T.S - ECET-EEE-2015

C

1. The abbreviation MCCB Stands for

(1) Miniature case circuit breaker   (2) Maintenance case circuit breaker

(3) Moulded case circuit breaker   (4) Metal case circuit breaker

2. The operation of distance relays depends upon

(1) Voltage   (2) Current

(3) Power   (4) Impedance

3. Induction type of relays are used for protection purposes involving

(1) ac only   (2) dc only

(3) ac and dc   (4) non sinusoidal ac only

4. Choose a wrong statement from the following : Current limiting reactor is used to

(1) Filter out spikes of current

(2) Reduce injection harmonics into power supply

(3) Increase the system power factor

(4) Limit starting current of motors

5. For protection of incipient faults on transformers, relay used is

(1) differential relay   (2) Buchhloz relay

(3) thermal relay   (4) electromagnetic relay

6. Merz-price circulating current protection is used in

(1) Transformers   (2) Alternators

(3) Motors   (4) Sub-stations

7. In any transmission line with parameters A, B, C & D constants, the following relation holds good

(1) AD = BC   (2) AC = BD

(3) AD = BC + 1   (4) AC = BD + 1

8. String efficiency is defined as

(1) (no. of units × voltage across the string) / voltage across bottom most unit)

(2) (no. of units × voltage across bottom most string) / voltage across the string)

(3) Voltage across bottom most unit / (no. of units × voltage across the string)

(4) Voltage across the string / (no. of units × voltage across bottom most unit)

9. Sag of a line is proportional to

    (1) Square root of span length

    (2) Span length

    (3) Weight per unit length

    (4) Square of weight per unit length

10. Carona loss is................... Proportional to ....

    (1) Directly .... frequency

    (2) Inversely .... frequency

    (3) Directly .... frequency^2

    (4) Inversely .... frequency^2

11. The ratio of material required for transmission of single phase, 2 wire - system to D.C, 2 wire system with maximum potential difference between any conductor and earth is

    (1) 1

    (2) 1.25

    (3) $2/\cos^2 \phi$

    (4) $1.5/\cos^2 \phi$

12. In a sub-station, the following equipment is not installed

    (1) Shunt capacitors

    (2) Exciters

    (3) Lighting attesters

    (4) Isolation switches

13. Identify a balanced 3 - phase system from the following

    (1) $440V \angle 0^0$, $440V \angle 120^0$, $440V \angle 240^0$

    (2) $440V \angle 0^0$, $440V \angle 120^0$, $440V \angle -240^0$

    (3) $440V \angle 0^0$, $440V \angle -120^0$, $440V \angle 240^0$

    (4) $400V \angle 0^0$, $440V \angle 120^0$, $440V \angle 240^0$

14. In a lossless transmission line, the characteristics impedance is given by

    (1) $\sqrt{C/L}$

    (2) $\sqrt{X_C/X_L}$

    (3) $\sqrt{LC}$

    (4) $\sqrt{X_C X_L}$

15. Which of the following insulation cable has the least dielectric strength

    (1) Poly vinyl chloride (PVC)

    (2) Paper Insulation

    (3) Vulcanized India Rubber (VIR)

    (4) Cross linked polythene cable (XLPE)

16. The surge impedance of transmission line is

    (1) 40Ω

    (b) 400Ω

    (3) 80Ω

    (d) 1000Ω

17. A sting insulator has 4 units. The voltage across the bottom - most unit is 1/3rd of total voltage. Its string efficiency is

    (1) 25%

    (2) 33.33%

    (3) 66.7%

    (4) 75%

18. The speed of a train thinking into consideration of time of stops at stations including the actual running time between stops, is called as

   (1) Average speed
   (2) Notching speed
   (3) schedule speed
   (4) Free running speed

19. The area of speed - time curve of a train gives

   (1) Power consumed
   (2) Energy consumed
   (3) Acceleration of the train
   (4) Distance travelled

20. Which of the following is called composite system of track electrification

   (1) Three-phase ac system
   (2) Three-phase low frequency system
   (3) Single-phase low frequency system
   (4) Single-phase to dc system

21. Specific energy consumption is measured in

   (1) Watt Hrs per tonne per kM
   (2) Watt seconds per tonne per kM
   (3) Watt Hrs per kg per kM
   (4) Watt Hrs per tonne per meter

