

ANNA UNIVERSITY COIMBATORE

B.E. / B.TECH. DEGREE EXAMINATIONS : JUNE / JULY- 2009

REGULATIONS : 2008

SECOND SEMESTER

080280011 - BASIC ELECTRICAL & ELECTRONICS ENGINEERING

(Common to branches under Civil, Mechanical and Technology faculty)

TIME: 3 Hours

Max.Marks: 100

PART – A

(20 x 2 = 40 MARKS)

ANSWER ALL QUESTIONS

1. Write the expression to find the average value of a sinusoidal wave.
2. Define Root Mean Square value.
3. Draw a simple Permanent Magnet Moving Coil meter.
4. Comment on 'Deflecting torque' with respect to both MC and MI meters.
5. Draw the core and shell type transformers.
6. What is called the back emf of D.C. motor?
7. What is the significance of a commutator in a DC generator? Give its electronic analogy.
8. A 1Φ transformer has 400 primary and 1000 secondary turns. The net cross sectional area of the core is 60cm^2 . If the primary is connected to a 50Hz supply at 500V, determine the peak value of the flux density in the core. Neglect any leakages.
9. Write the equation that relates current with voltage at a PN junction.
10. What is the form factor value for a half-wave rectifier?
11. Why a BJT is called a current controlled device?
12. Why CE configuration of a BJT is widely used? Comment.
13. Add the numbers $(101101101)_2$ and $(1110011)_2$
14. Apply DeMorgan's theorem to implement $A.B = A+B$ with any Gate.
15. Give the truth table of XNOR Gate.

16. Draw the logic diagram of Full adder with two half adders.
17. What is meant by carrier signal? Give a typical value for a satellite TV channel.
18. Give the frequency range of amplitude modulation?
19. Comment on the other name of a flip-flop?
20. List four advantages of Fibre-optic communication.

PART – B

(5 x 12 = 60 MARKS)

ANSWER ANY FIVE QUESTIONS

21. Explain briefly about dynamometer type wattmeter? Derive the Torque equation and give its error.
22. A 200V, shunt motor develops an output of 18 KW when taking 16.5 KW. The field resistance is 30Ω and armature resistance 0.04Ω . Calculate the efficiency and power input when the output is 8 KW.
23. Compare CE, CB and CC transistor configurations.
 - (i) In terms of input impedance, output impedance, current gain and voltage gain.
 - (ii) Draw the output characteristics of CE configuration and mark its regions of operation.
24. With a neat circuit diagram explain the operation of a full-wave bridge rectifier. Also derive its rectifier efficiency, voltage regulations and ripple factor.
25. With neat block diagram explain the operation of optical fibre communication technique and mentions its applications.

26. Derive the EMF and Torque equation of a DC machine. List all the types of DC machines.
27. Modify the inputs of a master-slave JK flip flop so that it will perform like a D flip flop.
28. The open circuit (O.C) and short circuit (S.C) test results on a single-phase, 50Hz, 250/500 volts transformer are as:
O.C test (L.V.side): 250 volts, 0.9 Amp, 45 watts
S.C. test (H.V.side): 25 volts, 12 Amp, 100 watts.
Calculate the efficiency and approximate regulation while supplying 8 Amps at 500 volts at 0.8 power factor lagging.

*****THE END*****