Sree Chitra Tirunal Institute for Medical Sciences & Technology,

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Written test – JTA-Electrical

10TH JULY, 2012 **Roll Number: .....**

1. Five lights are connected in parallel and fed by a 6V, 100Amp hour battery; each light is a sixty watt lamp. How long could this battery keep these lamps lit?
   A. 1.0hr
   B. 1.5hr
   C. 2.0hr
   D. 0.25hr

2. A ground connection should be made:
   A. Before the current carrying wire is connected.
   B. After the current carrying wire is connected.
   C. Only if power may be accidentally interrupted.
   D. Only when an extension cord is used.

3. If a12 SWG wire will safely carry 20amps at 120V, what it will carry at 240 volts?
   A. 10 amps
   B. 20 amps
   C. 15amps
   D. 30amps

4. To test and calibrate a polyphase watt-hour meter using a single phase ac supply, the best method is to connect the:
   A. Voltage coils in series ,current in parallel
   B. Current coils in parallel, voltage coils in parallel.
   C. Current coils, voltage coils in parallel.
   D. Voltage coils in series, current coils in series

5. In a capacitive circuit, what is the relationship of the current to the voltage?
   A. Current leads voltage.
   B. Current in phase with voltage
   C. Current and voltage both out of phase.
   D. Current is 120^0 out of phase.

6. Voltage dependant resisters are usually made from
   A. Graphite
   B. Charcoal
   C. Silicon carbide
   D. Nicrome

10.7.2012

10-7-12

7. Resistivity of pure aluminium at 0^0 is
   A. 2.62 micro ohm-cm
   B. 3.62 micro ohm-cm
   C. 4.62 micro ohm-cm
   D. 5.62 micro ohm-cm

8. A heating appliance rated at 1000watts at 240 volts is connected at 208volt .What is the wattage?
   A. 1153.8watts
   B. 866.6watts
   C. 1000watts
   D. 751.1watts

9. Why is it necessary to limit the maximum current carried by a wire?
   A. To achieve maximum economy.
   B. To guard against the danger of wire damage.
   C. To increase the voltage factor.
   D. To increase the demand factor.

10. Workers compensation laws have been enacted so that workers injured while on the job may receive benefit payments:
   A. Only if the injury was the employer's fault.
   B. Only if the injury was the employees fault.
   C. Only if negligence on the part of the employer can be proved.
   D. Regardless of whose fault the injury was.

11. A senior supervisor institutes a policy of minimizing the amount of information passed onto subordinates since it is felt that they are too over burdened with details. This practice is:
   A. Improper: The subordinates lack information which may be the necessary to properly perform their duties.
   B. Proper: This leadership strength is increased by the degree to which subordinates turn to the supervisor for guidance.
   C. Improper: The senior supervisor is trying to carry too many responsibilities.
   D. Proper: It is part of the job for the senior supervisor's job to act as a buffer for subordinates and give them only the information they need to competently perform the job.

12. Autocratic leadership is one supervisory style. Which of the following describes an autocratic supervisor's style?
   A. One that uses centralized power and enjoys giving orders.
   B. One that allows the group of members to do things as they see fit.
   C. One that follows the followers to share in decision making process.
   D. One that utilizes the delegation of power.

13. The current flowing in a purely inductive circuit of 30 mH on application of 230 V, 50 Hz single phase supply is 24.4 A. If the frequency of the applied voltage is increased to 100 Hz, the current flowing in the same circuit will be
   A. 24.4 A

10.5.2012

B. 48.8 A
C. 12.2 A
D. 6.1 A

14. Find the total resistance when two 3 Ohm resistances are connected in parallel.
A. 1.11 ohms
B. 1.5 ohms
C. 0.707 ohms
D. 1.23 ohms

15. Filter circuits are constructed by means of
A. Diode
B. Resistors
C. Transformers
D. Capacitor & Inductor

16. In earlier times _____ was used for voltage regulation.
A. Diode
B. Transistors
C. Vacuum tubes and glow bulbs
D. SMPS

17. Peak factor of the sine wave is equal to
A. 0.901
B. 1.414
C. 1.1
D. 1.11

18. The amplitude of current of full wave rectified sinusoidal wave is 80 A, its average value will be
A. 25.44A
B. 80A
C. 40A
D. 56.56A

19. The power factor of a inductive circuit is
A. Lagging
B. Leading
C. Zero
D. Unity

20. An electric bulb suitable for 220V ac can be put on safe dc voltage at
A. 220 V
B. 189 V
C. 157 V
D. 100 V

21. _____ is the property of magnetic field, which opposes the flow of flux through it.
A. Resistance

10-7-12

B. MMF
C. Reluctance
D. emf

22. A fuse wire should have
A. Low specific resistance and high melting point
B. Low specific resistance and low melting point
C. High specific resistance and high melting point
D. High specific resistance and low melting point

23. Power factor of the magnetising component of a transformer is
A. unity
B. 0,8 lagging
C. always leading
D. zero

24. The acting contact for a circuit breaker are made of
A. Stainless steel
B. Hard pressed carbon
C. Porcelain
D. Copper tungsten alloy

25. Capacitive susceptance is expressed in terms of
A. Faraday
B. Micro farads
C. Siemens
D. Ohms

26. The power is measured in terms of decibels in case of
A. Transformers
B. Current Transformers
C. AutoTransformers
D. Electronic equipment

27. The internal resistance of a 20,000 ohm/volt voltmeter set on its 5 V range is
A. 20,000
B. 100,000
C. 200,000
D. 1,00,0000

28. The output of a certain voltage divider is 12 V with no load. When a load is connected, the output voltage
A. Decreases
B. Increases
C. Remains the same
D. Becomes zero.

