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Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

Vellore – 632014, Tamil Nadu, India
SCHOOL OF ELECTRICAL ENGINEERING
FALL SEMESTER 2024-2025
CAT-II

Reg.No-

SLOT: D1+TD1

Programme Name & Branch : BEE/EEE

Course Code: BEEE202L

Course Name : Electromagnetic Theory

Faculty Members

:Dr. Himadri Lala

Class Number(s): VL2024250101249

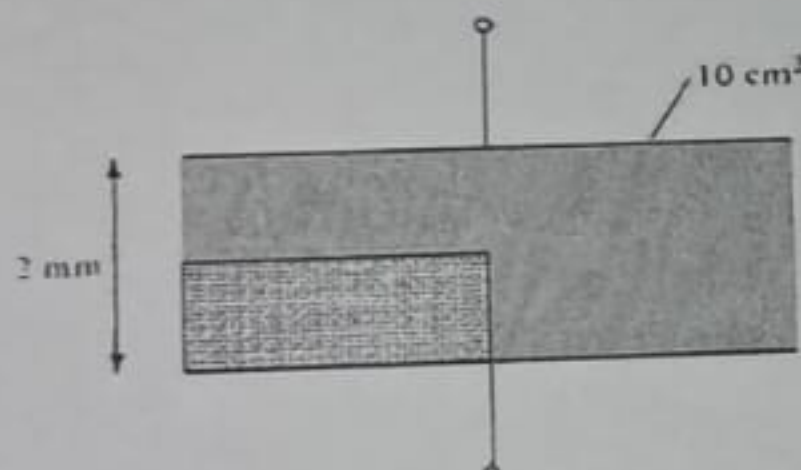
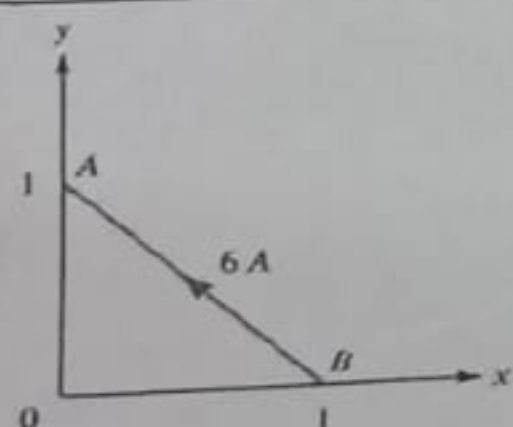
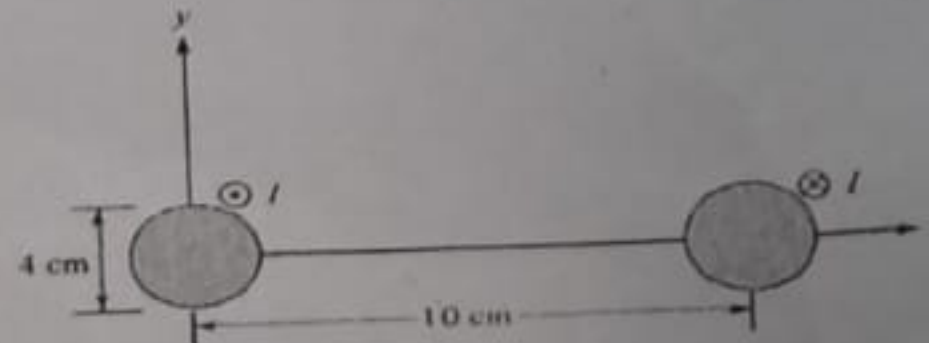
Date of the Examination: 16.10.24

Time: 2:00-3:30PM

Duration: 90 minutes

Max. Marks : 50

General instruction(s): Answer all the questions

Q.No	Question	Mark	CO	BL
1.	Two conducting planes are located at $x = 0$ and $x = 50$ mm. The zero voltage reference is at $x = 20$ mm. Given that $E = -110\hat{a}_x$ V/m, in between the plates. Calculate the conductor voltages.	10	2	3
2.	 The parallel-plate capacitor of figure below is quarter-filled with mica ($\epsilon_r = 6$) and rest with free space. Find the capacitance of the capacitor.	10	2	4
3.	 Consider AB in figure as part of an electric circuit. Find $\vec{H}$ at the origin due to AB.	10	3	4
4.	Region 1 ($x < 0$) is free space, while region 2 ($x > 0$) is a magnetic material with $\mu = 50\mu_0$. If $B_{11} = 40\hat{a}_x - 30\hat{a}_y + 10\hat{a}_z$ mWb/m ² , find H_2 .	10	3	4
5.	Consider the two-wire transmission line whose cross section is illustrated in figure below. Each wire is of radius 2 cm, and the wires are separated 10 cm. The wire centered at (0, 0) carries a current of 5 A while the other centered at (10 cm, 0) carries the return current. Find H at (a) (5 cm, 0) (b) (10 cm, 5 cm) 	10	3	5