M.E. Electrical Engg. (Power System)

1. In air blast Circuit breakers , the pressure of air is of order of
A) 100 mmHg B) 1 kg/cm^2
C) 20-30 kg/cm^2 D) 200-300 kg/cm^2

2. The rating of an oil CB's is 2000A, 2500 MVA, 66 kV, 3 sec, three phase. The rated breaking current in kA is
A) 19.87 B) 4.56 C) 21.87 D) 19.76

3. The voltage drop across the arc in an AC CB is
A) Leading the arc current by 90^0
B) Lagging behind the arc current by 900
C) In phase with arc current
D) In phase opposition to arc current

4. The function of lightning arrestor is to protect the electric equipments against
A) Power frequency voltage
B) Direct strokes of lightning
C) Fault current
D) Overcurrent due to power frequency harmonics

5. The value of coordination time interval between successive relays is
A) 0.6 sec B) 0.5 sec C) 0.25 sec D) 0.45 sec

6. For protecting a distribution feeder having transformer which relaying scheme is preferred ?
A) Two overcurrent and one earth fault relay
B) Three overcurrent and one earth fault relay
C) One overcurrent and one earth fault relay
D) Only overcurrent relays

7. For a single circuit one terminal transmission line (three conductors) , how many distance units are required?
A) One B) Two C) Three D) Six

8. In case of busbar fault, the bus zone relay must
A) Trip all the breakers connected to the bus
B) Give an alarm for bus fault
C) Trip one breaker connected to the bus
D) Trip some breakers connected to the bus

9. For 19 strand in a stranded conductor, the number of layers will be
A) 2 B) 4 C) 6 D) 7

10. Wavy structure of pin insulator increases its
A) Mechanical strength B) Puncture strength
C) Flashover strength D) Thermal strength

11. Transposition of transmission line is done
A) Reduce line losses B) Reduce skin effect
C) Balance line voltage drop D) Reduce corona

12. If the insulation resistance of a cable of length 10 km is 1 MΩ its insulation resistance for 50 km length will be
A) 1 MΩ B) 5 MΩ C) 0.2 MΩ D) 0.4 MΩ

13. With bundled conductors
A) Corona inception voltage increases
B) Corona inception voltage decreases
C) Corona inception voltage remains unaffected
D) Corona inception voltage is independent

14. Characteristics impedance of an overhead transmission line is usually in the range of
A) 100-200 ohm B) 200-300 ohms
C) 0-100 ohms D) 400-500 ohms

15. The size of conductor on modern EHV lines is obtained based on
A) Voltage drop B) Current density
C) Corona D) Skin effect

16. In a transmission system, the weight of copper used is proportional to
A) E^2 B) E C) $1/E^2$ D) 1/ E

17. In case of potential transformer with increase in load on secondary side
A) Both of the ratio error and phase angle increases
B) Ratio error increases but phase angle decreases
C) Ratio error decreases but phase angle increases
D) Both ratio error and phase angle decreases

18. In operating a 400 Hz transformer at 50 Hz
A) Only voltage is reduced in same proportion as frequency
B) Only kVA rating is reduced in same proportion as frequency
C) Both voltage and kVA ratings are reduced in same proportion as frequency
D) It will not affect voltage and kVA rating

19. The essential condition for parallel operation of two 1-hase transformers is that they should have the same
A) Polarity B) kVA rating C) Voltage ratio D) % impedance

20. In a three phase, star-star transformer connection, neutral is fundamental to the
A) Ssuppression of harmonics
B) Passage of unbalanced currents due to unbalanced loads
C) Provision of dual electric service
D) Balancing of phase voltages w.r.t. line voltages

21. For supplying a balanced 3-phase load of 40 kVA rating of each transformer in V-V bank should be nearly
A) 20 kVA B) 23 kVA C) 34.6 kVA D) 25 kVA

22. A 6-pole, 50 Hz, 3-phase induction motor is running at 950 rpm and has copper loss of 5 kW. Its rotor input is
A) 100 B) 10 C) 95 D) 5.3

23. The magnetizing current drawn by transformer and induction motors is the cause of their power factor
A) Zero B) Unity C) Lagging D) Leading

24. The power factor of a squirrel cage induction motor is
A) Low at light loads only B) Low at heavy loads only
C) Low at light and heavy loads both D) Low at rated load only

