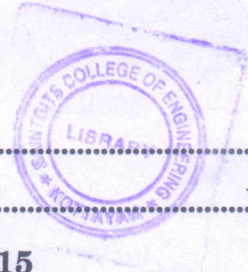


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Reg. No.....

Name.....



B.TECH. DEGREE EXAMINATION, MAY 2015

First and Second Semester

EN 010 108—BASIC ELECTRICAL ENGINEERING

(Common for all Branches)

(New Scheme—2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. State and explain Kirchhoff's voltage Law.
2. What is coupling coefficient ?
3. Why core loss is constant for transformers ?
4. What is the power factor when one Wattmeter reads negative in two Wattmeter method of measuring 3ϕ power ?
5. Give reasons for having power transmission at high voltages.

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Compare Electric and Magnetic circuits.
7. Find RMS value, average value and form factor of HW rectified current.
8. Explain the principle of operation of transformer.
9. Draw phasor diagram and obtain relation between line and phase voltages and currents in three-phase star connected system.
10. Differentiate clearly-Feeder, distributor and service mains.

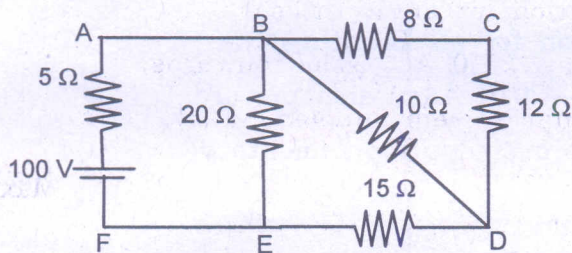
(5 × 5 = 25 marks)

Turn over

Part C

Answer **all** questions.
Each question carries 12 marks.

11. (a) Use mesh current method to find the current in $10\ \Omega$ resistor.



(8 marks)

- (b) Explain the terms : MMF and reluctance.

(4 marks)

Or

12. (a) A cast iron ring of mean diameter 10 cm and cross-sectional area 3 cm^2 has a coil of 1,000 turns wound uniformly on it. Calculate the current in the coil to produce a flux density of 0.67 Tesla if the relative permeability of cast iron is 240.

(8 marks)

- (b) Discuss star to delta transformation.

(4 marks)

13. (a) An alternating current varying sinusoidally has RMS value 10 A and frequency 50 Hz. Find the instantaneous value at 0.0025 sec after passing through positive maximum value. Also find at what time measured from positive maximum value, will the instantaneous current be 7.07 A.

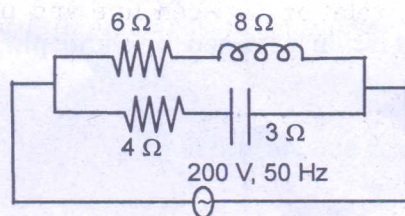
(8 marks)

- (b) State Faraday's Laws of electromagnetic induction.

(4 marks)

Or

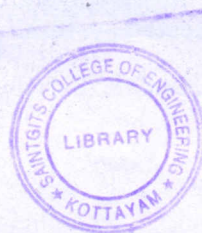
14. (a) For circuit shown in figure find (i) branch currents ; (ii) total current and power factor ; (iii) real and reactive power.

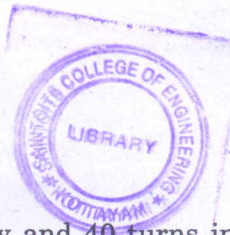


(8 marks)

- (b) Explain statically induced e.m.f.

(4 marks)





15. (a) Discuss the classification of generators. (6 marks)
- (b) A 25 kVA transformer has 500 turns in the primary and 40 turns in the secondary. It is connected to 3000 V, 50 Hz supply. Calculate the currents in the primary and secondary and the maximum flux in the core. (6 marks)

Or

16. (a) Derive the EMF equation of D.C. generator. (6 marks)
- (b) Discuss the applications of D.C. shunt and series motors. (6 marks)
17. (a) Explain the construction of two types of 3-phase induction motors. (6 marks)
- (b) Discuss the advantages of stationary armature in alternators. (6 marks)

Or

18. (a) Discuss the applications of single-phase motors. (6 marks)
- (b) A balanced 3-phase load consists of 3 coils having reactance of 4Ω and resistance of 3Ω connected in delta. It is connected across 250 V, 50 Hz, 3-phase supply. Calculate the line current, real and reactive power. (6 marks)

19. (a) Explain the requirements of a good lighting system. (6 marks)
- (b) Discuss the working principle of fluorescent lamp. (6 marks)

Or

20. With block schematic and layout describe the components of hydroelectric power station.

[5 × 12 = 60 marks]