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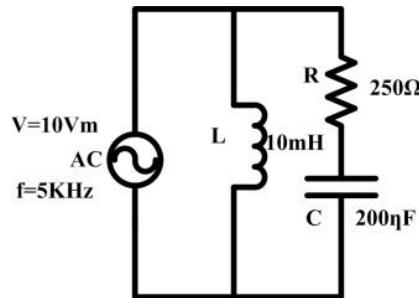
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**TERM END EXAMINATIONS (TEE) – December 2021- January 2022**

Programme	B.Tech [ BAC, BAI, BAS, BCE, BCG, BCY, BEC, BHI, BME, BMR, BOE, BSA, MEI ]	Semester	Fall 2021-22
Course Name	Electric Circuits and Systems	Course Code	EEE1001
Faculty Name	Dr. Baldev Swamy	Slot / Class No	C11+C12+C13/0083
Time	1½ hours	Max. Marks	50

**Answer ALL the Questions**

Q.No.	Question Description	Marks
<b>PART - A ( 30 Marks)</b>		
1	(a) Calculate the values of total current I and voltage across the each element (R,L,C) of the below Fig. 1.	10



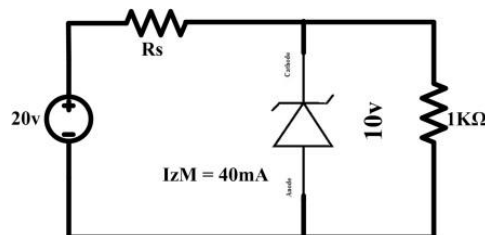
**Fig. 1**

OR

- (b) An iron ring of 19.1 cm mean diameter has a cross-sectional area of 8 cm<sup>2</sup>. The ring has an air gap of 5 mm. The winding on the ring has 1000 turns and carries a current of 5A. The relative permeability of iron is 2000. Calculate the flux produced in the air gap.
- 2 (a) A 12-pole separately excited machine having 1200 lap-connected conductors each carrying a current of 15 A. The armature is being driven at 300 rpm. The flux per pole is 60 mWb. Resistance of armature circuit is 0.1 Ω. Calculate the output power.

OR

- (b) Calculate the minimum and maximum values of the series resistance  $R_s$  of the below circuit,  $I_{zM}$  is zener maximum current Shown in below Fig. 2.

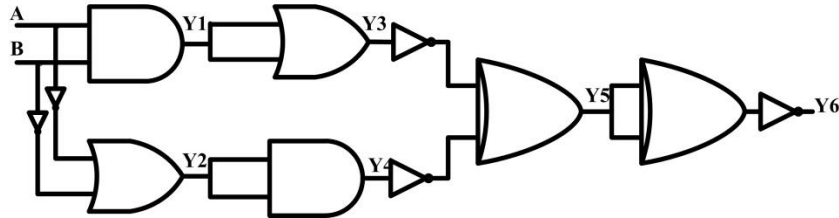


**Fig. 2**

- 3 (a) Analyse the device which works as a switch, controls the voltage and current flow between the source and drain. The working of the device depends on the MOS capacitor, which is the semiconductor surface below the oxide layers between the source and drain. Also analyse its operating modes. 10

OR

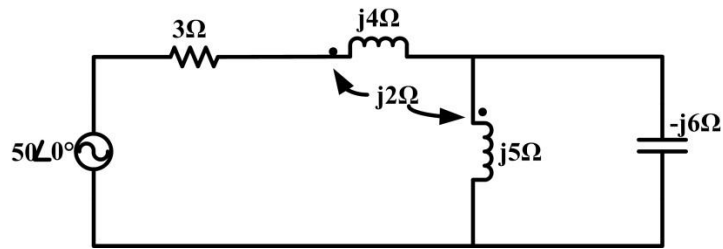
- (b) Find the outputs Y1, Y2, Y3, Y4, Y5 and Y6 of the given digital logic diagram by using truth table shown in below Fig. 3. 10



**Fig. 3**

**PART - B (20 Marks)**

- 4 Calculate the voltage drop across the  $j5\Omega$  shown in the below Fig. 4 10



**Fig. 4**

- 5 Implement the following Boolean function  $f(a, b, c) = \sum(1,2,6,7)$  by using 4:1 Mux. 10

