Register Number.....

B.TECH. DEGREE EXAMINATIONS: OCTOBER/NOVEMBER – 2008

Third Semester

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

U07EE311: BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

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

Answer ALL Questions:-

PART A (20 × 1 = 20 Marks)

1. The resistivity or specific resistance is measured in
A) Ω - m B) Ω / m C) Ω / m^3 D) Ω / m^2

2. Which of the following relation is not correct?
A) $P = V/R^2$ B) $P = VI$ C) $I = \sqrt{P/R}$ D) $V = \sqrt{PR}$

3. The form factor is the ratio of
A) Average value to RMS value B) RMS value to average value
C) Peak value to average value D) Peak to RMS value

4. In a pure capacitive circuit the current will
A) Lag behind the voltage by 90° B) Remain in phase with voltage
C) Lead the voltage by 90° D) Lead the voltage by 45°

5. The speed of rotor of an induction motor is always_____synchronous Speed
A) Equal to B) More than
C) Less than D) Half of

6. In a three phase induction motor, the starting torque will be maximum when
A) $R_2 = 1/X_2$ B) $R_2 = X_2$
C) $R_2 = X_2^2$ D) $R_2 = \sqrt{X_2}$

7. In a DC generator, the commutator is provided to
A) Improve commutation B) Convert DC into AC quantity
C) Convert AC into DC quantity D) Prevent sparking

8. The input to a stepper motor is in the form of
A) Frictional form B) Electric pulses
C) Mechanical inertia D) Viscous damping force

9. The most efficient form of damping current in electrical measuring instrument is
A) Air friction B) Fluid friction
C) Eddy current D) Hysteresis

10. Moving iron and PMMC instruments can be distinguished from each other by looking at

A) Pointer B) Terminal SIZE
C) Scale D) Scale range

11. Thermocouple is used to measure

A) Flow B) Pressure
C) Temperature D) Liquid level

12. A device which converts energy from to another form is known as

A) Signal generator B) Transducer
C) DC motor D) DC generator

13. In a semiconductor diode avalanche break down occurs when

A) Reverse bias exceeds zener voltage B) Potential barrier is eliminated
C) Forward current generates sufficient heat
D) Reverse current generates sufficient heat

14. A JFET is a

A) Two p-n junction, three terminal current driven device
B) Two p-n junction, three terminal bipolar device
C) Two p-n junction, three terminal voltage driven device
D) Three p-n junction, two terminal unipolar device

15. Which of the following gates is universal gate?

A) NOT B) OR C) AND D) NOR

16. 8085 Microprocessor is a _____ bit processor.

A) 32 B) 16 C) 8 D) 12

17. A closed loop control system is basically different from open loop control system due to

A) Feedback B) Servo mechanism C) Actuating signal D) Error signal

18. Feedback is employed in control system

A) Reduce the sensitivity of the system to parameter variation
B) Increase the gain of the system C) Improve the system stability
D) Improve the system reliability

19. The transfer function of a system is used to determine

A) The output for a given input B) The type of system
C) The input for a given output D) The steady state gain

20. The order of the system determined by the number of

A) Stable roots of the system B) Multiplying terms in the denominator
C) Poles at the origin D) Unstable roots of the system

PART B (5 × 16 = 80 Marks)

21. (a) (i) State and prove Kirchhoff's laws. (8)

(ii) Define RMS value and obtain the same for sinusoidal waveform. (8)

(OR)

21. (b) Derive the expression for impedance, current, phase angle, power factor and power for the RLC series circuit. Also draw the phasor diagram.

22. (a) (i) What is rotating magnetic field? Explain how is it produced? (8)

(ii)Draw and explain torque-slip characteristics of three-phase induction motor with necessary equations. (8)

(OR)

22. (b) (i)Explain the armature and flux control method of speed control of DC shunt motor. (8)

(ii) With neat sketch explain the operation of three-point starter. (8)

23. (a) (i)With neat sketch, explain the construction and working principle of attraction type moving iron instruments. (8)

(ii)With neat diagram, explain the construction and working principle of Induction type energy meter. (8)

(OR)

23. (b)(i) With suitable diagram describe the working of potentiometric transducer. (8)

(ii)With relevant diagram, explain the principle of operation of any one capacitive transducer. (8)

24. (a)(i) Draw and explain the V-I characteristics of PN junction diode. (8)

(ii)Explain the operation of NPN and PNP transistors (8)

(OR)

24. (b)With neat block diagram, explain the architecture of 8085 microprocessor.

25. (a) Draw the block diagram of open loop and closed loop control systems and explain each with an example.

(OR)

25. (b) Draw and explain the block diagram of position feedback control system with suitable example.

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