501 MCQ Questions on Transformer

1. In a 3-phase power transformer, 5-limbed construction is adopted to

(a) suppress the 5th and 7th harmonics.

(b) suppress the 3rd and its multiple harmonics.

(c) suppress all the orders of harmonics.

(d) increase the capacity of the transformer.

Answer: (a) suppress the 5th and 7th harmonics.

2. Consider the following statements: The use of Delta-connected tertiary windings in star-star connected power transformers

1. makes available supply for single-phase loads.

2. suppresses harmonic voltages.

3. allows flow of earth fault current for operation of protective devices.

4. provides low-reactance paths for zero-sequence currents.

Of the statements are correct:

(a) 1, 2 and 3 are correct

(b) 1, 3 and 4 are correct

(c) 2 and 4 are correct

(d) 1, 2, 3 and 4 are correct

Answer: (d) 1, 2, 3 and 4 are correct

3. If the height to width ratio of the window of core-type transformer is increased, then

(a) its leakage reactance and percentage voltage regulation will decrease.

(b) its leakage reactance will decrease and percentage voltage regulation will increase.

(c) its leakage reactance will be unaffected but total space in the window will increase to accommodate the windings better.

(d) efficiency will increase and temperature rise will decrease.

Answer: (a) its leakage reactance and percentage voltage regulation will decrease.

4. A 220/110V, 50 Hz single-phase transformer having a negligible winding resistances operates from a variable voltage, variable frequency supply such that V_1/f (V_1 = primary applied voltage, f = source frequency) is constant. This will bringing the given range of frequencies,

(a) variation in both eddy current loss and hysteresis loss.

(b) variation only in the eddy current loss, hysteresis loss remaining constant.

(c) variation only in the hysteresis loss, eddy current loss remaining constant.

(d) no change either in the eddy current loss or the hysteresis loss.

Answer: (a) variation in both eddy current loss and hysteresis loss.

5. A 3-phase Y/Δ transformer has per phase turn ratio 'K' and line voltage ratio K_1. If the voltage of Δ winding lags the voltage of Y winding by an angle ϕ then K, K_1, and are related as

(a) $K_1 = K$ and $\phi = -30°$

(b) $K_1 = K/\sqrt{3}$ and $\phi = -30°$

(c) $K_1 = \sqrt{3}K$ and $\phi = -30°$

(d) $K_1 = K$ and $\phi = 30°$

Answer: (c) $K1 = \sqrt{3}K$ and $\phi = -30°$

6. Two transformers X and Y with identical ratings and dimensions have 0.8 mm and 1.2 mm thick laminations respectively. If R_m and X_m are the magnetizing branch parameters in the equivalent circuit, then

(a) R_m values in both are likely to be equal, but X_m of X is likely to be higher than X_m of Y.

(b) X_m values in both are likely to be equal, but R_m of X is likely to be higher than R_m of Y.

(c) X_m values in both are likely to be equal, but R_m of X is likely to be lower than R of Y.

(d) R_m values in both are likely to be equal, but X_m of X is likely to be lower than X_m of Y.

Answer: (b) X_m values in both are likely to be equal, but R_m of X is likely to be higher than R_m of Y.

7. Hysteresis loss of a transformer designed at voltage 'V' and frequency 'f' is P_h If the transformer is operated from a voltage 'xV' and frequency 'xf' the hysteresis loss for a Steinmetz constant of will be

(a) x^2P_h

(b) xP_h

(c) P_h

(d) x^3P_h

Answer: (b) xP_h

8. Two magnetic materials. A and B have their electrical conductivities in the ratio 4 : 9. Eddy current losses in the materials A and B are in the ratio

(a) 2 : 3

(c) 9 : 4

(b) 3 : 2

(d) 4 : 9

Answer: (d) 4 : 9

9. For a distribution sub-station power transformer, operating at normal voltage and frequency, and with usual 24-hour urban domestic load-cycle, let the commercial efficiency be η_c and the all-day efficiency be η_a, Under the operating conditions stated above, which one of the following is correct?

(a) $\eta_c = \eta_a$

(b) $\eta_c > \eta_a$

(c) $\eta_c < \eta_a$

(d) η_c and η_a can not be compared, as they have different units

Answer: (b) $\eta_c > \eta_a$

10. Consider the following statements concerning the ferromagnetic materials :

1. There are easy and hard magnetization directions in the ferromagnetic Crystal.

2. Eddy current losses are smaller for materials having low electrical conductivity values.

3. All ferromagnetic materials can be used at high frequencies.

Which of the statements given above are correct?

(a) 1, 2 and 3

(c) 2 and 3

(b) 1 and 2

(d) 1 and 3

Answer: (b) 1 and 2

11. Two transformers with identical voltage ratings are working in parallel to supply a common load. The percentage impedance of one transformer higher compared to that of the other. The load sharing between the two transformers will

(a) be proportionate to their percentage impedances.

(b) be independent of their percentage impedances.

(c) be inversely proportional to their respective impedances.

(d) depend on the resistance to leakage reactance ratio of each transformer.

Answer: (c) be inversely proportional to their respective impedances.

12. Consider the following statements: In a transformer, an iron core is used to

1. Increase the useful flux.

2. Reduce the leakage flux.

3. Reduce the useful flux.

Which of the above is/are correct?

(a) 2 only

(b) 1 and 2

(c) 2 and 3

(d) 3 only

Answer: (b) 1 and 2

13. Three single-phase transformers, each of 100 KVA rating are connected in delta, if one of the transformers is taken out of service, the capacity of the system will be

(a) 200 kVA

(b) 173.2 kVA

(c) 115.5 kVA

(d) 36.6 kVA

Answer: (b) 173.2 kVA

14. Three units of 1 : 5 transformers are connected in Δ -Y to supply a 3-phase load from a 400 V 3-phase source. The line voltage on the load side is

(a) 1000V

(c) 3464 V

(b) 80V

(d) 803 V

Answer: (c) 3464 V

15. A 15 MVA, 33/11 kV, 3-phase transformer having an impedance of 16 on the high tension side is supplied from a generator rated 30 MVA, 11 kV. The p.u. impedance of the transformer calculated on its own base and on the generator base will be in the ratio

(a) 1 : 1

(c) 1 : 9

(b) 1 : 3

(d) 1 : 18

Answer: (d) 1 : 18

16. The full-load, copper loss of a transformer is twice its core loss. At what percent of the full-load, will the efficiency be maximum?

(a) 25%

(b) 50%

(c) 70.7%

(d) 141 %

Answer: (c) 70.7%

17. Three single-phase transformers with turn ratio 1 : 10 are connected in delta-star to supply a 3-phase load. The supply voltage is 400 V (line to line). The line voltage on the load side is

(a) 400V

(b) 400 √3 V

(c) 4000V

(d) 4000 √3 V

Answer: (d) 4000 √3 V

18. Which of the following statements are incorrect?

1. Maximum voltage regulation of transformer occurs at leading power factor.

2. Voltage regulation of a transformer is the maximum when load power factor (lagging) angle has the same value as the angle of equivalent impedance.

3. Voltage regulation of a transformer at leading power factor is always zero.

4. Voltage regulation of a transformer can be negative at leading power factor.

Select the correct answer using the codes given below:

(a) 1 and 3

(c) 2 and 4

(b) 2 and 3

(d) 1 and 4

Answer: (a) 1 and 3

19. Two 3-phase transformers are connected to the same supply of balanced 3-phase voltages on the primary side. The first transformer is connected in Yd1 on the second in Dy11. The phase difference between the line-to-line voltages of the corresponding phases on the secondary sides of the two transformers of

(a) 0°

(c) 60°

(b) 30°

(d) 90°

Answer: (c) 60°

20. The leakage flux in a transformer depends upon the

(a) Applied voltage

(b) Frequency

(c) Load current

(d) Mutual flux

Answer: (c) Load current

21. The voltage regulation of a large transformer is mainly influenced by

(a) no-load current and load power factor.

(b) winding resistances and load power factor.

(c) leakage fluxes and load power factor.

(d) winding resistances and core loss.

Answer: (c) leakage fluxes and load power factor.