22. The maximum value of coefficient of adhesion is :

   (1) 0.20
   (2) 0.15
   (3) 0.30
   (4) 0.50

23. When two traction motors are used for series-parallel starting, the energy efficiency during starting time is :

   (1) 80.0%
   (2) 75.0%
   (3) 50%
   (4) 66.7%

24. Electrical appliances are controlled by switches connected in

   (1) Earth wire
   (2) Phase wire
   (3) Neutral wire
   (4) Ground wire

25. The lamp mostly used in commercial advertisements is

   (1) MAT type MV
   (2) Neon indicator lamp
   (3) Neon sign lamp
   (4) Sodium vapour lamp

26. The supply voltage at the point of commencement of supply should not vary from the declared voltage value by more than

   (1) 4%
   (2) 5%
   (3) 7.5%
   (4) 10%

27. As per international standards, a good earthing in residential buildings can have a resistance (R) value of

   (1) $0 < R < 1\Omega$
   (2) $0 < R < 10\Omega$
   (3) $0 < R \leq 5\Omega$
   (4) $0 < R \leq 1\Omega$

28. Constant voltage can be obtained in a circuit when zener diode is

    (1) Forward biased within cut - in voltage   (2) Reverse biased after break - down voltage

    (3) Forward biased after cut - in voltage   (4) Reverse biased within break - down voltage

29. The output frequency of a single-phase, 50 Hz, half-wave rectifier is :

    (1) 50 Hz   (2) 25 Hz

    (3) 100 Hz   (4) zero Hz

30. Time delay and phase can be measured by using a

    (1) VTVM   (2) PMMC

    (3) Sphere gap   (4) CRO

31. Unity Current gain can be obtained in an amplifier

    (1) Common base configuration   (2) Common emitter configuration

    (3) Common collector configuration   (4) Common base & collector configurations

32. The binary equivalent of decimal number 752 is :

    (1) 1101110000   (2) 1011100000

    (3) 1011101000   (4) 1011110000

33. When both the inputs of a logic are same, the output is zero; otherwise output is one. This type of gate is called

    (1) NAND gate   (2) NOR gate

    (3) Exclusive OR gate   (3) Exclusive NOR gate

34. Pick the voltage controlled devices from the following :

    (1) MOSFET & GTO   (2) IGBT & SCR

    (3) SCR & GTO   (4) MOSFET & IGBT

35. The voltage across a SCR is found to be 68 V and the current is 0.01 mA. Now the device is :

    (1) Forward biased & turned-off   (2) Forward biased & turned - on

    (3) Reverse biased & turned - off   (4) Reverse biased & turned - on.

36. Cut - off region, negative resistance region and saturation region are regions in volt-amp. Characteristics of

    (1) UJT   (2) LASCR

    (3) TRIAC   (4) GTO

37. The possible output frequency of a 60 Hz cyclo-converter is :

    (1) 60 Hz   (2) $16\frac{2}{3}$ Hz

    (3) 20 Hz   (4) 25 Hz

38. The output voltage of a single - phase, 200 v semi - converter at a firing angle of 0^0 is

    (1) $400 / \pi$

    (2) $400 \sqrt{2} / \pi$

    (3) $200 / \sqrt{2} \pi$

    (4) $200 / \sqrt{2} / \pi$

39. In V/f control of induction motor above rated voltage, to increase the speed of motor, frequency is to be _____ and voltage is to be _____

