

SECTION -B (ESSAY TYPE QUESTIONS)
(5x5=25 Marks)

1. Write the expression for 'equivalent resistance' and 'voltage division' when 3 resistances are connected in series.
2. Determine the current through $8\ \Omega$ resistor as shown in Fig.1 using KVL.

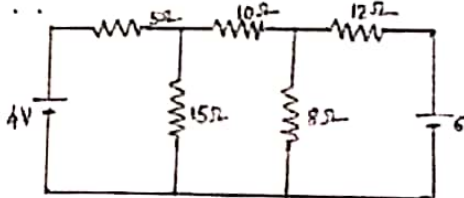


Fig.1

3. What is meant by slip of an induction motor? Explain the importance of slip in the operation and performance of an induction motor.
4. Explain the working of single phase transformer. Deduce the emf equation of a transformer.
5. Describe the followings:
 - (a) MCBs and ELCBs
 - (b) Stepper motors
6. Explain the concept of neutrals and earthing.
7. Draw and explain input and output characteristics of CB configuration of transistor.
8. Explain the term 'phase sequence'. What is its significance? Draw waveforms of 3 balanced voltages A, B & C with phase sequences (a) ABC and (b) ACB.

==END OF PAPER==

BACHELOR OF VOCATION
Automotive Mechatronics

Subject: Basics of Electrical and Electronics Engineering

Subject Code: ZBEE-104

Semester: Second

July 2021

Theory (External): 35 Marks

Time: 03 Hours

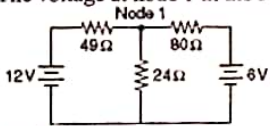
Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.
2. Section A comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 1 mark.
3. Section B comprises 8 essay type questions out of which students need to do any 5. Each question carries 5 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled

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SECTION -A (SHORT/OBJECTIVE TYPE QUESTIONS)
(10x1=10 Marks)

- A. The capacitor doesn't allow sudden changes in _____
 a) Voltage
 b) Current
 c) Resistance
 d) Capacitance
- B. The insulating medium between the two plates of capacitor is known as _____
 a) Electrode
 b) Capacitive medium
 c) Conducting medium
 d) Dielectric
- C. The number of independent equations to solve a network is equal to
 a) The number of chords
 b) The number of branches
 c) Sum of the number of branches and chords
 d) Sum of the number of branches, chords and nodes
- D. The voltage at node 1 in the Figure is



- a) 6.15 V
 b) 12.5 V
 c) 4.25 V
 d) 3.75 V
- E. The starting torque of a squirrel-cage induction motor is
 a) Full-load torque
 b) Slightly more than full-load torque
 c) Low
 d) Negligible

- F. The starting torque of a squirrel-cage induction motor is
 a) Full-load torque
 b) Slightly more than full-load torque
 c) Low
 d) Negligible
- G. Miniature circuit breaker is a small
 a) Fuse
 b) magnetic switch
 c) electromagnetic switch
 d) two way switch
- H. Percentage differential protection is used to prevent against
 a) Inter-turn faults
 b) Heavy Loads
 c) External Faults
 d) Magnetizing current
- I. Which of the following is valid for both P-N-P as well as N-P-N transistor
 a) The emitter injects holes into the base region
 b) The electrons are the minority carriers in the base region
 c) The EB junction is forward biased for active operation
 d) When a biased in the active region, current flows into their emitter terminal
- J. An SCR is fabricated from silicon and not germanium due to reason being
 a) Silicon has small leakage current
 b) Silicon is inexpensive
 c) Silicon is mechanically strong
 d) Silicon is tetravalent