

ANNA UNIVERSITY COIMBATORE

B.E. / B.TECH. DEGREE EXAMINATIONS JAN / FEB 2009

REGULATIONS : 2007

SECOND SEMESTER

070280014 / 4EE1202 – BASICS OF ELECTRICAL ENGINEERING

(COMMON TO CSE / IT)

TIME : 3 Hours

Max.Marks : 100

PART – A

(20 x 2 = 40 Marks)

ANSWER ALL QUESTIONS

1. Define Kirchoff's voltage law.
2. What are the advantages of Mesh loop analysis ?
3. Define Ohm's law.
4. What is meant by form factor?
5. What is meant by fringing effect?
6. Define leakage flux.
7. What is mutual inductance ?
8. Define Faraday's law of electromagnetic induction.
9. What is a transformer?
10. What are the various types of transformers?
11. What are the applications of DC motor?
12. What are the different types of DC generators ?
13. What is phase displacement of 1 $\Phi$  and 3 $\Phi$  induction motor?
14. Draw torque-slip characteristics curve of 3 $\Phi$  induction motor.
15. Define slip.
16. What is universal motor?
17. What are the various applications of UPS?
18. What is the need for pass transistor in SMPS?

19. Define rectifier and also write average output voltage for 1 $\Phi$  halfwave rectifier with R load.
20. What are the types of filters.

PART – B

(5 x 12 = 60 Marks)

ANSWER ANY FIVE QUESTIONS

21. (a) Explain the effect of resistance in series and parallel operation. 12
22. Discuss in detail on the analysis of simple magnetic circuits and composite magnetic circuits 12
23. The flux produced in the airgap between two electromagnetic poles is  $5 \times 10^{-2}$  wb. If the cross sectional area of the airgap is  $0.2\text{m}^2$ , find (a) Flux density (b) Magnetic field intensity (c) reluctance and (d) permeance of the airgap. Find also the mmf dropped in the airgap given the length of the airgap to be 1.2 cm. 12
24. (a) With a neat sketch, explain the working principle of DC generator. 6  
(b) Derive the EMF equation of DC generator. 6
25. (a) With a neat diagram, explain the working principle of transformer 6  
(b) Derive the EMF equation of transformer. 6
26. Derive the torque equation of 3 $\Phi$  induction motor. Mention the advantages and limitations of 3 $\Phi$  IM. 12

27. (a) With a suitable constructional view, explain the working principle of  $1\Phi$  6  
induction motor? 6
- (b) Mention the various types and applications of  $1\Phi$  induction motor. 6
28. Explain in detail on the operation of half wave rectifier and full wave rectifier 12  
with suitable sketches.

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