    (1) Increased .... kept constant

    (2) decreased .... decreased

    (3) Increased .... increased

    (4) decreased .... kept constant

40. To increase the speed of a constant frequency chopper fed dc shunt motor

    (1) T_{ON} should be decreased

    (2) T_{OFF} should be decreased

    (3) Duty ratio should be decreased

    (4) Duty ratio should be constant

41. Choose the correct answer regarding pins of micro-controller 8051

    (1) pin 20 : ground, pin 50 : – 5V

    (2) pin 40 : ground, pin 20 : – 5V

    (3) pin 20 : ground, pin 40 : + 5V

    (4) pin 40 : ground, pin 20 : + 5V

42. A current of 10 A flows through a resistor of 100 ohms for 10 hrs. The energy consumed is

    (1) 10000 watt hrs

    (2) 1000 kW. hrs

    (2) 100 units

    (4) 100000 units

43. The value of internal resistance of an ideal voltage source is

    (1) Zero

    (2) Low Value

    (3) Very high

    (4) Infinity

44. The variation of voltage across a resistor and current flowing through it is a straight line

    (1) Intercepting y-axis

    (2) Parallel x - axis

    (3) Passing through origin

    (4) Intercepting x - axis

45. Three unequal resistors A, B and C are connected in delta. One of the equivalent star connected values is :

    (1) $BC / 3(A + B + C)$

    (2) $3BC / (A + B + C)$

    (3) $(AB + CA) / (A + B + C)$

    (4) $BC / (A + B + C)$

46. A drawn wire of resistance 5 Ω is further drawn so that its diameter becomes one fifth. Its resistance will be (Volume remaining same)

    (1) 625Ω

    (2) 3125Ω

    (3) 25Ω

    (4) 125Ω

47. Two resistances of 1 Ω each are connected first in series and then later in parallel. The ratio of equivalent series resistance to equivalent parallel resistance is

    (1) 4.0

    (2) 0.25

    (3) 1.0

    (4) 2.0

48. An inductor connected in series with a capacitor is fed from a variable frequency source. At lower frequencies, the net impedance is

    (1) Resistive
    (2) Capacitive
    (3) Inductive
    (4) Zero

49. A capacitor is to be constructed to take a potential difference of 1.25 kV with a dielectric mica of strength 50 MV/m. Find the thickness of mica

    (1) 0.025 mm
    (2) 0.025 cm
    (3) 0.04 mm
    (4) 0.04 cm

50. Choose the correct order of the following materials : Rubber, Brass, Germanium

    (1) Conductor, insulator, semi-conductor
    (2) Semi-conductor, insulator, conductor
    (3) Insulator, semi-conductor, conductor
    (4) Insulator, conductor, semi-conductor

51. KCL is a consequence of law of conservation of _____

    (1) Energy
    (2) Flux
    (3) Charge
    (4) Power

52. In delat connected circuit when one resistor is open, the power will be _____

    (1) Zero
    (2) Reduced to 1/3
    (3) Reduced by 1/3
    (4) Increased by 2/3

53. The energy stored in a choke is given by :

    (1) $\dfrac{1}{2} L^2 I$
    (2) $\dfrac{1}{2} L^2 I^2$
    (3) $0.5 \, LI^2$
    (4) $0.5 \, LI$

54. The number of parallel paths in wave winding and lap winding of two dc generators with 2 pair of poles each are :

    (1) 2 and 4 respectively
    (2) 4 and 2 respectively
    (3) 2 and 2 respectively
    (4) 4 and 4 respectively

55. In which of the following dc generators terminal voltage increase first and then decreases with load current

    (1) Under compound generator
    (2) Separately excited generator
    (3) Shunt generator
    (4) Series generator

56. If efficiency of a shunt generator is 84% at full - load, then the efficiency at half - load is

    (1) 84%
    (2) 42%
    (3) between 42% and 84%
    (4) greater than 84%

57. In which of the following dc motors of same output power rating, speed is lowest at rated torque

    (1) Compound motor
    (2) Separately excited motor
    (3) shunt motor
    (4) Series motor

58. During speed control of dc shunt motor, to increase the speed from minimum to rated value, the external resistance in series with

    (1) Field winding should be in maximum position at constant voltage
    (2) Field winding should be in minimum position at constant voltage
    (3) Armature winding should be in maximum position at constant flux
    (4) Armature winding should be in minimum position at constant flux

59. The variable losses in a dc series motor are :

    (1) Core losses & field losses
    (2) Copper losses & field losses
    (3) Stray losses & field losses
    (4) Copper losses & stray losses

60. In a 220 V. separately excited dc motor, the voltage drops due to armature reaction, armature resistance and brushes are 4V, 3 V and 2 V respectively. The back emf is :

    (1) 211 V
    (2) 229 V
    (3) 213 V
    (4) 215 V

61. Controlling torque in an indicating instrument can be created by

    (1) Elector - static effect
    (2) Air - friction
    (3) Gravity
    (4) Eddy current

62. A moving iron ammeter is connected in a circuit whose instantaneous value is given by : $i = 20 \sin (314t + 45^0)$. The meter reads

    (1) 20 Amps
    (2) $20 / \pi$ Amps
    (3) $20/ \sqrt{2}$ Amps
    (4) $20/8 \sqrt{3}$ Amps

