

**B.TECH DEGREE EXAMINATIONS: NOV/DEC 2010**

Third Semester

**U07EE311: BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING**

(Common to Textile Technology and Fashion Technology)

**Time: Three Hours**

**Maximum Marks: 100**

**Answer All the Questions:-**

**PART A (10 x 1 = 10 Marks)**

1. "Watt-sec" is the unit of  
(a) Charge                      (b) power                      (c) energy                      (d) none of these
2. Energy stored in an inductor  
(a)  $\frac{1}{2} L I^2$                       (b)  $\frac{1}{2} L V^2$                       (c)  $I^2 L$                       (d)  $2 L I V$
3. Brushes are used in d.c. machine to  
(a) Reduce the losses                      (b) Increase the flux density  
(c) to supply relolving armature                      (d) to control the speed
4. The armature conductors of a 6-pole, lap wound d.c. generators are divided into  
(a) 2 parallel paths      (b) 4 parallel paths      (c) 3 parallel paths      (d) 6 parallel paths
5. In a dynamometer type instrument, damping is provided by....  
(a) Air friction      (b) eddy currents      (c) fluid friction      (d) none of these
6. The full –scale deflection current of a moving coil instrument is about.....  
(a) 50 mA                      (b) 1A                      (c) 3A                      (d) 2A
7. Which statement is not correct for open loop control system?  
(a) Simple construction and ease of maintenance  
(b) Less expensive  
(c) Disturbances cause errors.  
(d) To maintain the required quality in the output, recalibration is not required.
8. A control system in which the control action is somehow dependent on the output is known as.....  
(a) Closed loop system                      (b) Semi closed loop system  
(c) Open loop system                      (d) None of these
9. The binary equivalent of  $0.875_{10}$  is  
(a) 0.011                      (b) 0.0011                      (c) 0.0111                      (d) 0.111.

10. The function of which of the following logic gate is similar to that of two switches in series?

- (a) OR                      (b) AND                      (c) NAND                      (d) all of these

**PART B (10 x 2 = 20 Marks)**

11. Define ohm's law  
12. Define power factor  
13. What is meant by back emf?  
14. What is the basic principle of a dc generator?  
15. What is the classification of transducer?  
16. What is the principle of PMMC?  
17. What is meant by doping in a semiconductor?  
18. State Demorgan's theorem  
19. Define open loop system  
20. What are the benefits of closed loop system?

**PART C (5 x 14 = 70 Marks)**

21. (a) (i) State and explain Kirchhoff's law. (7)  
(ii) Derive the equation for equivalent resistance of number of resistors connected in series circuit. (7)

**(OR)**

- (b) Define the following for sinusoidal A/c  
(i) RMS Value              (ii) Average Value              (iii) Instantaneous Value  
(iv) Real power              (v) Apparent power              (vi) Reactive power              (vii) Frequency

22. (a) (i) Explain about constructional detail and working principle of stepper motor. (10)  
(ii) List the types of DC motor. (4)

**(OR)**

- (b) Explain the following  
(i) Starting torque (5)  
(ii) Maximum developed torque (5)  
(iii) Applications of 3  $\Phi$  Induction Motor (4)

23. (a) Discuss in detail about principle of Moving Iron instruments

**(OR)**

(b) (i) Discuss the following

(a) Resistive transducer (7)

(b) Inductive transducer (7)

24. (a) Explain the working JFET and compare with BJT.

**(OR)**

(b) Explain the following gates with truth table.

(i) AND GATES (3)

(ii) OR GATES (3)

(iii) NAND GATES (3)

(iv) NOR GATES (3)

(v) NOT GATES (2)

25. (a) Give an example of closed loop system and explain it.

**(OR)**

(b) Discuss in detail about position feed back control system.

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