22. A bank of three identical singe-phase 250 kVA, 11 kV/230 V transformers is used to provide 400 V low tension supply from a 11 kV, 3-phase sub-station. The effective kVA rating of the bank will be

(a) 250

(c) 500

(b) 250 √3

(d) 750

Answer: (d) 750

23. A transformer designed for operation on 60 Hz supply is worked on 50 Hz supply system without changing its voltage and current ratings. When compared with full load efficiency at 60 Hz, the transformer efficiency on full load at 50 Hz will

(a) Increase marginally

(b) Increase by a factor of 1.2

(c) Remain unaltered

(d) Decrease marginally

Answer: (d) Decrease marginally

24. A transformer has a core loss of 200W and a full load copper loss of 800W. The maximum efficiency of the transformer will occur at

(a) 0.5 times full load current

(b) 0.6 times full load current

(c) 0.7 times full load current

(d) 0.8 times full load current

Answer: (a) 0.5 times full load current

25. In a transformer P_i; is iron loss at rated voltage and P_c. is full load copper loss. If the maximum efficiency occurs at 75% of full load, then which one of the following is correct?

(a) $P_i = P_c$

(b) $3P_i/4 = P_c$

(c) $P_i = 9P_c/16$

(d) $P_i = 16P_c/9$

Answer: (c) $P_i = 9P_c/16$

26. An open circuit test was done on a transformer with rated voltage at rated frequency. If the open circuit test is now done on the transformer with double the rated voltage with double the rated frequency, then which one of the following is correct?

(a) Both current and power factor increase.

(b) Both current and power factor decrease.

(c) Current decreases but power factor increases.

(d) Current increases but power factor decreases.

Answer: (d) Current increases but power factor decreases.

27. The main purpose of the conservator in a (Driving system) transformer is to

(a) store extra oil to compensate for the loss of oil due to leakage.

(b) achieve better cooling of the transformer.

(c) take up the expansion of oil due to heating.

(d) have the Bucholtz relay fitted.

Answer: (c) take up the expansion of oil due to heating.

28. Which one of the following can be obtained by the equivalent circuit of an electrical machine?

(a) Temperature rise in the cores.

(b) Complete performance characteristic of the machine.

(c) Type of protection used in the machine

(d) Design parameters of the windings.

Answer: (b) Complete performance characteristic of the machine.

29. Which one of the following statements regarding a transformer is correct?

(a) In transformers, a laminated core is used to reduce copper losses.

(b) Core losses in a transformer can be determined by open-circuit test.

(c) Short-circuit test is conducted on a transformer to determine constant losses.

(d) In a shell type transformer the primary and secondary windings are wound on separate limbs.

Answer: (b) Core losses in a transformer can be determined by open-circuit test.

30. A 300 kVA transformer has 95% efficiency at full load, 0.8 pf lagging and 96% efficiency at half load, unity pf. The iron loss W_i; and copper loss W_{cu} in kW, under full-load operation are

(a) 4.12, 8.51

(b) 6.59, 9.21

(c) 8.51, 4.12

(d) 12.72, 307

Answer: (a) 4.12, 8.51

31. A single-phase transformer has a maximum efficiency of 90% at full load and unity power factor. Efficiency at half load at the same power factor is

(a) 87.7%

(b) 88.26%

(c) 95%

(d) 96%

Answer: (a) 87.7%

32. The percentage resistance and percentage reactance of a 10 kVA, 400 V/200 V, single- phase transformer are 3% and 6%. The transformer is supplying a current of 50 A to a resistive load. The value of the voltage across the load is

(a) 194 V

(b) 198 V

(c) 192 V

(d) 196 V

Answer: (a) 194 V

33. The efficiency of a 100 kVA transformer is 0.98 at full as well as at half load. For this transformer at full load, the copper loss

(a) is less than core loss.

(b) is equal to core loss.

(c) is more than core loss.

(d) none of the above.

Answer: (c) is more than core loss.

34. The low-voltage winding of a 400 V/230 V, 1 phase, 50 Hz transformer is to be connected to a 25 Hz supply. In order to keep the magnetisation current at the same level as that for normal 50 Hz supply, at 25 Hz supply the supply voltage should be

(a) 230 V

(b) 460 V

(c) 115 V

(d) 65 V

Answer: (c) 115 V

35. A voltage V = 400 sin 314.16t is applied to a 1- phase transformer on no-load. If the no-load current of the transformer is 2 sin (314.16 t - 85°), the magnetisation branch impedance will be approximately equal to

(a) 141∠90°

(b) 200∠-85°

(c) 200∠85°

(d) 282∠-80°

Answer: (c) 200∠85°

36. The equivalent resistance of the primary of a transformer having K = 5 and R_1 = 0.1Ω, when referred to secondary becomes ……. ohms.

(a) 0.5

(b) 0.02

(c) 0.004

(d) 2.5

Answer: (d) 2.5

37. It is desired to measure parameters of 230 V/ 115 V, 2 kVA single-phase transformer. The following wattmeters are available in a laboratory:

W1 250 V, 10 A, Low power factor

W2 250 V, 5 A, Low power factor

W3 150, 10 A, High power factor

W4 150 V, 5 A, High power factor

The wattmeters used in open-circuit test and short-circuit test of the transformer will respectively be

(a) W1 and W2

(b) W2 and W4

(c) W1, and W4

(d) W2 and W3

Answer: (d) W2 and W3

38. In a transformer, the primary and the secondary voltages are

(a) 60° out of phase

(b) 90° out of phase

(c) 180° out of phase

(d) Always in phase

Answer: (c) 180° out of phase

39. The dielectric strength of transformer oil is expected to be

(a) 1 kV (b) 33 kV

(c) 100 kV (d) 330 kV

Answer: (b) 33 kV

40. In the transformer following winding has got more cross-sectional area

(a) Low voltage winding

(b) High voltage winding

(c) Primary winding

(d) Secondary winding

Answer: (a) Low voltage winding

41. A transformer cannot raise or lower the voltage of a D.C. supply because

(a) there is no need to change the d.c. voltage.

(b) a d.c. circuit has more losses.

(c) faraday's laws of electromagnetic induction are not valid since the rate of change of flux is zero.

(d) none of the above.

Answer: (c) faraday's laws of electromagnetic induction are not valid since the rate of change of flux is zero.

42. Spacers are provided between adjacent coils

(a) to provide free passage to the cooling oil.

(b) to insulate the coils from each other.

(c) both (a) and (b).

(d) none of the above.

Answer: (a) to provide free passage to the cooling oil.

43. If R_2 is the resistance of secondary winding of the transformer and K is the transformation ratio then the equivalent secondary resistance referred to primary will be

(a) $R_2/\sqrt{K}$

(b) R_2/K^2

(c) R_2^2/K^2

(d) R_2^2/K

Answer: (b) R_2/K^2

44. The use of higher flux density in the transformer design

(a) reduces weight per kVA.

(b) reduces iron losses.

(c) reduces copper losses.

(d) increase part load efficiency.

Answer: (a) reduces weight per kVA.

45. The chemical used in breather is

(a) asbestos fibre

(b) silica sand

(c) sodium chloride

(d) silica gel

Answer: (d) silica gel

46. Star/star transformers work satisfactorily when

(a) load is unbalanced only.

(b) load is balanced only.

(c) on balanced as well as unbalanced loads.

(d) none of the above.

Answer: (b) load is balanced only.

47. During open circuit test of a transformer

(a) primary is supplied rated voltage.

(b) primary is supplied full-load current.

(c) primary is supplied current at reduced voltage.

(d) primary is supplied rated kVA.

Answer: (a) primary is supplied rated voltage.

48. The size of a transformer core will depend on

(a) frequency.

(b) area of the core.

(c) flux density of the core material.

(d) both (a) and (c).

Answer: (d) both (a) and (c).

49. Minimum voltage regulation occurs in transformer when the power factor of the load is

(a) unity

(b) lagging

(c) leading

(d) zero

Answer: (c) leading

50. A pole pitch in electrical machine is:

(a) equal to 180° electrical

(b) equal to 180° mechanical

(c) less than 180° electrical

(d) greater than 180° electrical [DMRC JE-2016]

Answer: (a) equal to 180° electrical

51. Which of the following are constant losses in transformers?

(a) Winding losses

(b) Core losses

(c) Both Winding & core losses

(d) None of these [DMRC JE-2016]

Answer: (b) Core losses

52. Two transformers with identical voltage ratings are working in parallel to supply common load. The percentage impedance of one transformer is higher compared to that of other. The load sharing between the two transformer will:

(a) be proportional to their percentage impedance.

(b) be independent of their percentage impedance.

(c) be inversely proportional to their respective impedance.

(d) depend on the resistance to leakage reactance ratio of each transformer. [DMRC JE-2016]

Answer: (c) be inversely proportional to their respective impedance.

