Reg. No.:

Name :

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

Programme	:	**B.Tech. – BAI, BOE, BCE ,MIM**	**Semester**	:	**Fall 2021-22**
Course Name	:	**Electric Circuits and Systems**	**Course Code**	:	**EEE1001**
Faculty Name	:	**Mohammad Sarwar Raeen**	**Slot / Class No**	:	**D11+D12+D13/0162**
Time	:	**1 ½ hours**	**Max. Marks**	:	**50**

Answer ALL the Questions

Q. No.		**Question Description**	**Marks**

PART - A (30 Marks)

1 (a) Evaluate the value of the voltage source (V_S) that delivers 2 Amps current through the circuit as shown in Fig1. 10

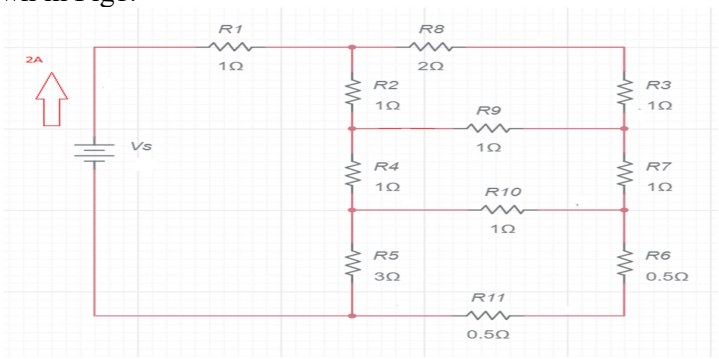

Fig.1

OR

(b) Fig. 2 shows a rectangular magnetic core with an air gap. Find the exciting current needed to establish a flux density of 10
B = 1.2 T in the air gap. Given N = 400 turns and μ_r (iron) = 4000.

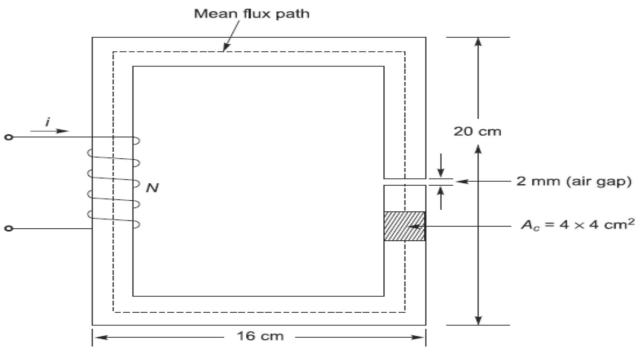

Fig. 2

2 (a) A four-pole generator having wave-wound armature winding has 51 slots, each slot containing 20 conductors. What will be the voltage generated in the machine when driven at 1500 rpm assuming the flux per pole to be 7.0 mWb ? 10

OR

(b) A student has to evaluate the input and output characteristics of a PNP transistor in a common base configuration. 10
(i)What kind of circuit arrangement should he/ she apply for this purpose?
(ii)Display the region of operation on the characteristics and elucidate it.

3 (a) Enlighten the working principle of a silicon control rectifier with two transistor model of an SCR. Enticement the forward and reverse characteristics of an SCR. 10

OR

(b) Design synchronous counter for sequence: $0 \rightarrow 1 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 7 \rightarrow 0$, using T flip-flop. 10

PART - B (20 Marks)

4 A 30 μF capacitor is connected in parallel with an 80Ω resistor across a 240 V, 50 Hz supply. Calculate (a) the current in each branch, (b) the supply current, (c) the circuit phase angle, (d) the circuit impedance (e) the power dissipated, and (f) the apparent power. 10

5 Implement a BCD to seven-segment display decoder using a suitable combinational circuit. 10

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