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Total No. of Questions : 6] [Total No. of Printed Pages : 8

EXS-85

B.Tech. IInd Semester (CSE, IT & Elect.)

Examination, 2023

Basic Electrical Engineering

Paper - BE-202

Time : 3 Hours] **[Maximum Marks : 60**

Note :- (i) Q. 1 is MCQ based questions. Each objective question carry one mark each.

(ii) Attempt all questions, internal choice is given. Each question carris 10 marks.

(iii) All parts of each question are to be attempted at

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one place.

(iv) Explain through sketches wherever possible.

1. Choose the correct one :

(i) Kirchhoff's laws are useful in determining-

(a) Current flowing in a circuit

(b) EMFs and Voltage drops in a circuit

(c) Power in a circuit

(d) All the above

(ii) Three resistance 14.5 Ω, 25.5 Ω and 60 Ω are connected in series across 200 V. What will be the voltage drop across 14.5 Ω.

(a) 29 V

(b) 13.5 V

(c) 14 V

(d) 18 V

(iii) The unit of frequency is-

(a) Cycle

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(b) Cycle-second

(c) Hertz second

(d) Hartz

(iv) In an AC circuit (sine wave) with R and L in series.

(a) Voltage across R and L 180^0 out of face

(b) The voltage across R lags the voltage across L by 90^0

(c) The voltage across R leads the voltage across L by 90^0

(d) Voltage across R and L are in phase

(v) Transformer is-

(a) a device used to convert low alternating voltage to a high alternating voltage

(b) a device used to convert alternating current to direct current

(c) a device used to convert low alternating current to a high alternating current

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(d) used only for low alternating voltage.

(vi) The purpose of the tranformer core is to provide

(a) Low reluctance path

(b) High inductive path

(c) High capacitive path

(d) High reluctance path

(vii) The output power of any electrical motor is taken from the

(a) Armature

(b) Field

(c) coupling method on shaft

(d) motor frame

(viii) What is the lamination used for the stator of induction motor?

(a) cast iron

(b) die cast aluminum alloy frame

(c) cast iron or die cast aluminum alloy frame

(d) cast iron and die cast aluminum alloy frame

(ix) In a pure inductive circuit.

(a) The current is in phase with the voltage

(b) The current lags behind the voltage by 90^0

(c) The current leads the voltage by 90^0

(d) The current can lead or lag by 90^0

(x) Armature reaction of an unsaturated D.C. machine is-

(a) Cross-magnetizing

(b) Demagnetizing

(c) Magnetizing

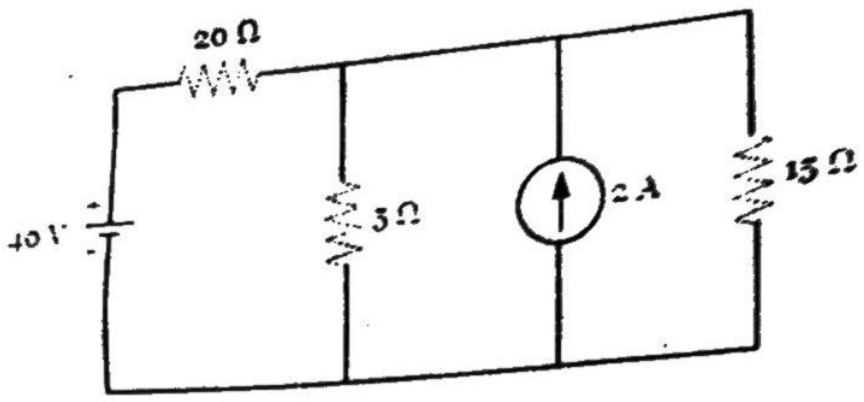
(d) None of above

2. (a) Explain the advantages and disadvantages of power system?

(b) Describe different types of power system?

OR

(a) Solve the given circuit to find the current through $15\,\Omega$ using Thevenin's Theorem.



(b) Explain star to delta and delta to star transformation of resistances with neat diagram.

3. (a) Explain the power measurement of three phase ac circuit using 2 wattmeter method.

(b) Write the equation for series RLC circuit with the proper diagram. phasor diagram and power equations.

OR

(a) Explain the Concept of phasor & Concept of Power factor using any suitable example.

(b) Derive the expression of power in R-L circuit. Draw the phasor diagram too.

4. (a) Explain about hysteresis and eddy current losses in transformer?

(b) Explain about open circuit and short circuit tests in single phase transformer.

OR

(a) Explain the self & mutual inductances Explain the leakage & Fringing of flux?

(b) Explain the working principle of Transformer. Derive an expression for the emf induced in Transformer.

(a) Explain the working principle and construction of D.C. machine.

(b) A six-pole lap wound generator has 720 conductors, a flux of 40 mWb per pole is driven at 400 rpm. Find the generated emf.

OR

(a) Compare induction machine and synchronous machine on the basis of construction and application.

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(b) Explain the basic working principle of induction machine and types of induction machine.

6. Write short notes on :

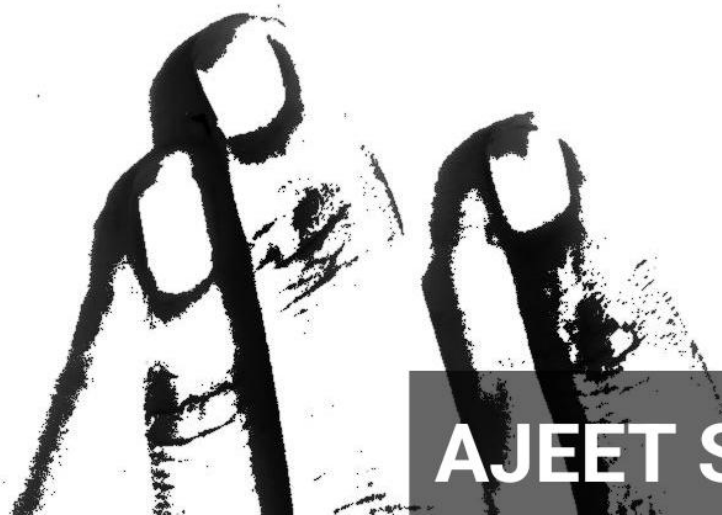
(a) Smart Grid

(b) Load & its characteristics

OR

(a) Explain the structure of Power System

(b) Write short notes on micro grid



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