53. When two transformer of different kVA rating are connected in parallel they share the load in proportion to their respective kVA rating only when their

(a) kVA rating are identical.

(b) efficiencies are equal.

(c) pu impedance are equal.

(d) equivalent impedance are equal. [DMRC JE-2016]

Answer: (c) pu impedance are equal.

54. Hysteresis loss in a transformer depends upon

(a) frequency.

(b) supply voltage.

(c) square of the frequency alone.

(d) square of the voltage alone. [DMRC JE-2016]

Answer: (a) frequency.

55. Which of the following is determined by the turns ratio?

(a) Ratio of primary and secondary voltages .

(b) Ratio of primary and secondary currents.

(c) Both (a) and (b).

(d) None of these.

Answer: (c) Both (a) and (b).

56. The turns ratio of a step down transformer is

(a) equal to one.

(b) less than 1.

(c) more than 1.

(d) more than that of the step-up transformer.

Answer: (c) more than 1.

57. Which of the following is true with a transformer?

(a) The same transformer can be used as a step up or step down.

(b) The primary winding and the secondary winding are connected through a central tap.

(c) Both (a) and (b)

(d) None of these.

Answer: (a) The same transformer can be used as a step up or step down.

58. Which of the following is true with transformers?

(a) They work on the principle of induction.

(b) The voltage can be either stepped-up or stepped down.

(c) Both (a) and (b)

(d) None of these.

Answer: (c) Both (a) and (b)

59. What is the secondary power of a transformer having a 2 : 1 voltage ratio, if the primary power is 200 W?

(a) 400 W

(c) 200 W

(b) 100 W

(d) None of these

Answer: (c) 200 W

60. A transformer with 1 : 1 turns ratio is called

(a) isolation transformer.

(b) equitable transformer.

(c) isotopic transformer.

(d) none of these.

Answer: (a) isolation transformer.

61. Which of the following is true in a Y-Y configuration?

(a) The phase current, line current and load current are equal in each phase.

(b) The phase current and line current are equal and load current is double of line current.

(c) The phase current double of line current but, load current and line current are equal.

(d) None of these.

Answer: (a) The phase current, line current and load current are equal in each phase.

62. Which of the following statements is true about the windings of a transformer? [UPPCL JE 2014]

(a) Windings are conductively linked.

(b) Windings are inductively linked.

(c) Windings are not linked at all.

(d) Windings are electrically linked.

Answer: (b) Windings are inductively linked.

63. Five limb core construction is preferred over three limb construction because in this type of construction

(a) hysteresis loss is reduced.

(b) eddy current loss is reduced.

(c) magnetic reluctance of the three phases can be balanced.

(d) copper losses can be reduced. [RRB SSE 2015]

Answer: (c) magnetic reluctance of the three phases can be balanced.

64. The principle of mutual induction is applied in case of

(a) Alternator

(b) Synchronous motor

(c) Wattmeter

(d) Transformer [UPPCL JE 2014]

Answer: (d) Transformer

65. Which of the following is not a type of construction used for single phase transformer? [UPPCL JE 2014]

(a) Core type

(b) Shell type

(c) Berry type

(d) Roof type

Answer: (d) Roof type

66. If in a transformer, 'P_m' denotes the maximum value of the flux, 'f' is the frequency of the supply voltage, 'N_1,' is number of primary winding turns, 'E_1 is RMS value of the primary induced emf, then one of the equations of the transformer would be:

(a) $E_1 = 4.44\ fP_mN_1$

(b) $E_1 = 2.35\ fP_mN_1$

(c) $E_1 = 1.23\ fP_mN_1$

(d) $E_1 = 7.8\ fP_mN_1$

Answer: (a) $E_1 = 4.44\ fP_mN_1$

67. An ideal transformer has

(a) very high losses.

(c) moderate losses.

(b) very low losses.

(d) no losses. [UPPCL JE 2014]

Answer: (d) no losses.

68. The no-load current of a transformer is 20A at a power factor of 0.20 lagging, when connected to 400 V, 50 Hz supply. Calculate the magnetizing component of no-load current. [UPPCL JE 2014]

(a) 13.4 A

(b) 16.8 A

(c) 19.6 A

(d) 18.2 A

Answer: (c) 19.6 A

69. Which of the following statement/s is/are true?

I. DC supply cannot be used for transformers.

II. The transformer works on the principle of mutual induction.

Choose the correct answer from the options given below.

(a) Only I

(b) Both I and II

(c) Only II

(d) Neither I nor II [UPPCL JE 2014]

Answer: (b) Both I and II

70. On which of the following do the eddy current losses depend? [UPPCL JE 2014]

I. Nature of the material

II. Maximum flux density

III. Frequency

Choose the correct answer from the options given below.

(a) I, II and III

(b) II and III

(c) I and II

(d) I and III

Answer: (a) I, II and III

71. Hysteresis loss is …… proportional to the area under the hysteresis curve. Also, it is ……. proportional to the number of cycles of magnetization per second. [UPPCL JE - 2014]

(a) directly, inversely

(b) inversely, directly

(c) directly, directly

(d) inversely, inversely

Answer: (c) directly, directly

72. A 2000/200 V, 20 kVA transformer has 66 turns in the secondary. The number of primary turns are

(a) 660

(b) 440

(c) 770

(d) 330

Answer: (a) 660

73. Open circuit test on a transformer gives:

(a) total loss.

(b) insulation resistance.

(c) core loss.

(d) cu loss.

Answer: (c) core loss.

74. High silicon content steel is used for transformer core construction, to

(a) improve cooling of core and yoke.

(b) reduce hysteresis loss.

(c) reduce eddy current loss.

(d) reduce weight of steel.

Answer: (c) reduce eddy current loss.

75. A magnetizing force of 800 AT/m will produce a flux density of ……. in air. [NMRC JE-2017]

(a) 0.5 Wb/m^2

(b) 1 Wb/m^2

(c) 10 mWb/m^2

(d) 1 mWb/m^2

Answer: (d) 1 mWb/m2

76. The rating of transformers is expressed in

(a) kVA

(c) HP

(b) kW

(d) kWh

Answer: (a) kVA

77. The voltage regulation of a transformer at full load 0.9 p.f. lagging is 5%. For a full load at 0.9 p.f. leading, it will

(a) remain the same.

(b) become negative.

(c) reduce and may even become negative.

(d) increase.

Answer: (c) reduce and may even become negative.

78. Transformer core is laminated in order to

(a) decrease copper losses.

(b) decrease entire core losses.

(c) decrease only eddy current losses.

(d) decrease only hysteresis losses.

Answer: (c) decrease only eddy current losses.

79. To conduct Sumpners test on a transformer

(a) only one transformer is sufficient.

(b) two identical transformers are needed.

(c) two un-identical transformers are needed.

(d) at least three transformers are necessary.

Answer: (b) two identical transformers are needed.

80. Iron loss of a transformer can be measured by

(a) low power factor wattmeter.

(b) unity power factor wattmeter.

(c) frequency meter.

(d) any type of wattmeter.

Answer: (a) low power factor wattmeter.

81. Distribution transformers have core losses

(a) more than full load copper losses.

(b) equal to full load copper losses.

(c) less than full load copper losses.

(d) negligible compared to full load copper losses.

Answer: (c) less than full load copper losses.

82. The minus sign in the expression, $e = -N d\varphi/dt$ is due to:

(a) Fleming's rule

(b) Thumb's rule

(c) Faraday's law

(d) Lenz's law

Answer: (d) Lenz's law

83. The following statements associated with Buchholtz relays is not true.

(a) It is a gas actuated device.

(b) It is a current operative device.

(c) It is placed between the transformer tank and the conservator.

(d) It causes alarm for minor fault and tripping for major fault.

Answer: (b) It is a current operative device.

84. Which of the following combination of 3-phase transformers can be successfully operated in parallel?

(a) Δ-Y and Δ-Y

(b) Y-Y and Δ-Y

(c) Δ -Δ and Δ-Y

(d) Y-Δ and Δ-Δ

Answer: (a) Δ-Y and Δ-Y

85. Three phase step-up transformer installed at power house, just before commencement of transmission line, have

(a) DELTA-DELTA connection.

(b) STAR-STAR connections.

(c) STAR-DELTA connections.

(d) DELTA-STAR connections.

Answer: (d) DELTA-STAR connections.

86. Hysteresis loss in a transformer depends upon

(a) both voltage and frequency.