29. Power factor of incandescent bulb is
A. 0.8 lagging
B. 0.8 leading
C. Unity
D. 0

30. If the RMS voltage drop across a 15 k resistor is 16 V, the peak current through the resistor is
A. 15mA
B. 1.5mA
C. 10mA
D. 1mA

31. All the laws of DC circuits also apply to AC circuits without modifications, in case the circuit contains
A. Resistance only
B. Capacitance only
C. Inductance only
D. All the passive Elements

32. To produce an 800 Hz sine wave, a four-pole generator must be operated at
A. 200rps
B. 400rps
C. 800rps
D. 1600rps

33. The winding resistance of a coil can be increased by
A. Increasing the number of turns
B. Using a thinner wire
C. Changing the core material
D. increasing the number of turns or using thinner wire

34. An inductance of 0.43 mH is smaller than
A. 43H
B. 430 H
C. 0.05mH
D. 0.00043H

35. An uncharged capacitor and a 1 kΩ resistor are connected in series with a switch & a 6 V battery. At the instant the switch is closed, the voltage across the capacitor is
A. 6V
B. 3V
C. 2V
D. 0V

36. When the turns ratio of a transformer is 20 and the primary ac voltage is 12 V, the secondary voltage is
A. 12V

B. 120V
C. 240V
D. 2400V

37. A certain amplifier has 600 internal resistance looking from its output. In order to provide maximum power to a 4 speaker, what turns ratio must be used in the coupling transformer?
A. 8
B. 0.8
C. 0.08
D. 80

38. A basic one-loop DC generator is rotated at 90 rev/s. How many times each second does the DC output voltage peak
A. 90
B. 180
C. 270
D. 360

39. A certain series resonant circuit has a bandwidth of 2 kHz. If the existing coil is replaced with one having a higher value of Q, the bandwidth will
A. Increase
B. Remain the same
C. Decrease
D. Be less selective

40. When a 200 ohm load resistor is connected across the secondary winding of a transformer with a turns ratio of 4, the source "sees" a reflective load of
A. 50
B. 12.5
C. 800
D. 0

41. DC motors are commonly used in
A. Electric overhead cranes
B. Pump sets
C. Driving compressors
D. Electric traction

42. Which DC motor is expected to have highest full load efficiency
A. 1 HP
B. 5HP
C. 10HP
D. 100HP

43. Insulation between the segments is usually
A. Paper
B. Fabric

C. Wood
D. Mica

44. Which part of motor can be easily identified with DC motor
A. Slip ring
B. Armature
C. Type of winding
D. Commutator

45. A punching machine has intermittent light and heavy loads. Which DC motor will be suitable for such a machine
A. Series motor
B. Shunt motor
C. Cumulatively compound motor
D. Differentially compound motor

46. In highly explosive zones, which motor is preferred
A. Synchronous motor
B. DC shunt motor
C. Battery operated motor
D. Air motor

47. Which of the following loads rated torque
A. Fans and blowers
B. Conveyors and printing presses
C. Centrifugal pumps
D. Compressors

48. In a Hopkinson's test for DC motors
A. Both motors are run as generators
B. Both machines are mechanically coupled
C. Both motors run at their respective rated speeds
D. Speed of the motors are separately controlled

49. The retardation test in case of shunt motor and generator is used to determine
A. Friction losses
B. Eddy current losses
C. Copper losses
D. Stray losses

50. A small Dc motor up to 5 HP usually have
A. 2 poles
B. 4 Poles
C. 6 poles
D. 8 poles

51. The rotor pf DC machine is usually supported in
A. Bush bearings

10.7.12

B. Ball or roller bearings
C. Plummer blocks
D. Magnetic bearings

52. Pole shoes of DC machines are fastened to the pole core by
A. Welding
B. Soldering
C. Wooden patterns
D. Counter sunk screws

53. Laminations are used in armature of DC machines to
A. Reduce weight
B. Reduce volume
C. Reduce eddy current loss
D. Increase air movement

54. A shunt generator produces 450A at 230 volt .The resistance of shunt field and armature are 50Ω and 0.025Ω respectively. The armature voltage drop will be
A. 11.39V
B. 22.7V
C. 31.6V
D. 38.4V

55. Dummy coils in generators are provided
A. To reduce eddy current
B. To enhance flux density
C. To amplify voltage
D. To mechanically balance the rotor

56. Residual magnetism of a DC shunt generator can be regained by
A. Connecting the shunt field to a battery
B. Running a generator on no load for sometime
C. Earthling the shunt field
D. Reversing the direction of the generator

57. The insulation resistance of a cable is specified by the manufacturer at 250 MOhm/KM. The resistance of 200M length will be
A. 1250 M ohm
B. 250Mohm
C. 125 M ohm
D. 50 M ohm

58. A temperature rises, the resistivity of insulation
A. Increases linearly
B. Remains unchanged
C. Decreases linearly
D. Decreases exponentially

10-7-12

10/7/2012

59. For underground cables the depth of trenches is usually

A. 10 to 15 cm
B. 20 to 30cm
C. 60 to 70 cm
D. 120 to 140 cm

60. Cables can be generally used up to

A. 400V
B. 1000V
C. 11kV
D. 33kV

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Signature of the candidate

10.7.2012

10.7.12