



SCHOOL OF ELECTRICAL ENGINEERING
CONTINUOUS ASSESSMENT TEST - II
WINTER SEMESTER 2024-2025

SLOT: B1

Programme Name & Branch : B.Tech (Common to all branches offered in B1 Slot)

Course Code and Course Name : BEEE102L, Basic Electrical and Electronics Engineering

Faculty Name(s) : SUDHAKAR N, ANBARASAN P, SATHISHKUMAR K, ALBERT ALEXANDER S, GNANAVIGNESH R, VENKATA RAMANA KASI

Class Number(s) : VL2024250504465, VL2024250504498, VL2024250504499, VL2024250504526, VL2024250504509, VL2024250504507

Date of Examination : 17.03.2025

Exam Duration : 90 minutes **Maximum Marks: 50**

General instruction(s):

- Answer All Questions
- M - Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)

Course Outcomes Statements:

- CO. 1: Evaluate DC and AC circuit parameters using various laws and theorems
- CO. 2: Comprehend the parameters of magnetic circuits
- CO. 4: Design basic combinational circuits in digital system

Q. No	Question	M	CO	BL
1.	Three similar coils, each of resistance 8 Ohm and Inductance 0.02H are connected in star across a three-phase 50Hz, 230V supply. Calculate the line current, total power absorbed, reactive VA and total VA.	10	1	2
2.	Perform the following number conversions (1) $(2345.65)_O = ()_D$ (2) $(111000.111001)_B = ()_O$ (3) $(600D.COFFEE)_H = ()_B$ (4) Find out the X and Y in $(365)_X = (1545)_Y$ (5) Find out the A and B in $(400)_A = (100)_B$	10	4	2
3.	Design a logic circuit for the timing diagram shown in the following Fig.1 with minimum number gates. Where, the P,Q and R are inputs and S, T are the outputs.	10	4	3



VIT

Vellore Institute of Technology
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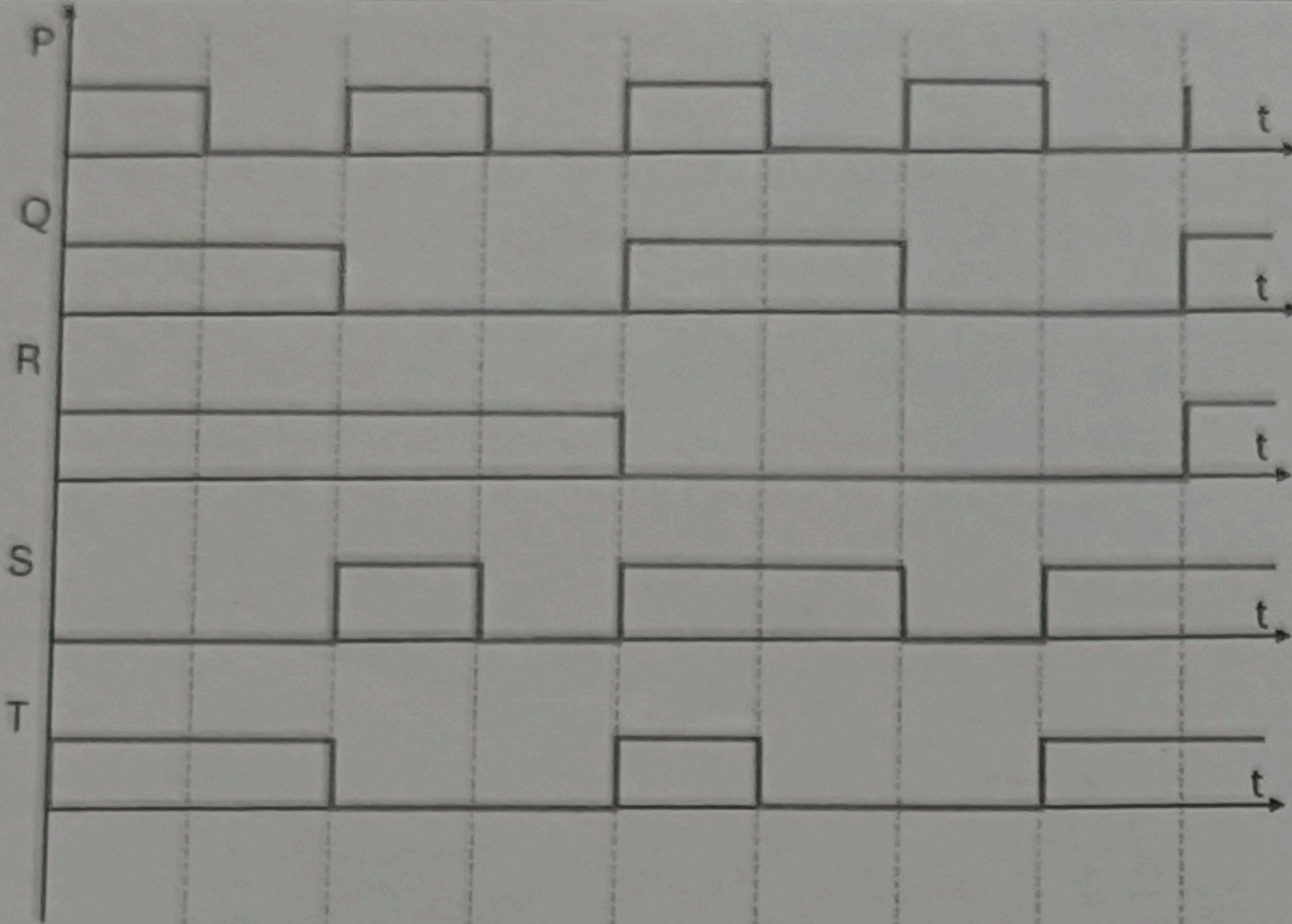


Fig. 1

4. As we know the tiger, goat, and grass bundle riddle is a classic "River Crossing" puzzle.

In this riddle, a man (M) must transport a tiger (T), a goat (G), and a bundle of grass (B) across a river using a boat that can only carry two items at a time.

