

035/2016

Maximum : 100 marks

Time : 1 hour and 15 minutes

1. Arc heating occurs when the air between electrodes of opposite polarity becomes :
(A) Moistened (B) Dry
(C) Ionized (D) None of the above
2. The meter used to measure the temperature of a furnace is :
(A) hydrometer (B) pyrometer
(C) hygrometer (D) tachometer
3. Which part is provided in a battery charger to prevent the flow of excessive current into the battery?
(A) Coarse selector (B) Time selector switch
(C) Limiting resistance (D) Transformer
4. What will happen to the filter circuit in battery charger if the output filter capacitor is opened?
(A) Will not function (B) Will make humming noise
(C) More current will flow (D) No output voltage
5. What are the two relative quantities to be plotted for external characteristics curve for DC shunt generator?
(A) Field current Vs No load voltage (B) Armature current Vs Induced e.m.f
(C) Load current Vs Terminal voltage (D) Load current Vs Induced e.m.f
6. What will happen to a self excited DC generator, if the generator runs in reverse direction?
(A) The induced e.m.f. is increased
(B) There is no change in the induced e.m.f.
(C) Spark will be produced in the commutator
(D) Residual magnetism in the pole will be destroyed
7. Which is the application of delayed response type diazed fuse?
(A) Motor circuits (B) Heating circuits
(C) Lighting circuits (D) Electronic circuits
8. The force between two long parallel conductors is inversely proportional to :
(A) current in one conductor (B) distance between the conductors
(C) radius of conductors (D) product of current in two conductors

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[P.T.O.]

9. Which of the following circuit elements will oppose the change in the circuit current?
(A) Inductance (B) Resistance
(C) Capacitance (D) All of the above
10. The colour of light of mercury vapour lamp is :
(A) Greenish blue (B) Yellow
(C) Pink (D) White
11. Which of the following frequencies has the longest time period?
(A) 1 Hz (B) 1 kHz
(C) 10 Hz (D) 10 kHz
12. In a generator maximum value of e.m.f. is generated within the coil axis is at :
(A) 45° with field axis (B) 90° with field axis
(C) 180° with field axis (D) Zero degree with field axis
13. A choke coil of an operating fluorescent lamp is short-circuited. What is the consequence?
(A) The lamp becomes brighter
(B) The lamp becomes less bright
(C) The current becomes so large that it damages the tube
(D) The short circuit is noticed only after the lamp is switched 'ON' again
14. A contactor coil is designed for 220V DC. What happens if it is connected to 220 V AC?
(A) Too large a current is drawn by the coil and it is destroyed
(B) Too small a current is drawn by the coil and the operation of the contactor is no longer certain
(C) It draws the same current
(D) It works better
15. A capacitor is connected across a 200 V AC line. Its minimum voltage rating should be :
(A) 100 volt (B) 200 volt
(C) 300 volt (D) 400 volt
16. The power factor of 3-phase load is less than 0.5. While measuring power by two watt meters :
(A) one of the wattmeters gives zero reading
(B) one of the wattmeters gives negative reading
(C) both wattmeters give positive reading
(D) one of the wattmeters kicks backward

17. Voltage required to operate the Neon sign tubes depends upon :
- (A) Diameter of the tube (B) Gases in the tube
(C) Length of the tube (D) Thickness of the tube
18. Soldering of a Britannia joint is a necessity to avoid loosening of the joint due to :
- (A) Vibrations and change in atmospheric temperature
(B) Corrosion due to galvanic action
(C) Corrosion due to atmospheric changes
(D) Overheating
19. The testing of wiring installation for insulation resistance to ensure that :
- (A) All conductors have high ohmic values in the circuit
(B) All outlet points are earthed properly to ground
(C) Leakage current beyond the stipulated value does not flow to earth
(D) Live and neutral conductors in the installation are continuous
20. Braking torque in energy meter is produced to :
- (A) Brake the instrument
(B) Bring energy meter to stand still
(C) Safeguard it against creep
(D) Maintain steady speed and equal to driving torque
21. The scale of dynamometer type wattmeter is of :
- (A) Uniform scale (B) Logarithmic scale
(C) Non-linear scale (D) Square law scale
22. The standard secondary voltage for a PT used in power system in :
- (A) 1 V (B) 5 V
(C) 50 V (D) 110 V
23. Which instrument always indicates true r.m.s. value irrespective of the waveform?
- (A) Moving iron meter (B) Digital voltmeter
(C) Thermocouple meter (D) None of the above
24. A voltmeter gives inaccurate reading to measure the drop across a low resistance because :
- (A) The higher scale has been selected
(B) The current drawn by the meter is too low
(C) The sensitivity of the meter is too low
(D) None of the above

25. The phase difference between the currents in the two pressure coils in PF meter is :
- (A) Approximately 0° (B) Approximately 90°
 (C) Exactly 0° (D) Exactly 90°
26. When a rewind armature is rolled on the surface of a leveled surface plate the armature stops at the same position of its periphery for each rolling, the portion of armature touching the surface plate is regarded to have :
- (A) higher weight than the diametrically opposite portion
 (B) lesser weight than the diametrically opposite portion
 (C) equal weight to that of opposite portion
 (D) higher weight than the portion 90° to it on any one side
27. Which one of the following characteristic is NOT applicable to synchronous motors?
- (A) Runs at constant speed at all loads
 (B) Suitable to supply only mechanical load
 (C) Can also be used for PF improvement
 (D) Not self starting
28. Which method is generally adopted to measure the power in a three phase imbalanced load system?
- (A) One wattmeter method (B) Two wattmeter method
 (C) Three voltmeter method (D) Three wattmeter method
29. The colour of light depends upon :
- (A) Wave length (B) Frequency
 (C) Speed of light (D) Frequency and wave length
30. Which of the following lamp is a cold cathode lamp?
- (A) Neon lamp (B) Sodium vapour lamp
 (C) Mercury vapour lamp (D) Fluorescent lamp
31. You have to repair storage type water heater which has steam in the hot water. The possible remedy for this trouble can be found by checking :
- (A) All points for possible leakages (B) The thermostat setting
 (C) All wiring for loose connections (D) Element for its condition
32. The reading on a 3 digit millivoltmeter started flashing continuously when connected across a resistor to measure the mV across it. The reason for flashing of display on millivoltmeter is that :
- (A) The battery in the instrument is weak (B) There is no battery in the instrument
 (C) The measured value is over range (D) The display is damaged