25. A squirrel cage induction motor runs at constant speed only so long as
A) Torque developed by it remain constant
B) Its supply voltage remains constant
C) Its torque exactly equals the mechanical load
D) Stator flux remains constant

26. If f be frequency , then dielectric loss is proportional to
A) f B) $1/f$ C) f^2 D) $1/f^2$

27. A sinusoidal voltage varies from zero to maximum of 250 V. The voltage at the instant of 60^0 of the cycle will be
A) 150 V B) 216.5 V C) 125 V D) 108.25 V

28. The instantaneous values of currents in phases R and Y of 3-phase system are 25 A each. For a phase sequence of BRY, the instantaneous value of current in phase B is
A) 25 A B) 50 A C) 12.5 A D) 43.3 A

29. Ward-Lenord system of speed control is not recommended for
A) Wide speed range B) Constant speed
C) Frequent motor reversals D) Very low speeds

30. The flux control method using paralleling of field coils when applied to a 4-pole series dc motor can give how many speeds?
A) 2 B) 3 C) 4 D) 6

31. Load saturation characteristics of a dc generator gives relation between
A) V and I_a B) E and I_a C) E_0 and I_f D) V and I_f

32. The voltage regulation of an over compounded dc generator is always
A) Positive B) Negative C) Zero D) High

33. An overhead transmission line has appreciable inductance because the loop it forms has
A) Large cross sectional area B) Small cross sectional area
C) Zero cross sectional area D) Independent of cross sectional area

34. If capacitance between two conductors of a three phase line is 4 μF, then capacitance of each conductor to neutral is
A) 4 μF B) 8 μF C) 12 μF D) 16 μF

35. The presence of earth wire in case of overhead lines
A) Increases the capacitance B) Increases the inductance
C) Decreases the capacitance D) Decreases the capacitance

36. For an exciting ac transmission line, the string efficiency is 80%. Now if dc voltage is supplied for the same set up, the string efficiency will be
A) 80% B) Less than 80 %
C) More than 80% D) 100%

37. The R/X ratio for distribution lines is
A) More than transmission lines B) Less than transmission lines
C) Equal to transmission lines D) None of the above

38. A plant has the following transfer function $G(s)=\frac{1}{(s^2+0.2s+1)}$, For a step input it is required that the response settles to within 2% of its final value. The plant settling time is
A) 20 sec B) 40 sec C) 35 sec D) 45 sec

39. A system has transfer function $\frac{1-s}{(1+s)}$ it is called

A) Low pass filter B) High pass filter
C) All pass filter D) None of these

40. Equal area criterion can be applicable to
A) Multi machine stability
B) One machine connected to an infinite bus
C) Both (A) and (B)
D) None of the above

41. Sinusoidal oscillators are

A) Stable B) Unstable
C) Marginally stable D) Conditionally stable

42. The number of roots of $s^3+5s^2+7s+3=0$ in the right half of s-plane is
A) 0 B) 1 C) 2 D) 3

43. A single phase bridge inverter delivers power to a series connected RLC load with R=2 Ω, ωL=8Ω. For this inverter-load combination, load commutation is possible in case the magnitude of 1/ ωC in ohms is
A) 10 B) 6 C) 8 D) Zero

44. In single pulse modulation of PWM inverters, third harmonic cab be either eliminated if pulse width is equal to
A) 60^0 B) 120^0 C) 30^0 D) 150^0

45. A transistor amplifier has a midband power gain of 50 dB. At half power frequencies the gain is
A) 25 dB B) 47 dB C) 35.35 dB D) 44 dB

46. The relative damping in a galvanometer is 0.8.Its logarithmic decrement is approximately
A) 0.48 B) 1.25 C) 4.19 D) -4.19

47. The phase margin of a system with open loop transfer function $G(s)H(s)=\frac{(1-s)}{(1+s)(2+s)}$ is
A) 0^0 B) 63.4^0 C) 90^0 D) Infinite

48. The gain margin of the transfer function $G(s)=\frac{0.75s}{(1+s)(2+s)}$ is
A) 4 dB B) 8 dB C) 12 dB D) 16 dB

49. Given $G(s)H(s)=\frac{K}{s(s+1)(s+3)}$, the point of intersection of asymptotes of the root loci with real axis is
A) -4 B) 1.33 C) -1.33 D) 4