(b) voltage alone.

(c) frequency alone.

(d) none of these.

Answer: (a) both voltage and frequency.

87. During a short-circuit test, the iron losses are negligible, because

(a) mutual flux is small.

(b) current is high.

(c) power factor is low.

(d) none of these.

Answer: (a) mutual flux is small.

88. A transformer has maximum efficiency at 3/4 full load. The ratio of its iron losses and full load copper loss is

(a) 16/9

(b) 4/3

(c) 3/4

(d) 9/16

Answer: (d) 9/16

89. Which two values are plotted on a B-H curve graph?

(a) Reluctance and flux density

(b) Permeability and reluctance

(c) Magnetizing force and permeability

(d) Flux density and magnetizing force

Answer: (d) Flux density and magnetizing force

90. What kVA rating is required for a transformer that must handle a maximum load current of 8 A with a secondary voltage of 2 kV?

(a) 4 kVA

(b) 0.25 kVA

(c) 16 kVA

(d) 8 kVA

Answer: (c) 16 kVA

91. The hysteresis cycle for the material of a transformer is

(a) tall and narrow.

(b) tall and wide.

(c) short and narrow.

(d) short and wide.

Answer: (a) tall and narrow.

92. Which of the following transformers is smallest?

(a) 1 kVA, 50 Hz

(b) 1 kVA, 200 Hz

(c) 1 kVA, 400 Hz

(d) 1 kVA, 600 Hz

Answer: (d) 1 kVA, 600 Hz

93. In a 3-φ transformer Δ-connected, one of the phase has burnt up, then it works with

(a) zero output

(b) rated output

(c) 60% of its rated output

(d) 86.6% of its rated output

Answer: (c) 60% of its rated output

94. The magnetizing current in a transformer is rich in

(a) 3rd harmonic

(b) 5th harmonic

(c) 7th harmonic

(d) 8th harmonic

Answer: (a) 3rd harmonic

95. Varnishes protect the insulating materials against

(a) dust and oil.

(b) moisture, dirt and oil.

(c) moisture and fire hazards.

(d) none of the above. [UPPCL JE - 2007]

Answer: (b) moisture, dirt and oil.

96. A transformer having 1000 turns in primary winding is connected to a single phase 250 V a.c. supply. For inducing 400 V in secondary winding, the number of turns in secondary winding must be

(a) 1600

(b) 1250

(c) 400

(d) 250 [UPPCL JE 2007]

Answer: (a) 1600

97. A 10 kVA, 220 V/220 V, 50 Hz transformer shows 340 W in short circuit test and 168 W in open circuit test. Its efficiency at full load and 0.8 power factor lagging is approximately

(a) 92%

(b) 94%

(c) 96%

(d) 98% [UPPCL JE 2007]

Answer: (b) 94%

98. At light load, efficiency of a transformer is low. It is because

(a) copper loss is small.

(b) copper loss is high.

(c) secondary output is low.

(d) fixed loss is high with respect to output.

Answer: (d) fixed loss is high with respect to output.

99. The essential condition for parallel operation of two single phase transformers is that they should have the same

(a) polarity

(b) kVA rating

(c) voltage ratio

(d) percentage impedance [UPPCL JE 2007]

Answer: (a) polarity

100. A transformer transforms

(a) frequency only .

(b) voltage only.

(c) current only.

(d) voltage and current. [UPPCL JE 2007]

Answer: (d) voltage and current.

101. A transformer has negative voltage regulation when its load power factor is

(a) zero.

(b) leading.

(c) unity.

(d) lagging.

Answer: (b) leading.

102. The no load current in a transformer lags the supply voltage by

(a) 0°

(b) 90°

(c) 110°

(d) about 75° [UPPCL JE 2007]

Answer: (d) about 75°

103. The heat run test of a transformer without its loading is performed by means of

(a) short circuit test.

(b) open circuit test.

(c) half time short circuit test and half time open circuit test.

(d) Sumpner's test. [UPPCL JE 2007]

Answer: (d) Sumpner's test.

104. Distribution transformers must be designed to have maximum efficiency at

(a) full load.

(b) no load.

(c) about 90% of the full load.

(d) about 50% of the full load. [UPPCL JE 2016]

Answer: (d) about 50% of the full load.

105. In transformer, occurrence of dimensional changes both perpendicular and parallel to the direction of magnetisation is referred to as

(a) damping

(b) magnetostriction

(c) coupling

(d) oscillation [UPPCL JE 2016]

Answer: (b) magnetostriction

106. Open circuit test on a transformer is used to find

(a) no load current.

(b) full load copper loss.

(c) equivalent resistance referred to metering side.

(d) equivalent resistance referred to metering side and no load current both.

Answer: (a) no load current.

107. Which of the following part of a transformer consists of a small vessel which contains a drying agent?

(a) Conservator

(b) Breather

(c) Oil tank

(d) Windings

Answer: (b) Breather

108. If the reciprocal of transformation ratio of a transformer is 11. The ratio of current in the secondary to primary is

(a) 1/11

(b) 11

(c) 11/2

(d) 2/11

Answer: (b) 11

109. The voltage regulation of a transformer having 4% resistance and 5% reactance at full load, 0.8 pf lagging is:

(a) 4.60%

(b) -4.6%

(c) -6.2%

(d) 6.20%

Answer: (d) 6.20%

110. A 2 kVA transformer has iron-loss of 100 W and full load copper loss of 200 W. The full load efficiency at unity power factor will be

(a) 90.90%

(b) 85.60%

(c) 80.60%

(d) 86.95%

Answer: (d) 86.95%

111. Two transformers are connected in parallel. These transformers do not have equal percentage impedance which results

(a) short-circuiting of the secondaries.

(b) power factor of one of the transformers is leading while that of the other lagging.

(c) transformers having higher copper losses will have negligible core losses.

(d) loading of the transformers not in proportional to their kva ratings.

Answer: (d) loading of the transformers not in proportional to their kva ratings.

112. The function of oil in a transformer is to provide

(a) insulation and cooling.

(b) protection against lighting.

(c) protection against short circuit.

(d) lubrication.

Answer: (a) insulation and cooling.

113. The transformer laminations are insulated from each other by:

(a) mica strip.

(b) thin coat of varnish.

(c) paper.

(d) copper sheets.

Answer: (b) thin coat of varnish.

114. Eddy current loss in a transformer is proportional to:

(a) frequency.

(b) supply voltage.

(c) square of the frequency.

(d) square of the voltage.

Answer: (c) square of the frequency.

115. What does the Eddy current loss depend on? [UPPCL JE 2018]

(a) Flux density

(b) Frequency

(c) Thickness

(d) All of these

Answer: (d) All of these

116. A 20,000 KVA transformer with 10% reactance will have a reactance of ……. at 10,000 kVA base.

(a) 10%

(b) 20%

(c) 15%

(d) 5%

Answer: (d) 5%

117. What can we reduce by using thin laminations in a machine? [UPPCL JE 2018]

(a) Hysteresis losses

(b) Iron losses

(c) Eddy current losses

(d) Copper losses

Answer: (c) Eddy current losses

118. Which law states that an e.m.f is induced in a conductor whenever it cuts the flux?

(a) Gauss's law for magnetism

(b) Lenz's law of electromagnetic induction

(c) Faraday's law of electromagnetic induction

(d) Lorentz force law

Answer: (c) Faraday's law of electromagnetic induction

119. A property of a transformer which makes it ideal is.

(a) CRGO core for its primary and secondary windings

(b) No losses and magnetic leakage

(c) Interleaved primary and secondary windings

(d) None of these [UPPCL JE 2018]

Answer: (b) No losses and magnetic leakage

120. Reason for using silicon steel in electrical machines?

(a) High retentivity

(b) High coercivity

(c) Low hysteresis loss

(d) Low coercivity [UPPCL JE 2018]

Answer: (c) Low hysteresis loss

121. A 25 kVA, 3300 /230 V, single phase transformer has iron and copper losses of 350 W and 400 W. The efficiency at 0.8 p.f is .....

(a) 96.39%

(b) 97.09%

(c) 98.43%

(d) 98.04%

Answer: (a) 96.39%

122. To minimise loss due to hysteresis, the magnetic material should have?

(a) High resistivity

(b) High retentivity

(c) Low hysteresis coefficient

(d) Large B-H loop area [UPPCL JE - 2018]

Answer: (c) Low hysteresis coefficient

123. The most common method of cooling employed in power transformer is:

(a) oil natural.

