Reg.No.:								

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
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Question Paper Code: 8018

B.E. / B.Tech. DEGREE SUPPLEMENTARY EXAMINATIONS – FEB. / MAR. 2020
Third Semester
Electronics and Communication Engineering
U15EE307 - ELECTRICAL TECHNOLOGY
(Regulation 2015)

Time : Three Hours Maximum : 100 Marks

Answer ALL the questions

PART – A

(10 x 2 = 20 Marks)

1. Mention the conventional or non -renewable energy sources.
2. Define the various sources of energy available in India.
3. Four resistances 80Ω, 50Ω, 25Ω and R are connected in parallel. Current through 25Ω resistance is 4A. Total current of the supply is 10A. Solve the value of R.
4. In a certain RC circuit the true power is 300W and the reactive power is 1000W. Show the apparent power in the circuit.
5. Write down the current and voltage transformation ratio.
6. Illustrate the concept of OC and SC tests are to be performed in transformer.
7. A 220V dc motor has an armature resistance of 0.5Ω.The full load armature current is 20A. Calculate the induced emf.
8. Distinguish between dc generator and dc motor.
9. List the main parts in the CRO.
10. Interpret the principle of resolution in the spectrum analyzer.

PART – B

(5 x 13 = 65 Marks)

11. a) i. Analyze the structure of electrical power system in India. (9)
ii. Compare the power transfer using overhead transmission lines and underground cables. (4)

(OR)

b) i. With a neat sketch indicate the function of various parts of a nuclear reactor. (6)

ii. What are the different components of a nuclear power plant? Explain the working of a nuclear power plant. (7)

12. a) A resistance of 20Ω, inductance of 0.2H and capacitance of 150μF are connected in series and are fed by a 230V, 50Hz supply, Examine the following parameters

i. Inductive Reactance (3)

ii. Inductive Capacitance (2)

iii. Impedance (3)

iv. Admittance (2)

v. Power factor (3)

(OR)

b) A 415V, 50Hz, 3phase supply is connected to a star connected balanced load. Each phase of the load circuit, a resistance of 25Ω and an inductance of 0.1H are connected in series. Analyze the following parameters

i. Phase voltage (5)

ii. The line current drawn from the supply (3)

iii. The power dissipated (5)

13. a) Derive an expression for induced emf in a transformer in terms of frequency, the maximum value of flux and the number of fluxes on the winding.

(OR)

b) A 5KVA 200/1000V,50Hz, single phase transformer gave the following test results:

O.C.Test (L.V.side):	2000V	1.2 A	90W
S.C.Test (H.V.side):	50V	5A	110W

i. Calculate the parameters of the equivalent circuit referred to the L.V.side. (7)

ii. Calculate the output secondary voltage when delivering 3KW at 0.8 p.f .lagging, The input primary voltage being 200V. Find the percentage regulation also. (6)

14. a) i. Illustrate the working principle and construction of DC generator. (8)

ii. Derive the EMF Equation or Equation for the EMF Generator.(5)

(OR)

b) Demonstrate the working of a 4 point starter for DC shunt motor with neat diagram.

15. a) i. Explain the measurement of frequency using CRO. (4)

ii. Mention the demerits of analog storage oscilloscope and also write merits of digital storage oscilloscope with neat sketch. (9)

(OR)

b) Demonstrate the equation for Q meter with their different connections.

PART – C

(1 x 15 = 15Marks)

16. a) The input to a 3 phase, 50Hz, 4 pole induction motor is 125 kW. The frequency of rotor currents is 2.5 Hz. The stator copper losses are 3 KW and stator core losses are 1.5 KW. The mechanical losses are 2 KW. Find

i. Slip (2)

ii. Motor speed (2)

iii. Power transferred from stator to rotor (2)

iv. Rotor copper loss per phase (2)

v. Mechanical power developed (2)

vi. Motor output (2)

vii. Efficiency (2)

viii. Output voltage. (1)

(OR)

b) i. Interpret the construction of cables and also discuss their classification of cables. (8)

ii. A single phase, 25Hz transformer has 50 primary turns and 600 secondary turns. The cross sectional area of the core is 400 sq.cm. If the primary of transformer is connected to 230V supply, calculate the secondary induced emf and the flux density(peak) in the core. (7)