name	:	**J. Sharmila Joseph**	**Slot / Class No**	:	**E11+E12+E13/0158**
Time	:	**1½ hours**	**Max. Marks**	:	**50**

Answer ALL the Questions

Q. No.		Question Description	Marks
		PART - A (30 Marks)	
1	(a)	Find the current I_L using Superposition theorem for the circuit shown in Fig.1.	10

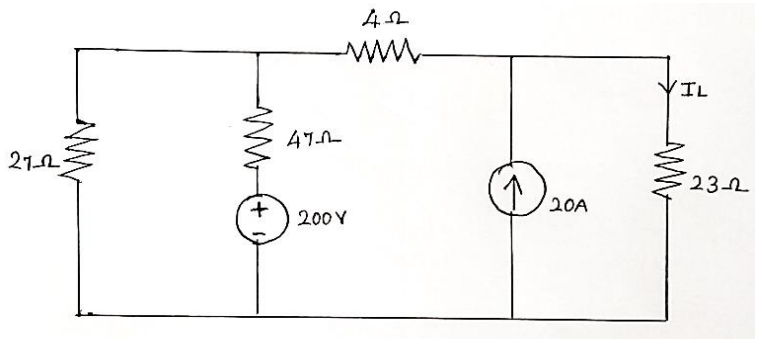

Fig.1

OR

	(b)	A circular iron ring has a mean circumference of 1.5m and a cross sectional area of $0.01m^2$. A sawcut of 4mm wide is made in the ring. Calculate the magnetizing current required to produce a flux of 0.8mWb in the air gap if the ring is wound with the coil of 175 turns. Assume relative permeability of iron as 400 and leakage factor 1.25.	10
2	(a)	For efficient power transfer, voltage is typically transformed from high to low and vice versa in electric power generation and distribution systems. In this case, a particular device is used to convert energy levels. Identify the device and describe its construction, operational principle, and attributes using crisp illustrations.	10

OR

(b) For the circuit shown in figure 2, determine 10

a) D.C output voltage
b) Rectification Efficiency
c) Peak Inverse Voltage
d) Output frequency

Assume the diodes are ideal

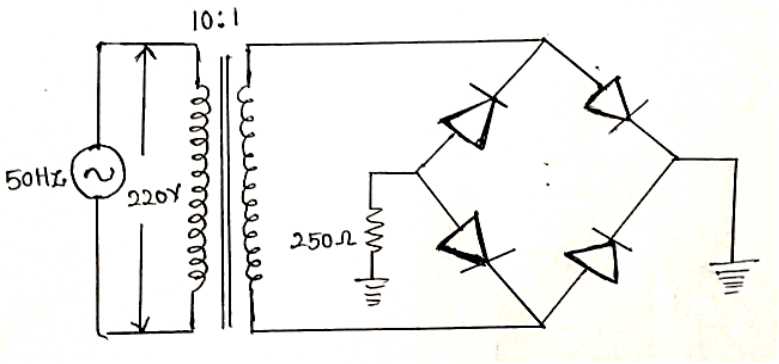

Fig.2

3 (a) The introduction of MOSFET device has brought a change in the domain of switching in Electronics. Identify the MOSFET which initially has no channel between drain and source in its construction. For the same, elaborate the working principle, drain characteristics and transfer characteristics with neat diagrams. 10

OR

(b) Explain how a full adder can be built using two half adders. 10

PART - B (20 Marks)

4 A closed magnetic circuit of cast steel contains a 6cm long path of cross-sectional area $1cm^2$ and a 2 cm path of cross-sectional area 0.5 cm^2. A coil of 200 turns is wound around the 6cm length of the circuit and a current of 0.4A flows through it. Determine the flux density in the 2cm path of the magnetic circuit. Relative permeability of cast steel is 750. 10

5 Design a 4-bit ripple counter and give an explanation of its operation with neat signal diagram. 10

⇔⇔⇔