(b) natural cooling.

(c) air cooling.

(d) air-blast cooling. [RRB SSE - 2015]

Answer: (a) oil natural.

124. Laminations of core are generally made of

(a) case iron

(b) carbon

(c) silicon steel

(d) stainless steel

Answer: (c) silicon steel

125. In a transformer the primary to secondary energy is conveyed from

(a) through cooling coil.

(b) through air.

(c) by the flux.

(d) none of the above.

Answer: (c) by the flux.

126. A transformer core is laminated to

(a) reduce hysteresis loss.

(b) reduce eddy current losses.

(c) reduce copper losses.

(d) reduce all above losses.

Answer: (b) reduce eddy current losses.

127. Major insulation in a transformer is the insulation between the

(a) LV winding and core.

(b) LV winding and HV winding.

(c) turns of the windings.

(d) Both (a) and (b) [RRB SSE - 2015]

Answer: (d) Both (a) and (b)

128. Delta/star transformer works satisfactorily when

(a) load is balanced only.

(b) load is unbalanced only.

(c) on balanced as well as unbalanced loads.

(d) none of the above.

Answer: (c) on balanced as well as unbalanced loads.

129. Transformer breaths in when

(a) load on it increase.

(b) load on it decreases.

(c) load remains constant.

(d) none of the above.

Answer: (b) load on it decreases.

130. No-load current of a transformer

(a) has high magnitude and low power factor.

(b) has high magnitude and high power factor.

(c) has small magnitude and high power factor.

(d) has small magnitude and low power factor .

Answer: (d) has small magnitude and low power factor .

131. The purpose of providing iron core in a step-up transformer is

(a) to provide coupling between primary and secondary.

(b) to increase the magnitude of mutual flux.

(c) to decrease the magnitude of magnetizing current.

(d) to provide all above features.

Answer: (d) to provide all above features.

132. Two transformers operating in parallel will share the load depending upon their

(a) leakage reactance.

(b) per unit impedance.

(c) efficiencies.

(d) ratings.

Answer: (b) per unit impedance.

133. Which winding of the transformer has less cross-sectional area?

(a) Primary winding

(b) Secondary winding

(c) Low voltage winding

(d) High voltage winding

Answer: (d) High voltage winding

134. Power transformers are generally designed to have maximum efficiency around

(a) No-load

(b) Half-load

(c) Near full-load

(d) 10% overload

Answer: (c) Near full-load

135. Which of the following is the main advantage of an auto-transformer over a two winding transformer?

(a) Hysteresis losses are reduced

(b) Saving in winding material

(c) Copper losses are negligible

(d) Eddy losses are totally eliminated

Answer: (b) Saving in winding material

136. When a given transformer is run at its rated voltage but reduced frequency, its

(a) flux density remains unaffected.

(b) iron losses are reduced.

(c) core flux density is reduced.

(d) core flux density is increased.

Answer: (d) core flux density is increased.

137. An ideal transformer will have maximum efficiency at a load such that

(a) copper loss = iron loss.

(b) copper loss < iron loss.

(c) copper loss > iron loss.

(d) none of the above.

Answer: (a) copper loss = iron loss.

138. If the supply frequency to the transformer is increased, the iron loss will

(a) not change.

(b) decrease.

(c) increase.

(d) any of the above.

Answer: (c) increase.

139. The no load primary input is approximately equal to the

(a) iron loss of transformer.

(b) sum of iron loss and copper loss of transformer.

(c) neither iron loss of transformer nor copper loss.

(d) copper loss of transformer.

Answer: (a) iron loss of transformer.

140. An exact equivalent circuit of a transformer is given by:

(a) conductance and susceptance for mutual flux.

(b) resistance and inductance for primary and secondary windings and conductance and susceptance to represent the mutual flux.

(c) resistance and inductance for primary and secondary windings respectively.

(d) resistance and inductance for primary, secondary and mutual flux linkages respectively.

Answer: (b) resistance and inductance for primary and secondary windings and conductance and susceptance to represent the mutual flux.

141. The short circuit test in a transformer is carried out

(a) at full load current.

(b) at half load current.

(c) at very small load current.

(d) at greater than full load current.

Answer: (a) at full load current.

142. Regulation of a transformer is defined by rise in primary voltage required to maintain rated output voltage at a given power factor for a lagging power factor load

(a) from no load to 50% of full load.

(b) from no load to full load.

(c) from no load to 25% of full load.

(d) from no load to 75% of full load.

Answer: (b) from no load to full load.

143. Booster transformers are used to

(a) change the voltage magnitude and phase angle.

(b) reduce the voltage magnitude.

(c) increase the voltage magnitude.

(d) change the voltage phase angle.

Answer: (c) increase the voltage magnitude.

144. Two 3- ϕ transformers can be operated in parallel if the …….. condition is satisfied.

1. Same voltage ratio and same voltage refering to the primary and secondary of the transformer to be connected in parallel.

2. The phase displacement between primary and secondary must be the same for all transformers connected in parallel.

3. The phase sequence must be same.

(a) Only 3 is correct

(b) Only 1 is correct

(c) Only 2 is correct

(d) All 1, 2 and 3 conditions are satisfied simulataneously.

Answer: (d) All 1, 2 and 3 conditions are satisfied simulataneously.

145. The sheet steel material used in transformer core has :

(a) high core loss and low permeability.

(b) low core loss and low permeability.

(c) low core loss and high permeability.

(d) high core loss and high permability.

Answer: (c) low core loss and high permeability.

146. Auto transformer has:

(a) one winding.

(b) multiple windings.

(c) two windings.

(d) does not have any winding.

Answer: (a) one winding.

147. The Δ connection has the advantage of restricting the third harmonic components currents to:

(a) within star connection.

(b) within delta connection.

(c) within both star and delta connections.

(d) neither star nor delta connections.

Answer: (b) within delta connection.

148. In a transformer the leakage flux:

(a) contributes to transfer of energy from primary to secondary.

(b) does not contribute to transfer of energy from primary to secondary.

(c) contributes to transfer of energy from secondary to primary.

(d) contributes to transfer of energy between both coils simultaneously.

Answer: (b) does not contribute to transfer of energy from primary to secondary.

149. A transformer is equivalent to an ideal transformer

(a) with inductive coil connected in the secondary circuit.

(b) when no coils are connected to primary and secondary.

(c) with inductive coil connected in only the primary circuit.

(d) with inductive coils connected in both the primary and secondary circuits.

Answer: (d) with inductive coils connected in both the primary and secondary circuits.

150. The current transformer's used in differential protection of a star/delta transformer will be connected in the configuration of:

(a) Delta connection on both sides of transformer.

(b) Star connection on both sides of transformer.

(c) Star connection on star side and delta connection on delta side of transformer.

(d) Delta connection on star side and star connection on delta side of transformer.

Answer: (d) Delta connection on star side and star connection on delta side of transformer.

151. The flux density affects:

(a) neither hysteresis nor eddy current loss.

(b) only eddy current loss.

(c) only core loss.

(d) only hysteresis loss.

Answer: (c) only core loss.

152. The frequency affects

(a) both hysteresis and eddy current loss.

(b) only eddy current loss.

(c) neither hysteresis nor eddy current loss.

(d) only hysteresis loss.

Answer: (a) both hysteresis and eddy current loss.

153. In electrical power transmission the ..... configuration of transformers are extensively used.

(a) Neither Y/Δ and Δ/Y

(b) Y/Δ

(c) Both Y/Δ and Δ/Y

(d) ΔY

Answer: (c) Both Y/Δ and Δ/Y

154. The short circuit test in a transformer is carried out by solidly shorting:

(a) only high voltage windings.

(b) only low voltage windings.

(c) either high voltage and low voltage windings.

(d) both high voltage and low voltage windings.

Answer: (b) only low voltage windings.

155. Transformers..... reactive power.

(a) generate

(b) neither generate nor absorb

(c) absorb

(d) absorb as well as generate

Answer: (c) absorb

156. The no load primary current will be approximately in the range of ..... time the rated load current in a transformer.

(a) 0.8

(b) 0.1

(c) 0.9

(d) 0.5

Answer: (b) 0.1

157. The efficiency of a transformer depends:

(a) on both load power factor and load magnitude.

(b) on load power factor.

(c) on load magnitude.

(d) neither on load power factor nor on load magnitude.

Answer: (a) on both load power factor and load magnitude.

158. In a transformer on load the total primary current is given by

(a) load component of secondary current.