63. Kelvin double bridge is used to measure

    (1) High resistance
    (2) Self-Inductance
    (3) Low resistance
    (4) Mutual inductance

64. Frequency can be measured by :

    (1) Schering bridge
    (2) Wein's bridge
    (3) Campbell bridge
    (4) Maxwell bridge

65. In current transformer, the ratio of rated primary winding current to rated secondary winding current is called

    (1) Transformation ratio
    (2) Turns ratio
    (3) Ratio correction factor
    (4) Nominal ratio

66. In which of the following digital voltmeters two voltages are compared

(1) Potentiometric type DVM   (2) Ramp type DVM

(3) Integrating type DVM   (4) Successive type DVM

67. Creep in energy meter is

(1) Slow running of disc at full load   (2) Fast running of disc at full loads

(3) Slow running of disc at No load   (4) Fast running of disc at No load

68. In single-phase ac R-L series circuit, voltage drop across the resistance _____ the voltage drop across inductor

(1) leads   (2) lags

(3) is in phase with   (4) is in anti-phase with

69. The maximum power consumed by a single-phase, variable frequency, R-L-C series circuit is 1000 W. At 3 dB frequencies, the power consumed is

(1) 707 W   (2) 333.3 W

(3) 1000 W   (4) 500 W

70. A circuit consists of L and C in parallel across a single-phase ac source. The angle between the currents in La and C is:

(1) 0^0 (2) 90^0

(3) 180^0 (4) 360^0

71. In delta connected 3-phase ac circuit

(1) phase voltage = $\sqrt{3}$ × line voltage   (2) phase current = $\sqrt{3}$ × line current

(3) phase voltage = line voltage   (4) phase current = line current

72. When power factor of a circuit is zero, then

(1) apparent power = active power   (2) apparent power = reactive power

(3) active power = reactive power   (4) reactive power = zero

73. In measurement of 3-phase power, when readings of two wattmeters are opposite sign, then the power factor is

(1) unity   (2) 0.5 leading

(3) 0.5 lagging   (4) zero

74. If nine 9 μF capacitors are connected in series, then the equivalent capacitance is

(1) 9 μF (2) 10 μF

(3) 1 μF (4) 81 μF

75. In a transformer, the primary _____ is equal to its corresponding secondary value

    (1) voltage   (2) current

    (3) power   (4) frequency

76. In case of a power transformer, the no-load current in terms of rated current is

    (1) 10 to 20%   (2) 2 to 6%

    (3) 15 to 30%   (4) 30 to 50%

77. The iron losses of a transformer at full-load is 160 W. At three-fourth full-load, the iron losses will be

    (1) 120 W   (2) 90 W

    (3) more than 160 W   (4) 160 W

78. The colour of transformer oil when it is filled in after filtration is

    (1) brown   (2) black

    (3) colour less   (4) pale yellow

79. For same kVA rating, an auto-transformer has _____ as compared to two-winding transformer

    (1) higher core losses   (2) lower efficiency

    (3) lower copper losses   (4) larger size

80. A 3-phase star-delta transformer has primary to secondary turn's ratio per phase of 5. For a primary line current of 10 A, the secondary line current would be

    (1) 50 A   (2) 86.6A

    (3) 3.464 A   (4) 150 A

81. The no-load and rated load voltages of a transformer are 220 V and 200 V respectively. The percentage voltage regulations is:

    (1) 8   (2) 10

    (3) –10   (4) –9

82. In a 6-pole ac machine, the mechanical angle is always equal to

    (1) $6 \times$ electrical angle   (2) $3 \times$ electrical angle

    (3) electrical angle/6   (4) electrical angle/3

83. In an alternator, if armature resistance is 1Ω and armature reactance and leakage reactance is 2Ω each, then synchronous impedance is

