1E3108

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# 1E3108

## B.Tech. I Sem. (Main) Examination, April/May - 2022

## 1FY3-08 Basic Electrical Engineering

**Time : 3 Hours** **Maximum Marks : 70**

***Instructions to Candidates:***

*Attempt **all ten** questions from **Part A**, **five** questions out of **Seven** questions from **Part B** and **three** questions out of **Five** questions **Part C**.*

*Schematic diagram must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

*Use of following supporting material is permitted during examination. (Mentioned in form No.205)*

### PART - A

(Answer should be given up to 25 words only)

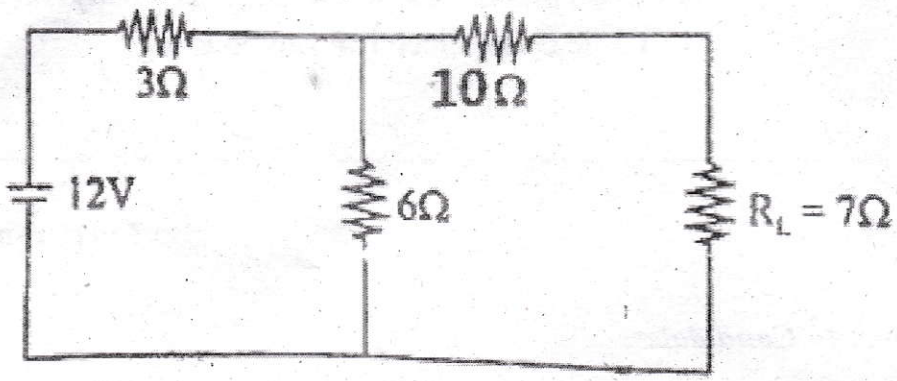
**All** questions are **compulsory** **(10×2=20)**

1. State and explain the Kirchhoff's Current Law.
2. Explain the RMS Value and peak value?
3. Discuss the classification of DC Generator.
4. What is the use of circuit breaker?
5. Define the transformer losses.
6. How does a transformer works.
7. What are the advantage and disadvantage of 3 - phase Induction Motor.
8. What are the advantage and disadvantage of DC Motor.
9. What is the different method to turn on the Thyristor.
10. What are the different types of earthing?

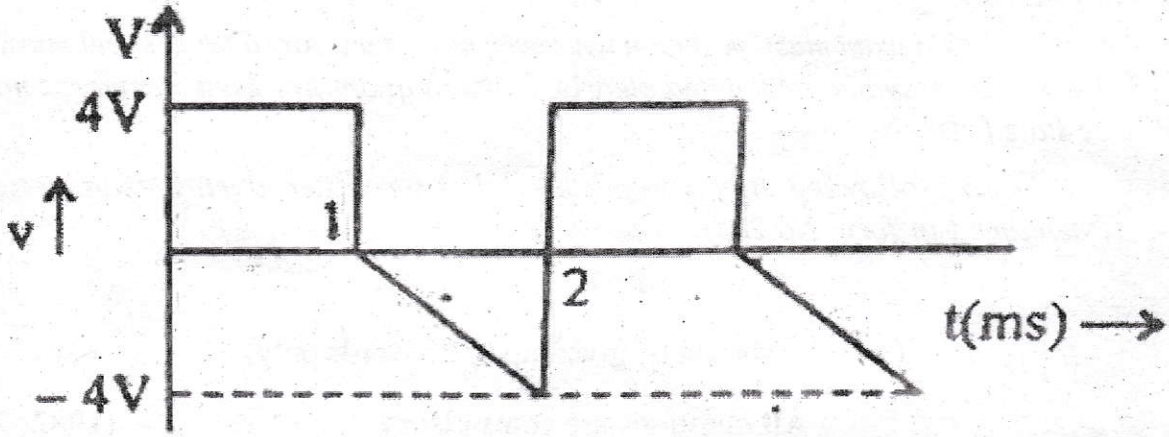
## PART - B

Attempt any **five** questions (5×4=20)

1. Find the current in $R_L = 7$ ohm resistor using Thevenin's theorem.




2. Calculate the RMS and average value of the voltage wave shown below.




3. A voltage $e = 200 * \sin(\pi t)$ is applied to a coil having resistor R = 200 ohm and L = 0.38 H. Find the expression for current and power taken from the supply.

4. Explain in detail the construction, working principle and emf equation of a single phase transformers.

5. Briefly discuss the types of dc motors. What is the difference between differential compound and cumulative compound DC motor.

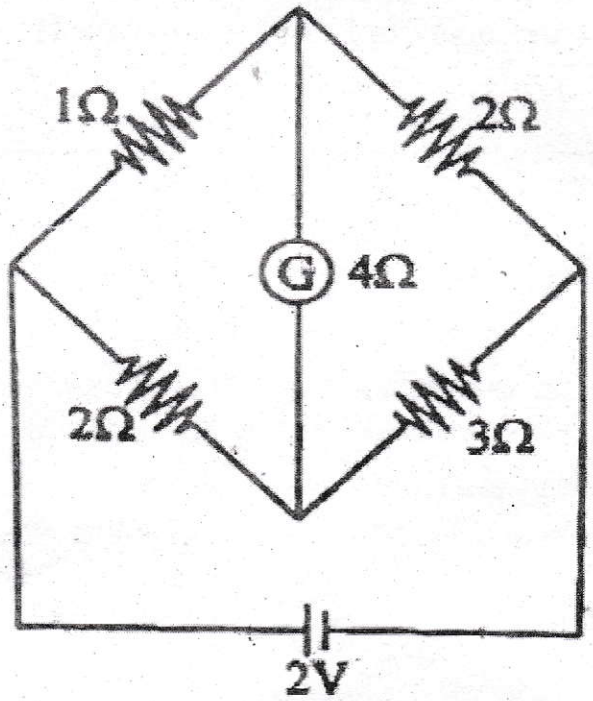
6. What is a SCR? Sketch static V-I charcteristic of a thyristor. Label the various voltages, current and operating modes on this sketch.

7. What are the different types of Earthing systems used in Electrical Installation explain in details?

## PART - C

Attempt any **Three** questions (3×10=30)

1. Calculate the current through the glavanometer. (using Mesh analysis)




2. Explain two wattmeter method of measuring power of 3 - phase star connected load with the help of necessary phasor diagram and circuit diagram.

3. Explain in detail the construction and principle of working of a three - phase Induction motor.

4. Write short notes on :

   i. MCB.

   ii. Layout of LV Switchgear.

5. Two coils A and B having 1200 and 800 turns respectively are placed near to each other. 60% of the flux of each coil is linked with the other coil. A current of 5A in coil a produce a flux of 0.25 mWb while the same current in coil B produce a flux of 0.15 mWb. Determine the mutual inductance and coefficient of coupling between the two coils.

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