The challenge is to figure out the order of transport to ensure "Successful River Crossing (S)" so the tiger doesn't eat the goat or the goat doesn't eat the grass when they are being the combination, else it results in "Failed River Crossing (F)".

Design an optimized logic circuit for the "Failed River Crossing (F)" using Karnaugh Map. **Note:** The boat travel with other than 2 items should be considered as "Failed River Crossing (F)"

10 4 3

5. A rectangular iron core shown in Fig.2 has a mean length of magnetic path of 100cm, cross section of 2cmX2cm, relative permeability of 1400 and an air-gap of 5mm cut in the core. The three coils carried by the core have number of turns $N_a=335$, $N_b=600$ and $N_c=600$; and the respective currents are 1.6A, 4A and 3A. The directions of the currents are as shown. Find the flux in the air-gap.

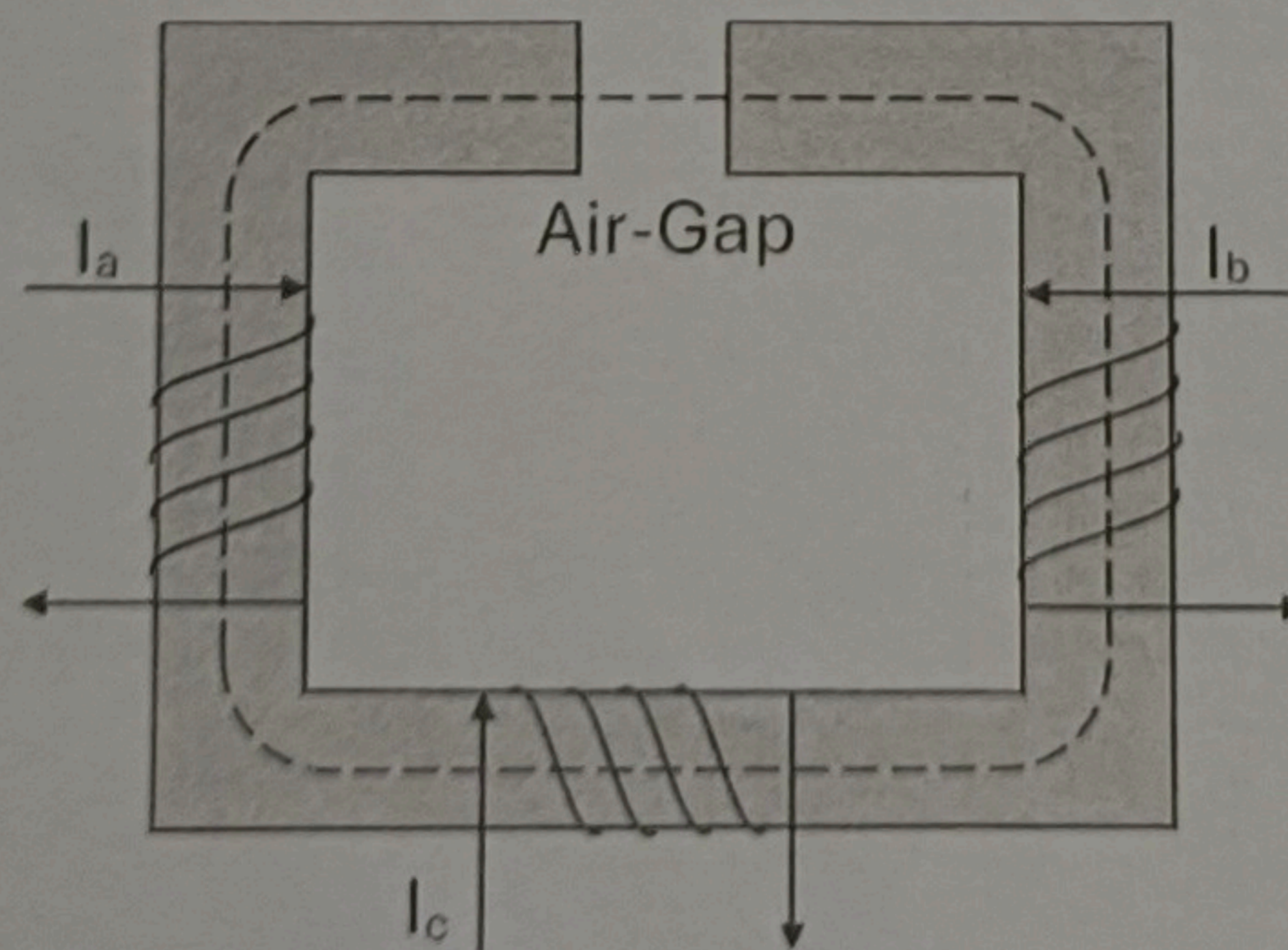


Fig. 2

10 2 2