    (1) $\sqrt{17}\ \Omega$ (2) $\sqrt{5}\ \Omega$

    (3) $\sqrt{13}\ \Omega$ (4) 3Ω

84. Two alternators (A and B) are connected in parallel and when steam input of machine A is increased, then

(1) kVA (B) remain constant

(2) kW (A) decreases

(3) kVA (B) increases

(4) kW (A) increases

85. In synchronous motor if field current increases, then

(1) power factor increases and then decreases

(2) power factor decreases and then increases

(3) armature current increases and the decreases

(4) both power factor and armature current remain constant

86. A 3-phase, 6-pole synchronous motor runs at a speed of 900 rpm. The supply frequency is

(1) 50 Hz

(2) 45 Hz

(3) 30 Hz

(4) 33.3 Hz

87. As load on a synchronous motor increases

(1) speed increases

(2) speed decreases

(3) load angle increases

(4) load angle decreases

88. Maximum torque of a 3-phase squirrel cage induction motor occurs when

(1) slip = 0.5

(2) slip = 1.0

(3) $0 < $ slip < 0.5

(4) $0.5 > $ slip > 1.0

89. In 3 - phase slip-ring induction motor as external rotor resistance increases

(1) starting torque increases & speed decreases

(2) starting torque decreases & speed increases

(3) maximum torque increases & speed decreases

(4) maximum torque decreases & speed increases

90. A 3-phase, 50 Hz, 6 pole induction motor running at a speed of 980 rpm has a equivalent rotor resistance of 0.2 Ω per phase. The total per phase resistance on rotor side is

(1) 0.200Ω

(2) 10Ω

(3) 0.204Ω

(4) 100Ω

91. The rotor current frequency of 5% slip of a 3-phase induction motor is 3 Hz. The supply frequency is

(1) 50 Hz

(2) 15 Hz

(3) 60 Hz

(4) 45 Hz

92. In single-phase induction motor, the angle between two stator currents during starting is nearly:

    (1) 180^0

    (2) 90^0

    (3) 120^0

    (4) 45^0

93. An universal motor can be operated with

    (1) single-phase ac supply

    (2) dc supply

    (3) single-phase ac supply & dc supply

    (4) three - phase ac supply & dc supply

94. A pair of brushes are shorted in

    (1) uncompensated ac series motor

    (2) universal motor

    (3) compensated ac series motor

    (4) repulsion motor

95. In hydro-electric plants, for heads above 500 m _____ is used

    (1) francis turbine

    (2) pelton wheel

    (3) propeller turbine

    (4) kaplan turbine

96. In thermal power station, flue gases flow to the chimney through

    (1) economizer, air pre-heater & induced draught fan

    (2) economizer, re-heater & induced draught fan

    (3) air pre-heater, forced draught fan & induced draught fan

    (4) air pre-heater, re-heater & induced draught fan

97. Diversity factor is defined as:

    (1) max. load on the station/sum of consumer's max. demands

    (2) sum of consumer's average demands/max. load on the station

    (3) sum of consumer's max. demands/average load on the station

    (4) sum of consumer's max. demands/max. load on the station

98. The maximum demand and average demand on a steam power plant are 500 MW and 250 MW respectively. If the connected load is 750 MW, the demand factor is:

    (1) 1/3

    (2) 2/3

    (3) 1/2

    (4) 1

99. The tariff named kVA maximum demand tariff belong to the main category of

    (1) maximum demand tariff

    (2) power factor tariff

    (3) block rate tariff

    (4) two part tariff

100. Choose one of the following fuse metals having highest melting point

    (1) copper

    (2) silver

    (3) aluminium

    (4) zinc

KEY

1) 3	2) 4	3) 1	4) 3	5) 2	6) 2	7) 3	8) 4	9) 3	10) 1
11) 3	12) 2	13) 1	14) 4	15) 3	16) 2	17) 4	18) 3	19) 4	20) 4
21) 1	22) 3	23) 2	24) 2	25) 3	26) 2	27) 1	28) 2	29) 1	30) 4
31) 1	32) 4	33) 3	34) 4	35) 1	36) 1	37) 3	38) 4	39) 1	40) 2
41) 3	42) 3	43) 1	44) 3	45) 4	46) 2	47) 1	48) 2	49) 1	50) 4
51) 3	52) 3	53) 3	54) 1	55) 4	56) 3	57) 4	58) 3	59) 2	60) 1
61) 3	62) 3	63) 3	64) 2	65) 4	66) 1	67) 3	68) 2	69) 4	70) 3
71) 3	72) 2	73) 4	74) 3	75) 3	76) 2	77) 4	78) 4	79) 3	80) 2
81) 2	82) 4	83) 2	84) 4	85) 1	86) 2	87) 3	88) 4	89) 1	90) 2
91) 3	92) 2	93) 3	94) 4	95) 2	96) 3	97) 4	98) 2	99) 2	100) 2