(b) sum of magnetising current and reflected load current on primary side.

(c) reflected load current on primary side.

(d) magnetising current.

Answer: (b) sum of magnetising current and reflected load current on primary side.

159. The per unit quantity for voltage is defined by:

(a) $V_{pu} = V_b$

(b) $V_{pu} = V$

(c) $V_{pu} = V_b/V$

(d) $V_{pu} = V/V_b$

Answer: (d) $V_{pu} = V/V_b$

160. Transformers can be connected in:

(a) both series and parallel.

(b) series.

(c) parallel.

(d) neither series nor parallel.

Answer: (c) parallel.

161. Open Circuit Test on transformer is used to find:

(a) no load current.

(b) full load copper loss.

(c) equivalent resistance referred to metering side.

(d) equivalent resistance referred to metering side and no load current both.

Answer: (a) no load current.

162. Dissolve gas analysis of transformer oil is carried out to determine:

(a) condition of transformer oil.

(b) condition of transformer.

(c) condition of bushings.

(d) condition of bushing stud.

Answer: (a) condition of transformer oil.

163. The steel used in transformer core is high silicon content to:

(a) produce low permeability and low hysterisis loss.

(b) produce high permeability and low hysteresis loss.

(c) produce low permeability and low eddy. current loss.

(d) produce high permeability and low eddy current loss.

Answer: (d) produce high permeability and low eddy current loss.

164. A 1 φ, 10 kVA, 220/110V, 50Hz transformer is connected to a 220V supply. It draws rated current at 0.8 p.f. leading. The transformer may be considered ideal. What is the KVA rating of the load?

(a) 10

(b) 20

(c) 15

(d) 8

Answer: (a) 10

165. How the leakage flux is minimized in an actual transformer?

(a) Interleaving and sectionalizing both primary and secondary windings.

(b) Sectionalizing primary windings only.

(c) Interleaving and Sectionalizing secondary windings only.

(d) Sectionalizing secondary windings only.

Answer: (a) Interleaving and sectionalizing both primary and secondary windings.

166. Which machine is protected by Buchholz relay?

(a) Generators

(c) Motors

(b) Transformers

(d) Transmission lines

Answer: (b) Transformers

167. If the voltage ratio of the transformer is 1 : 30 then the ratio of primary and secondary turns will be

(a) 2 : 30

(b) 1 : 30

(c) 1 : 3

(d) 2 : 10

Answer: (b) 1 : 30

168. Which quantity is preferred as a reference vector to draw a Phasor diagram in a series circuit?

(a) Phase angle

(b) Current

(c) Power

(d) Voltage

Answer: (b) Current

169. Which type of "Current Transformer Arrangmenet (CT) is preferred in protection of star-star power transformer?

(a) Star/delta connections

(b) Star/star connections

(c) Delta/delta connections

(d) Delta/star connections

Answer: (c) Delta/delta connections

170. The current and potential transformers are used to measure

(a) high current and high voltage.

(b) low current and low voltage.

(c) high voltage and low current.

(d) high current and low voltage.

Answer: (a) high current and high voltage.

171. All day efficiency of a transformer is defined as the ratio of output to input in

(a) kVA at particular instant.

(b) kWh during 24 hours.

(c) kVARh at particular instant.

(d) kW during 24 hours.

Answer: (b) kWh during 24 hours.

172. An electric transformer is

(a) a magnetic device that consists of two or more multi turn coils wound on a common core.

(b) a magnetic device that consists of only two coils wound on a common core.

(c) an electric device that consists of two or more multi turn coils wound on a common core.

(d) an electric device that consists of only two coils wound on a common core.

Answer: (c) an electric device that consists of two or more multi turn coils wound on a common core.

173. A 2000/200 V, 20 kVA transformer has 66 turns in the secondary. The number of primary of turns are:

(a) 660

(b) 440

(c) 770

(d) 330

Answer: (a) 660

174. A transformer has efficiency of 80% and works at 100V and 4 kW. If the secondary voltage is 240V, find the primary current.

(a) 16.67 A

(b) 40 A

(c) 30 A

(d) 10 A

Answer: (b) 40 A

175. The full load efficiency at unity power factor of a 230/115 V, 2 kVA single phase transformer having a Cu loss of 60W at half load and iron loss of 50 W is:

(a) 92%

(b) 87%

(c) 90%

(d) 98%

Answer: (b) 87%

176. Find the line current under measurement, if a 100 : 5 CT is used in conjuction with a (0 - 5A) ammeter reads 3A.

(a) 70 A

(b) 35 A

(c) 60 A

(d) 15 A

Answer: (c) 60 A

177. Two transformer are to be operated in parallel such that they share load in proportion to their KVA ratings. The rating of the first transformer is 500 kVA and its pu leakage is 0.05 pu. If the rating of the second transformer is 250 kVA then its pu leakage impedance is:

(a) 0.025

(b) 0.1

(c) 0.05

(d) 0.2

Answer: (c) 0.05

178. A 3-phase transformer has its primary is delta connected and secondary in star. Secondary to primary turns ratio per phase is 5. What would be the secondary voltage for a primary voltage of 400 V?

(a) 2000 V

(b) 80 V

(c) 3464 V

(d) 138 V

Answer: (c) 3464 V

179. A transformer having a turn's ratio 1 : 5 and a resistance of 500 is connected across the secondary terminals. What is the equivalent resistance for the current flowing in the primary?

(a) 100 Ω

(b) 10 Ω

(c) 20 Ω

(d) 50 Ω

Answer: (c) 20 Ω

180. The percentage resistance of a 100 kVA, 5kV, 5 Ω resistance is given by:

(a) 2%

(b) 20%

(c) 40%

(d) 4%

Answer: (a) 2%

181. In a transformer having 1000 primary and 400 secondary turns, if the primary voltage is 250 volts, the secondary voltage will be:

(a) 400 Volts

(b) 100 Volts

(c) 625 Volts

(d) 1600 Volts

Answer: (b) 100 Volts

182. Which test on transformer provides information about regulation efficiency and heating under load conditions?

(a) Open circuit test

(b) Back to back test

(c) Hopkinson test

(d) Short circuit test

Answer: (b) Back to back test

183. If the flux density in the core of a transformer is increased

(a) frequency on secondary windings will change.

(b) wave shape on secondary side will be distorted.

(c) size of transformer can be reduced.

(d) eddy current losses will be reduced.

Answer: (c) size of transformer can be reduced.

184. In a transformer magnetic coupling between the primary and secondary circuit can be increased by:

(a) increasing the number of turn.

(b) using soft materials for windings.

(c) using magnetic core of low reluctance.

(d) using transformer oil of better quality.

Answer: (c) using magnetic core of low reluctance.

185. For a transformer of the full load, copper losses are A and iron losses are B. Then the load at which these two losses would be equal is given by:

(a) Full load x A/B

(b) Full load x B/A

(c) Full load x √(A/B)

(d) Full load x √(B/A)

Answer: (d) Full load x √(B/A)

186. Full load copper loss in a transformer is 1600 watts. At half load, the loss will be:

(a) 6400 Watt

(b) 1600 Watt

(c) 800 Watt

(d) 400 Watt

Answer: (d) 400 Watt

187. A Transformer has full load copper losses of 800 watt and core loss of 600 watt. Total losses at no load will be:

(a) 1400 watt

(b) 1100 watt

(c) 100 watt

(d) 600 watt

Answer: (d) 600 watt

188. A 600 kVA, 1-φ, transformer when working at unity p.f. has an efficiency of 92% at full load, total losses at full load are:

(a) 104.4 kW

(b) 48 kW

(c) 52.2 kW

(d) 26.1 kW

Answer: (c) 52.2 kW

189. Efficiency of a power-transformer under no load condition is approximately:

(a) 75%

(b) 50%

(c) 25%

(d) None of the above

Answer: (d) None of the above

190. A single phase transformer rated at 3000 kVA, 69 kV/4.16 kV, 60 Hz has a total internal impedance Z, of 127 ohm, referred to the primary side. Calculate the primary current if the secondary is accidentally short circuited. [J & K JE - 2016]

(a) 43.5 A

(b) 543 A

(c) 9006 A

(d) 721 A

Answer: (b) 543 A

200. Which test is used to determine the magnetizing impedance of a transformer? [J & K JE 2016]

(a) Short-circuit test

(b) Impulse test

(c) Load test

(d) Open-circuit test

Answer: (d) Open-circuit test

201. Three single phase transformers are connected in delta-delta to step down a line voltage of 138 kV to 4160 V to supply power to a production plant. The plant draws 21 MW at a lagging power factor of 86%. Calculate the apparent power furnished by the HV line. [Jammu & Kashmir JE - 2016]

(a) 24.4 MVA

(b) 48.8 MVA

(c) 12.2 MVA

(d) 6.1 MVA

Answer: (a) 24.4 MVA

202. A large transformer operating at no load draws an exciting curent I_o, of 5A, when the primary is connected to a 120 V, 60 Hz source. From a wattmeter test, it is known that iron losses are equal to 180 W. Calculate the reactive power absorbed by the core. [Jammu & Kashmir JE 2016]

(a) 600 var

(b) 572 var

(c) 180 var

(d) 360 var

Answer: (b) 572 var

203. The exciting current in a single phase transformer consists of

(a) fundamental component current.