50. For a feedback control system of type 2, the steady state error for a ramp input is
A) Infinite B) Constant C) Zero D) Indetermine

51. The eigen values of the system represented by $X^{'}=\begin{bmatrix}0&1&0&0\\0&0&1&0\\0&1&0&1\\0&0&1&1\end{bmatrix}x$ are
A) 0,0, 0, 0 B) 1,1,1,1 C) 0, 0, 0, -1 D) 1, 0, 0, 0

52. The step size of a stepper motor with 12 rotor tooth is
A) 10^0 B) 30^0 C) 60^0 D) 120^0

53. Which distance characteristics is best suitable as far as the incorporation of fault resistance is concerned

A) Reactance B) Impedance C) Mho D) Quardilateral

54. In bridge inverter with single pulse width modulation

A) The output frequency is equal to frequency of reference signal
B) The output frequency is equal to frequency of control signal
C) Either (A) or (B)
D) None of the above

55. The resolution of a 4-bit counting ADC is 0.5 V. For an analog input of 6.6 volts, the digital output of ADC is

A) 1011 B) 1101 C) 1100 D) 1110

56. The number of hardware interrupts (which require an external signal to interrupt) present in an 8085 microprocessor are

A) 1 B) 4 C) 5 D) 13

57. 4-bit 2's complement representation of decimal number is 1000. The number is

A) +8 B) 0 C) -7 D) -8

58. A digital voltmeter measures

A) Peak value B) Peak-to-peak value
C) Rms value D) Average value

59. Which of the meter is suitable for measurement of 10 mV at 50 Hz?

A) Moving iron type B) VTVM
C) C.R.O. D) Electrostatic voltmeter

60. To obtain very high input and output impedances in a feedback amplifier, the topology must be

A) Voltage- series B) Current-series
C) Voltage-shunt D) Current-shunt

61. A two stage amplifier with negative feedback has an overshoot when damping factor k is

A) Less than unity B) Greater than unity
C) Zero D) Negative

62. The MOSFET switch in its on-state may be considered equivalent to

A) Resistor B) Inductor C) Capacitor D) Battery

63. In a transmission system, the weight of copper used is proportional to

A) E^2 B) E C) $1/E^2$ D) $1/E$

64. Shackle type insulators are used in

A) Distribution lines
B) Long Transmission lines
C) EHV lines
D) HVDC transmission lines

65. The starting torque of a capacitor start induction run motor is directly related to the angle α between its two winding currents by the relation
A) cos α B) sin α C) tan α D) sin α/2

66. The reflection co-efficient of a travelling waves when transmission line end is short-circuited is
A) -1 B) 1 C) 0 D) Infinite

67. When a PNP transistor is properly biased, the holes from emitter
A) Diffuse through the base into the collector region
B) Recombine with the electron base
C) Recombine with the electrons in emitter itself
D) None of the above

68. The maximum efficiency of a half-wave rectifier circuit can be
A) 37.2% B) 40.6% C) 53.9% D) 81.2%

69. In a p-channel MOSFET the substrate
A) Is p-type
B) Is n-type
C) May be p-type or n-type
D) None of the above

70. Which of the following transistor amplifier configurations has the highest power gain
A) Common base
B) Common collector
C) Common emitter
D) None of the above

71. In a transistor most of the heating occurs at
A) Emitter junction
B) Collector junction
C) Any where
D) None of the above

72. A 3-phase, 400 V, 50 Hz, 4-pole induction motor is fed from3-phase, 400 V supply and runs at 1425 rpm. The frequency of the rotor emf is
A) 2.5 Hz B) 50 Hz C) 48 Hz D) zero

73. In an auto-transformer, the voltage ratio V_1/ V_2 while $V_1 > V_2$, the fraction transferred inductively is
A) $V_1/(V_1+ V_2)$
B) V_2/ V_1
C) $(V_1-V_2)/(V_1+ V_2)$
D) $(V_1-V_2)/V_1$

74. The efficiency of a transformer at full load 0.8 p.f. lag is 90%. Its efficiency at full load 0.8 p.f. lead is
A) Less than 90%
B) More than 90%
C) 90%
D) None of these

75. On occurrence of the unsymmetrical fault, which sequence component is always more that the negative sequence component

A) Zero sequence
B) Positive sequence
C) Both
D) None of the above

x-x-x