33. Which one of the following measurement CANNOT be done with multimeter?
- (A) Current drawn by an electronic circuit
 - (B) Supply voltage to DC motor
 - (C) Continuity test of motor winding
 - (D) Insulation resistance of motor
34. Why a higher capacity squirrel cage induction motor is not recommended for operating under low load condition?
- (A) Voltage drop in line will be too much
 - (B) Power factor will be less
 - (C) Higher capacity motors does not run at constant speed
 - (D) Torque is too much hence it may cause damage
35. Shunts and multipliers used in MC instruments are made up of Manganin. The reason for using the above metal is that, it has :
- (A) Positive temperature co-efficient of resistance
 - (B) Negative temperature co-efficient of resistance
 - (C) Perfectly constant temperature co-efficient of resistance
 - (D) Very low (practically constant) temperature co-efficient of resistance
36. In order to operate a fluorescent tube set on DC supply, which of the following additional auxiliary device is to be connected?
- (A) Inductance
 - (B) Capacitance
 - (C) Resistance
 - (D) No extra device is needed
37. The power input increases by three times when the connection of three phase loads changes from star to delta at the same line voltage. What is the reason for this?
- (A) The voltage across one phase of the load is three times higher in delta connection than in star connection
 - (B) The power factor increases by three times in delta connection when compared to star connection
 - (C) The line current is three times higher in delta connection than in star connection
 - (D) The voltage in each phase increases by two times and the current by 1.732 times
38. In a parallel resonant circuit the capacitor current is :
- (A) More than line current
 - (B) Less than line current
 - (C) Equal to line current
 - (D) None of the above
39. According to National electric code what is the specified minimum distance between the washing unit and the switch board :
- (A) 0.6 metre
 - (B) 1.3 metre
 - (C) 2.5 metre
 - (D) 3.4 metre

40. A series RLC circuit takes leading power factor current at :
(A) Resonant frequency (B) More than resonant frequency
(C) Less than resonant frequency (D) None of the above
41. In the output voltage of a DC generator the ripple effects can be reduced by increasing the :
(A) Field current
(B) Number of armature coil
(C) Number of turns in the field winding
(D) Size of the conductor of the armature coil
42. While installing power sub-circuits in domestic installations it should be restricted to :
(A) 800 watts with in 10 light and fan points
(B) 800 watts within 2 outlets
(C) 3000 watts within 10 light and fan points
(D) 3000 watts within 2 outlets
43. What type of compounding would be desirable in the DC generator feeding a long transmission line?
(A) Over compounding (B) Under compounding
(C) Flat compounding (D) Any one of the above
44. The most economic method of electrical braking is :
(A) Plugging
(B) Dynamic braking with self excitation
(C) Regenerative braking
(D) Dynamic braking with separate excitation
45. When a DC series motor is connected to an AC supply, then :
(A) It will stop
(B) It may burnt out
(C) It will run without any trouble
(D) It will run with less efficiency and high spark at commutator
46. Dummy coils in a DC generator is provided :
(A) To amplify voltage
(B) To reduce eddy current losses
(C) To enhance flux density
(D) To provide mechanical balance to the rotor
47. When the number of poles and the number of armature conductors are fixed, then which winding of a DC generator will give the higher e.m.f.?
(A) Wave winding (B) Lap winding
(C) Same e.m.f. in lap and wave winding (D) Depends on other features of design

48. Earth tester is used for measuring earth resistance in which generated DC is converted into AC by current reverser. The reason for using AC supply for resistance measurement is :
- AC resistance is more than DC resistance
 - To reduce error due to electrolytic e.m.f.
 - AC wave form is pulsating in nature
 - AC contains sine wave form
49. The basic function of voltage stabilizer is to provide :
- Constant current supply to load
 - Constant power supply to load
 - Constant voltage supply to load
 - Uninterrupted supply to load
50. A food mixture rated for 240 V AC fails to start when it is switched on. Which one of the following is NOT a cause for the above?
- Jammed rotor
 - Supply voltage is only 210 V
 - OL relay is not re-set
 - Open in armature winding
51. In a transformer the leakage flux may be minimized by :
- Minimizing the number of turns of both the winding
 - Sectionalizing and interleaving the primary and secondary winding
 - Keeping the magnetizing current to the minimum
 - Reducing the reluctance of the iron core to the minimum.
52. Which one of the following connections is preferred for three-to-two phase conversion?
- Scott
 - Double scott
 - Star/star
 - Star/double - delta
53. The phase relationship between primary and secondary terminal voltage of a transformer is :
- Primary voltage is leading the secondary voltage by 90°
 - Secondary voltage is leading the primary voltage by 90°
 - 180° out of phase
 - In the same phase
54. The no load primary current I_0 in an ideal transformer is :
- In phase with V_1
 - Leads V_1 by 90°
 - Lags behind V_1 by 90°
 - Lags V_1 by an angle lying between 0° and 90°
55. An optocoupler is a single package of :
- LED and a signal diode
 - LED and a photodiode
 - Two photodiodes
 - Two LEDs