(b) odd harmonics.

(c) even harmonics.

(d) fundamental and odd harmonics.

Answer: (d) fundamental and odd harmonics.

204. For minimum weight of the transformer, the iron weight should be..... the weight of the copper. [RRB SSE 2015]

(a) more than

(b) equal to

(c) less than

(d) no relation

Answer: (b) equal to

205. What KVA rating is required for a transformer that must handle a maximum load current of 8 A with a secondary voltage of 2 kV? [RRB SSE 2015]

(a) 4 kVA

(b) 0.25 kVA

(c) 16 kVA

(d) 8 kVA

Answer: (c) 16 kVA

206. When is an Auto transformer used in transmission and distribution?

(a) When operator is not available.

(b) When iron losses are to be reduced.

(c) When efficiency consideration can be ignored.

(d) When transformation ratio is small.

Answer: (d) When transformation ratio is small.

207. No-load on a transformer is carried out to determine:

(a) copper loss.

(b) magnetising current.

(c) magnetising current and loss.

(d) efficiency of the transformer.

Answer: (c) magnetising current and loss.

208. The power transformer is a constant:

(b) current device.

(a) voltage device.

(c) power device.

(d) main flux device.

Answer: (d) main flux device.

209. Which of the following is not a routine test on transformers? [ESIC JE 2016]

(a) Core insulation voltage test

(b) Impedance voltage test.

(c) Radio interference test

(d) Polarity test

Answer: (c) Radio interference test

210. A transformer can have zero voltage regulation at:

(a) leading power factor.

(b) lagging power factor.

(c) unity power factor.

(d) zero power factor.

Answer: (a) leading power factor.

211. When a given transformer is run at its rated voltage but reduced frequency, its

(a) flux density remains unaffected.

(b) iron losses are reduced.

(c) core flux density is reduced.

(d) core flux density is increased. [ESIC JE 2016]

Answer: (d) core flux density is increased.

212. The voltage transformation ratio of a transformer is equal to the ratio of:

(a) primary turns to secondary turns.

(b) secondary current to primary current.

(c) secondary induced e.m.f. to primary induced.

(d) secondary terminal voltage to primary applied voltage.

Answer: (c) secondary induced e.m.f. to primary induced.

213. For minimum weight of a transformer, the weight of iron should be:

(a) equal to weight of copper.

(b) less than weight of copper.

(c) greater than weight of copper.

(d) zero. [ESIC JE - 2016]

Answer: (a) equal to weight of copper.

214. Core of transformer is made of good quality material like CRGO steel to minimize:

(a) eddy current loss.

(b) full load copper loss.

(c) hysteresis loss.

(d) no load copper loss. [FCI - 2015]

Answer: (c) hysteresis loss.

215. The function of conservator in a transformer is to:

(a) store extra oil to be used in emergency.

(b) prevent entry of moisture.

(c) cool transformer.

(d) take care of expansion and contraction of oil due to change in temperature of oil. [FCI - 2015]

Answer: (d) take care of expansion and contraction of oil due to change in temperature of oil.

216. What is the cause of occurrence of stray load losses in transformer?

(a) Leakage flux

(b) Poor cooling

(c) Overloading

(d) Under frequency operation [FCI - 2015]

Answer: (a) Leakage flux

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

(a) 12 V

(b) 120 V

(c) 240 V

(d) 2,400 V [RRB SSE 2015]

Answer: (c) 240 V

218. The nominal ratio of a current transformer is:

(a) Primary winding current/secondary winding current

(b) Number of Primary winding turns/Number of secondary winding current

(c) Rated Primary winding current/Rated secondary winding current

(d) Number of Secondary winding turns/ Number of Primary winding turns [FIC 2015]

Answer: (c) Rated Primary winding current/Rated secondary winding current

219. When moist air passes through a bed of silica gel, the .....

(a) dry bulb temperature of air decreases.

(b) dry bulb temperature of air increases.

(c) specific humidity of air increases.

(d) it undergoes adiabatic saturation.

Answer: (b) dry bulb temperature of air increases.

220. Single phase Transformer voltage is maximum when the primary and secondary coils are.....

(a) normal to each other.

(b) have a phase shift of 90° from each other.

(c) aligned along the same axis.

(d) have a phase shift of 120° from each other.

Answer: (c) aligned along the same axis.

221. In a transformer, electric power is transferred from primary coil to secondary

(a) through air.

(b) by electric field.

(c) through insulating medium.

(d) by magnetic flux. [RRB JE 2015]

Answer: (d) by magnetic flux.

222. Which part of transformer is subjected to maximum heating? [RRB JE 2015]

(a) frame

(c) oil

(b) core

(d) winding

Answer: (d) winding

223. Which test is performed to determine core loss of a transformer?

(a) Short circuit

(b) Sumpner

(c) Open Circuit

(d) None of these [Uttarakhand AE 2013]

Answer: (c) Open Circuit

224. The maximum efficiency of a 200 kVA transformer having an iron loss of 1800 W and full load copper loss of 3200 W occurs at

(a) 100 kVA

(b) 150 kVA

(c) 200 kVA

(d) 125 kVA [Uttarakhand AE - 2013]

Answer: (b) 150 kVA

225. The emf per turn for a single phase 2200/220 V, 50 Hz transformer is approximately 12 V. The number of primary and secondary turns are

(a) 18, 183

(b) 183, 18

(c) 155, 26

(d) 172, 21 [Uttarakhand AE 2013]

Answer: (b) 183, 18

226. Which type of connection is employed for current transformers for the protection of star-delta connected 3-phase transformer?

(a) Delta-Delta

(b) Star-Star

(c) Star-Delta

(d) Delta-Star [Uttarakhand AE 2013]

Answer: (d) Delta-Star

227. If the secondary burden of a current transformer is 15 VA and secondary current is 5A, then the impedance of the connected load will be:

(a) 0.6 Ω

(b) 5 Ω

(c) 6 Ω

(d) 10 Ω [UPRVUNL AE - 2016]

Answer: (a) 0.6 Ω

228. A PT is a device which is:

(a) electro-statically coupled.

(b) electrically coupled.

(c) electromagnetically coupled.

(d) conductively coupled [UPRVUNL AE 2016]

Answer: (c) electromagnetically coupled.

229. A T-T transformer cannot be paralleled with ….. transformer.

(a) V-V

(b) Y- Δ

(c) Y-Y

(d) Δ - Δ [BSNL TTA 2016]

Answer: (b) Y- Δ

230. A 200 KVA transformer has an iron loss of 1 kW and full load copper loss of 2 kW. Its load KVA corresponds to maximum efficiency is

(a) 100 kVA

(b) 70.7 kVA

(c) 200 kVA

(d) 141.4 kVA [J&K (JE) - 2016]

Answer: (d) 141.4 kVA

231. For Higher Voltage Ranges …….. transformers are used. [BSNL TTA 2016]

(a) core type

(b) shell type

(c) both core type and shell type

(d) none of these

Answer: (a) core type

232. In order to achieve high all day efficiency in a transformer:

(a) the copper losses should be less.

(b) the operating temperature should be low.

(c) the shell type construction should be used.

(d) the iron losses should be less. [BSNL TTA 2016]

Answer: (d) the iron losses should be less.

