

10024

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIRST/SECOND SEMESTER B.TECH DEGREE EXAMINATION, JULY 2016

EE100 BASICS OF ELECTRICAL ENGINEERING

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each question carries 4 marks

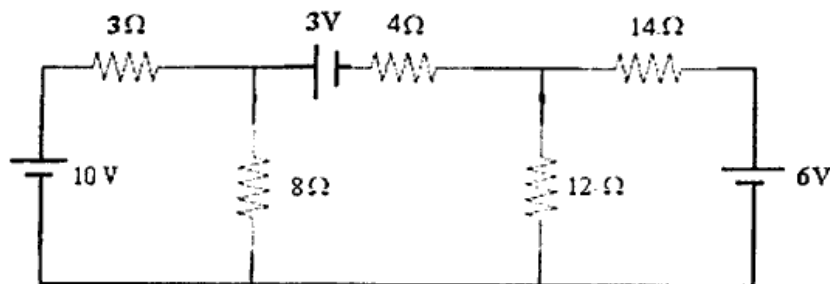
1. A $50\ \Omega$ resistor is in parallel with a $100\ \Omega$ resistor. Current in $50\ \Omega$ is 7.2A . What is the value of third resistance to be added in parallel to this circuit to make the total current 12.1A .
2. Three resistors of $30\ \Omega$ each are connected in delta. Obtain the equivalent star network.
3. Define MMF, magnetizing force, flux density, reluctance.
4. Define active, reactive & apparent power in an ac circuit with the help of power triangle.
5. Derive the relation between line and phase current in three phase delta connected system.
6. List the need for high voltage transmission system.
7. Explain the principle of operation of 3 phase induction motor.
8. Derive the emf equation of the transformer.
9. With neat sketch explain the working of fluorescent lamp.
10. Differentiate between simple and differential tariff.

PART B

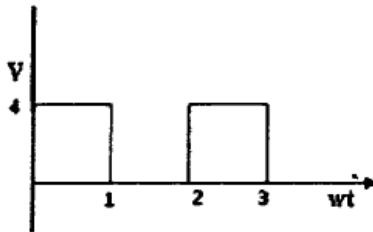
MODULE (1-4)

Answer any four questions, each question carries 10 marks

11. a) State & Explain Kirchhoff's laws. (4)
b) For the circuit shown below, find current through $8\ \Omega$ and $12\ \Omega$ resistors. (6)



12. a) Compare electric and magnetic circuit. (6)
b) A coil of insulated wire 500 turns and of resistance 4Ω is closely wound on iron ring. The ring has a mean diameter of 0.25m and a uniform cross sectional area of 700mm^2 . Calculate the total flux in the ring when a dc supply of 6V is applied to the end of the winding. Assume a relative permeability of 550. (4)
13. a) State and explain Faraday's laws and Lenz's law. (5)
b) Find the average and rms values for the given wave form. (5)



14. With neat phasor diagram, explain how power is measured in a 3 phase system by using 2 wattmeters. <http://www.ktuonline.com> (10)
15. With a neat layout explain thermal power plant. Also list 4 advantages and disadvantages of hydel power plant. (10)
16. With the help of a single line diagram explain a typical power transmission system. (10)

MODULE 5

Answer any one full question

17. a) With neat diagram explain the construction of a dc generator. (5)
b) Maximum efficiency of a transformer occurs at unity power factor and at full load. If the full load copper loss is 60 W, calculate the total loss at full load, $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{3}{4}$ full load? (5)

OR

18. a) List 4 advantages of three phase transformers compared to single phase transformer (4)
b) Explain different types of dc generators with respect to excitation and winding connection (6)

MODULE 6

Answer any one full question

19. What is the necessity of earthing. Explain with neat diagram, pipe earthing. (10)

OR

20. a) With neat diagram explain the working of mercury vapour lamp. (6)
b) "LED lamps are preferred now a days" give 4 reasons supporting this statement. (4)

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