

B.E./B.TECH. DEGREE EXAMINATIONS: NOV/DEC 2012

Third Semester

EEE251: BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to Aeronautical Engineering & Textile Technology)

Time: Three Hours

Maximum Marks: 100

Answer ALL Questions:-

PART A (10 x 1 = 10 Marks)

1. The r.m.s. value of sinusoidal 100 V peak to peak is _____ volt.
(A) $100/\sqrt{2}$ (B) $50/\sqrt{2}$ (C) 50 (D) 100
2. The unit of inductance is
(A) Ohm (B) Mho (C) Farad (D) Henry
3. Which of the following motors has a high starting torque?
(A) DC shunt motor (B) DC series motor (C) Induction motor (D) Synchronous motor
4. Which DC motors has approximately constant speed?
(A) Series motor (B) Shunt motor
(C) Cumulatively compound motor (D) All of the above
5. The CE configuration amplifier circuits are preferred over CB configuration amplifier circuits because they have
(A) lower amplification factor (B) Larger amplification factor
(C) high input resistance and low output resistance (D) none of these
6. FET is advantageous in comparison with BJT because of
(A) high input impedance (B) high gain-bandwidth product
(C) its current controlled behaviour (D) high noise immunity
7. Ripple factor of a full-wave rectifier without filter will be
(A) 0.2 (B) 0.48 (C) 0.24 (D) 1.21
8. In a differential amplifier an ideal CMRR is
(A) infinity (B) zero (C) -1 (D) +1
9. The decimal equivalent of binary number 100101 is
(A) 37 (B) 73 (C) 57 (D) 75
10. The hexadecimal equivalent of binary number 10100101 is
(A) C3 (B) 5A (C) A5 (D) B3

PART B (10 x 2 = 20 Marks)

11. State Kirchhoff's laws.

12. Give the units of following measurement
 - (a) Resistance
 - (b) Electric current
13. What are the factors to be considered for the selection of motors?
14. Name the different parts of DC motor.
15. What are the different configurations of BJT?
16. What is a zener diode?
17. What are the applications op-amps?
18. What are the ideal characteristics of op-amp?
19. Draw the symbol and truth-table for the logic gates AND and EXOR.
20. What are called universal gates? Why they are called so?

PART C (5 x 14 = 70 Marks)

21. a) Using Kirchoff's laws, find the current in various resistors in the circuit shown in Fig.1. Find the power consumed by the 4Ω resistor and power supplied by the 25V source? Also mark the direction of current.

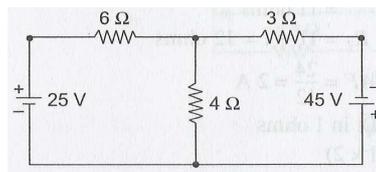


Fig.1

(OR)

- b) (i) Define the following terms (8)

- | | |
|--|---|
| 1. RMS value of an alternating current | 2. Average value an alternating current |
| 3. Form factor and Peak factor | 4. Power factor |

- (ii) Derive the expression for RMS value of sinusoidal current represented by

$$i = I_m \sin \omega t. \quad (6)$$

22. a) Explain the construction and principle of operation of dc motor.

(OR)

- b) Explain the construction, principle of operation and application of single phase induction motor.

23. a) Explain the V-I characteristics and applications of PN junction diode.

(OR)

- b) Explain the following.

1. Photo conductive cell 2. Photo transistor 3. Light Emitting diode

24. a) Explain the operation of full wave bridge rectifier.

(OR)

b) Explain the operation of inverting and non-inverting amplifiers.

25. a) What is a full adder? How it is realised using logic gates?

(OR)

b) Explain the operation of JK flip-flop, D flip-flop and T flip-flop.
