



R20 Regulation

Subject code: 3E1AD

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
(Autonomous, Accredited by NAAC with 'A' Grade)

B.Tech I Semester Regular Examinations, July 2021

BASIC ELECTRICAL ENGINEERING (Common to CE & EEE)

Maximum Marks: 70

Date: 18.07.2021 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks

(10x2M=20 Marks)

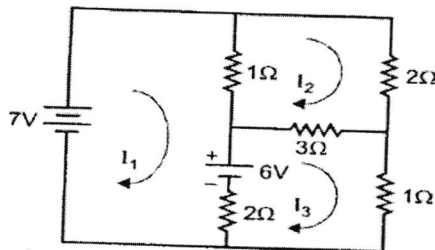
- 1 State Kirchoff's voltage law and current law. Illustrate with example.
- 2 Explain at condition the maximum power is transfer to the load.
- 3 Define form factor and peak factor.
- 4 A 400V is applied to three phase star connected identical impedances each containing of a 4Ω resistance in series with 3Ω inductive reactance. Find line current.
- 5 What are the properties of ideal transformer?
- 6 List out the losses in the transformer.
- 7 Explain how the single phase induction motor is made as self starting.
- 8 Why three phase Induction motor runs less than the synchronous speed?
- 9 What is the need of earthing?
- 10 List out the various types of cables.

Part-B

Answer All the following questions.

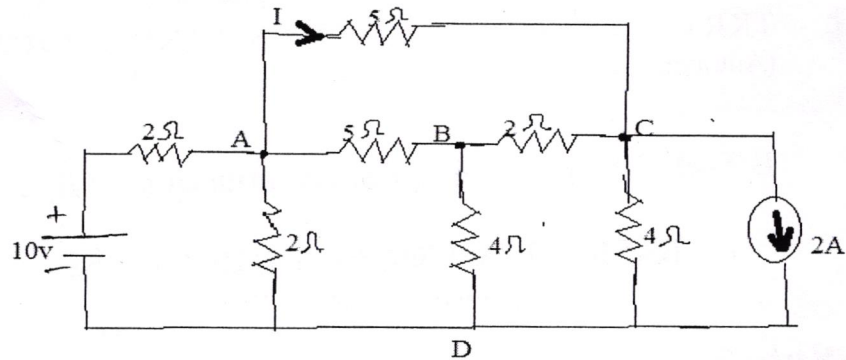
(10M X 5=50Marks)

- 11 Use mesh analysis to determine the three mesh currents in the circuit shown below. (10M)



OR

- 12 Calculate the current flowing in the 5Ω branch AC of the circuit shown in fig. using nodal analysis. (10M)



- 13 a) A series R-C circuit with $R = 20\Omega$ and $C = 127 \mu\text{F}$ has 160 V, 50 Hz supply connected to it. Find the impedance, current and power factor. (5M)
 b) Derive the expression for RMS value of AC supply. (5M)

OR

- 14 a) What is three phase circuit? The load in each branch of star connected three phase circuit consists of 10Ω resistance and 0.06H inductance in series. Find the line voltage and the phase current. (6M)
 b) Draw the phasor diagram and derive the equation for RC Circuits. (4M)

- 15 Explain the construction and working of practical transformer in detail with neat diagram. (10M)

OR

- 16 Explain the construction and working of Auto transformer in detail with neat diagram. (10M)

- 17 a) Derive the EMF equation of DC generator. (5M)
 b) Describe in detail about back EMF. (5M)

OR

- 18 a) Derive the torque equation of DC Motor. (5M)
 b) Explain the torque speed characteristic of three phase induction motor with neat diagram. (5M)

- 19 Explain in detail about various types of batteries and its characteristic. (5M)

OR

- 20 a) Describe in detail about MCB with neat diagram. (5M)
 b) Describe in detail about ELCB with neat diagram. (5M)