Code No: 113AP

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech II Year I Semester Examinations, September/October - 2023
ELECTRICAL AND ELECTRONICS ENGINEERING
(Common to CE, ME)

Time: 3 Hours **Max. Marks: 75**

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART - A

(25 Marks)

1.a)	What is the role of an instrument?	[2]
b)	With an example, define KCL.	[3]
c)	What is the purpose of armature winding in DC machines?	[2]
d)	What is the function of Yoke?	[3]
e)	What is a secondary winding?	[2]
f)	Define synchronous speed. What is its importance?	[3]
g)	Define reverse bias.	[2]
h)	What is the relationship between input and output voltages of a half wave rectifier?	[3]
i)	Define deflection.	[2]
j)	What is the relationship between frequency and time period?	[3]

PART - B

(50 Marks)

2.a) Describe in detail about star-delta transformations.
b) For the circuit shown in the figure 1, find current 'I' and voltage 'V'. [5+5]

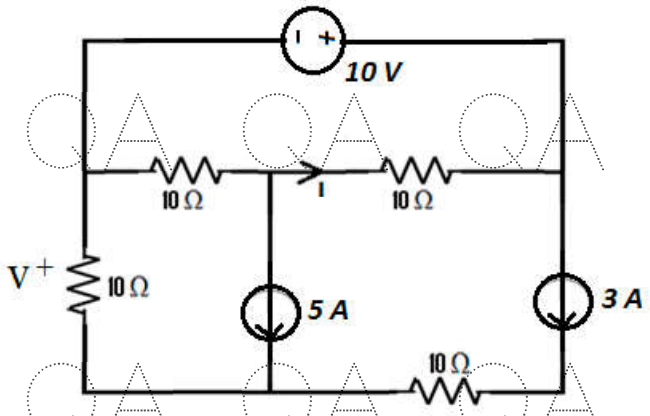

Figure 1

OR

3.a) Describe the working of moving iron instrument in detail.

b) In the following circuit, find the voltages V_1, V_2, V_3 and V_4.(figure 2) [5+5]

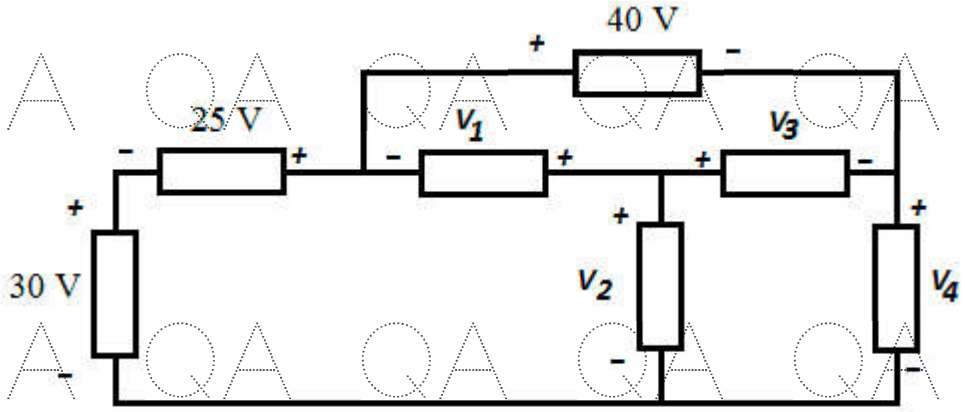

Figure 2

4.a) Explain the functions of stator and rotor in a DC machine in detail.

b) Describe briefly about different types of DC generators. [5+5]

OR

5.a) How EMF is induced in DC generator? Explain.

b) Derive the expression for torque in DC motor. [5+5]

6.a) What is an induction motor? How it works?

b) Across the HV side of a single phase 200V/400V, 50 Hz transformer, a resistance of 10 Ω is connected with LV side supplied with rated voltage and frequency. Determine the current and impedance seen by the supply. [5+5]

OR

7.a) Describe in detail about synchronous impedance method.

b) A 10 kVA, single phase transformer has a turns ratio of 5:1 and is supplied from a 2 kV supply. Neglecting Losses, determine (i) Primary current (ii) The full load secondary current (iii) The secondary Voltage [5+5]

8.a) Draw the V-I characteristics of PN junction diode and describe.

b) Draw the structure of PNP junction transistor and explain. [5+5]

OR

9.a) With the help of neat circuit and waveforms, explain the operation of full wave rectifier.

b) Draw the SCR characteristics and describe. [5+5]

10.a) What is the function of electron gun and glass envelope in CRT? Explain.

b) Describe briefly about the applications of CRO. [5+5]

OR

11.a) Describe in detail about electrostatic deflection.

b) How voltage is measured using CRO? Discuss. [5+5]

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