Register Number.....

B.TECH. DEGREE EXAMINATIONS: NOVEMBER 2009

Third Semester

U07EE311 BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to Textile Technology and Textile Technology (Fashion Technology))

Time: Three Hours **Maximum Marks: 100**

Answer ALL the Questions:-

PART A (10 x 1 = 10 Marks)

1. A heating element of a hot plate on an electric cooking range draws 12 amperes from 240 V mains. How many KWh of ener gy will be consumed in one hour and 15 minutes

   A) 1.2 B) 3.2 C) 6.0 D) 7.2

2. The peak factor of a wave is

   A) $\frac{\text{maximum value}}{\text{r.m.s Value}}$ B) $\frac{\text{maximum value}}{\text{average value}}$

   C) $\frac{\text{average value}}{\text{r .m.s Value}}$ D) $\frac{\text{r.m.s value}}{\text{maximum value}}$

3. In induction motors ,the condition for maximum power is

   A) Supply voltage=1/2xBack e.m.f B) Supply voltage=$\sqrt{2}$xBack e.m.f

   C) Back e.m.f=2x Supply voltage D) Back e.m.f=1/2 x Supply voltage

4. The direction of rotation of a 3 phase induction motor can be reversed by

   A) Reducing load B) Reducing frequency

   C) Supplying low voltage D) Interchanging any two phases.

5. Two voltmeter A and B having resistance 5000 ohms and 10000 ohms respectively are joined in series across 240V supply. The voltage across the two voltmeter will be

   A) V_A = 240 V , V_B = 240V

   B) V_A =120V, V_B =120V

   C) V_A = 60V, V_B = 180V

   D) V_A = 180V, V_B = 60V

6. Which instrument is not affect by stray magnetic fields

   A) Moving iron attraction type

   B) Moving iron repulsion type

   C) Moving coil type

   D) Hot wire typE

7. Convert 0.1011 to decimal

   A) 0.7842 B) 0.6875 C) 7482 D) 6578

8. The current i through the junction is given by Boltzmann diode equation

A) $i = KI_o(\epsilon^{V/KT} - 1)$

B) $i = I_o(\epsilon^{V/\eta T} - 1)$

C) $i = KI_o(\epsilon^{KT/V} - 1)$

D) $i = KI_o(\epsilon^{V/KV_T} - 1)$

9. The transfer function of a system is given by

$$\Phi = \frac{k\,(s+3)}{s(s+2+j4)(s+2-j4)}$$

The number of poles is

A) Stable B) two C)Three D) four

10. Transfer function can be obtained from

A) Analogous table

B) Standard block system

C) Output input ratio

D) Signal flow graph

PART B (10 x 2 = 20 Marks)

11. Define power factor.

12. State kirchoffs voltage law.

13. What is the necessity for starter in dc motor?

14. Draw speed torque characterstics of three phase induction motor.

15. Differentiate active and passive transducer.

16. What is meant by damping torque?

17. Write the truth table for NAND gate.

18. Describe barrier potential in a diode.

19. Given an example for open loop and closed loop control system.

20. Define transfer function.

PART C (5 x 14 = 70 Marks)

21.a(i) Two resistances R_1 and R_2 are connected in parallel as shown in fig.1. Find the current supplied by the battery and also battery voltage, the power dissipated in R1 = 24W. 07

(ii) Explain the performance of RLC series circuit for an alternating current input. 07

(OR)

b (i)	Define (i) Operator j (ii) Admittance (iii) Resistance		06
(ii)	Fig 2. shows the output waveform of a half wave rectifier. Find Average, Rms, Form factor value.		08
22.a	Explain the construction and operation of stepper motor.		14
	(OR)		
b	Explain the 3 point starter with a neat diagram.		14
23.a(i)	Explain the construction and operation of PMMC instrument, write the torque equation and list its merits and demerits.		10
(ii)	Discuss thermistor as a transducer.		04
	(OR)		
b (i)	Draw and explain the electro dynamometer type wattmeter construction and operating principles.		07
(ii)	How can inductive effect be used for making a transducer? Explain the working of an LVDT.		07
24.a(i)	Convert the hexadecimal number 8A3 into decimal equivalent.		04
(ii)	Convert the decimal number 39.12 into binary.		04
(iii)	Explain the JFET characteristics with required diagram.		06
	(OR)		
b	Draw a circuit for CE connection of npn transistor and explain the output characteristics of a npn transistor in the CE configuration.		14
25.a	Explain in detail the position feedback control system with a suitable example.		14
	(OR)		
b	Draw and explain the block diagram of feedback control system with a suitable example.		14

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