233. In a step-up transformer, the turn's ratio is 1 : 2. A Leclanche cell (emf 1.5 V) is connected across the primary. The voltage across the secondary is

(a) 3.0 V

(b) 0.75 V

(c) 0 V

(d) 1.5 V [BSNL TTA 2016]

Answer: (c) 0 V

234. In a transformer, the ratio of primary to secondary is 9 : 4. If power input is P, what will be the ratio of power output to the power input

(a) 4 : 9

(b) 9 : 4

(c) 5 : 4

(d) 1 : 1 [BSNL TTA 2016]

Answer: (d) 1 : 1

235. CT and PT are used generally to

(a) Step up the respective quantities

(b) Step down the respective quantities

(c) Both

(d) None of these [BSNL TTA 2016]

Answer: (b) Step down the respective quantities

236. Current drawn by the primary of a transformer which steps down from 220 V to 22 V to operate a device having an impedance of 220 will be

(a) 1 A

(b) 0.1 A

(c) 0.01 A

(d) 10 A [BSNL TTA 2013]

Answer: (c) 0.01 A

237. In a transformer the resistance between the primary and secondary must be

(a) Zero

(b) 1 KΩ

(c) 100 KΩ

(d) Infinite [BSNL TTA (JE) - 2013]

Answer: (d) Infinite

238. A good transformer must have voltage regulation as high as possible. [BSNL TTA 2016]

(a) True

(b) False

(c) Cannot be said

(d) None of these

Answer: (b) False

239. Calculate the regulation of transformer in which ohmic loss is 1% of the output and reactance drop is 5% of the voltage, when the power factor is 0.8 lag. [BSNL TTA 2016]

(a) 3.8%

(b) 3.5%

(c) 1%

(d) 5%

Answer: (a) 3.8%

240. In an ideal transformer the no load primary current I_o

(a) is in phase with V_1

(b) Leads V_1, by 90°

(c) Lags V_1, behind 90°

(d) None of these [BSNL TTA 2016]

Answer: (c) Lags V1, behind 90°

241. At relatively light loads, transformer efficiency is low because

(a) secondary output is low.

(b) transformer losses are high.

(c) fixed loss is high in proportion to the output.

(d) cu loss is small. [BSNL TTA 2016]

Answer: (c) fixed loss is high in proportion to the output.

242. At low frequencies, the material used for transformer cores is

(a) copper

(b) silicon iron

(c) soft iron

(d) none of these [BSNL TTA 2016]

Answer: (b) silicon iron

243. The kVA Rating of an ordinary 2-winding transformer is increased when connected as an autotransformer is due to

(a) transformation ratio is increased.

(b) secondary voltage is increased.

(c) energy is transferred both inductively and conductively.

(d) energy is transferred inductively [BSNL TTA 2016]

Answer: (c) energy is transferred both inductively and conductively.

244. If we leave the secondary winding of current transformer open

(a) Nothing will happen

(b) ct will blast.

(c) there will be only magnetizing component of the current flowing in the primary.

(d) there will not be any current in primary.

Answer: (c) there will be only magnetizing component of the current flowing in the primary.

245. The magnitude of magnetic flux in a transformer

(a) decreases with increase in load.

(b) increases with increase in load.

(c) is same at all loads.

(d) increases as load increases from zero and remain nearly constant at high loads. [BSNL TTA 2015]

Answer: (c) is same at all loads.

246. Transformers are rated in kVA instead of kW because

(a) load power factor is often not know

(b) kVA is fixed whereas kw depends on load pf.

(c) total transformer loss depends on VA.

(d) it has become customary. [BSNL TTA - 2016]

Answer: (c) total transformer loss depends on VA.

247. The efficiency of a transformer is

(a) independent of load.

(b) maximum at no load.

(c) maximum at a given load such that variable losses equals constant losses.

(d) maximum when copper losses are zero. [BSNL TTA 2016]

Answer: (c) maximum at a given load such that variable losses equals constant losses.

248. The maximum flux density in the core of a 250/ 3000-volts, 50 Hz single phase transformer is 1.2 Wb/m^2. If the e.m.f. per turn is 8 volt. Then what is the value of primary and secondary turns? [BSNL TTA - 2016]

(a) 208 & 32

(b) 375 & 32

(c) 208 & 375

(d) 32 & 375

Answer: (d) 32 & 375

249. Why is the core of the transformer built up of the laminations? [UPSSC JE - 2016]

(a) To reduce eddy current loss.

(b) For convenience of fabrication.

(c) No specific advantage.

(d) For increasing the permeability.

Answer: (a) To reduce eddy current loss.

250. In a transformer, minimum voltage regulation occurs when the power factor of the load is

(a) leading

(c) unity

(b) lagging

(d) 0.8

Answer: (a) leading

251. The highest rating transformer is likely to found application in:

(a) distribution.

(b) transmission.

(c) generator.

(d) substation.

Answer: (c) generator.

252. Current transformers for meters and relays usually have:

(a) 1 : 2 ratio

(b) 5 : 1 ratio

(c) 5-A secondary's

(d) 5-A primary's

Answer: (c) 5-A secondary's

253. Consider the following statements regarding parallel operation of transformer's

1. Transformers must be operated at same frequency.

2. Transformers must have equal voltage ratings.

(a) Only 1

(b) Only 2

(c) Both 1 and 2

(d) Neither 1 nor 2

Answer: (c) Both 1 and 2

254. Voltage regulation of a transformer is negative for

(a) inductive load.

(c) resistive load.

(b) capacitive load.

(d) no load.

Answer: (b) capacitive load.

255. Oil is invariably used in large transformers to

(a) lubricate the core.

(b) insulate the core.

(c) lubricate the coil.

(d) provide fuel for operation.

Answer: (b) insulate the core.

256. The value of useful flux least depends on:

(a) voltage.

(c) load.

(b) current.

(d) magneto motive force.

Answer: (c) load.

257. A part of primary winding also serves as secondary winding in:

(a) potential transformers.

(b) auto transformer.

(c) current transformer.

(d) all types of transformers.

Answer: (b) auto transformer.

258. In a transformer, the magnitude of mutual flux is

(a) varies at low loads and constant at high loads.

(b) low at low loads and high at high loads.

(c) high at low loads and low at high loads.

(d) same at all loads.

Answer: (d) same at all loads.

259. A tap changer is used on a transformer for adjustments in

(a) primary voltage.

(b) secondary voltage.

(c) both primary and secondary voltages.

(d) neither primary nor secondary voltages.

Answer: (b) secondary voltage.

260. Ferrite cores are used in high frequency transformer because it has:

(a) low resistance.

(b) high resistance.

(c) high hysteresis.

(d) low permeability.

Answer: (b) high resistance.

261. A transformer having a turn ratio 1 : 5 and a resistance of 1000 ohms is connected across the secondary terminals, the resistance to the current flowing in the primary will be:

(a) 10 ohm

(b) 20 ohm

(c) 40 ohm

(d) 60 ohm

Answer: (c) 40 ohm

262. In a power transformer, at full load, the efficiency is:

(a) minimum.

(b) maximum.

(c) half the normal efficiency.

(d) 20% of the maximum efficiency.

Answer: (b) maximum.

263. Which of the following losses in transformer is zero even at full load?

(a) Core loss

(b) Friction loss

(c) Eddy current loss

(d) Hysteresis loss

Answer: (b) Friction loss

264. Basically, a booster is a :

(a) synchronous motor.

(b) capacitor.

(c) inductor.

(d) transformer.

Answer: (d) transformer.

265. Which of the following statement is true about the windings of a transformer?

(a) Windings are conductively linked.

(b) Windings are inductively linked.

(c) Windings are not linked at all.

(d) Windings are electrically linked.

Answer: (b) Windings are inductively linked.

266. No winding resistance means

(a) primary windings have constant resistance.

(b) secondary windings have infinite resistance.

(c) no ohmic power loss.

(d) infinite resistive voltage drop.

Answer: (c) no ohmic power loss.

267. Which of the following is not a type of construction used for single phase transformer?

(a) Core type

(b) Shell type

(c) Berry type

(d) Roof type

Answer: (d) Roof type

268. An ideal transformer has

(a) very high losses

(b) very low losses

(c) moderate losses

(d) no losses

Answer: (d) no losses

269. Which of the following statement/s is/are true?

1. DC supply cannot be used for transformers.

2. The transformer works on the principle of mutual induction.

Choose the correct answer from the options given below.

(a) Only 1

(b) Both 1 and 2

(c) Only 2

(d) Neither 1 nor 2

Answer: (b) Both 1 and 2

270. Short circuit test on transformer is also known as:

(a) capacitance test.

(b) impedance test.

(c) inductance test.

(d) current test. [RRB JE - 2015]

Answer: (d) current test.

271. No load loss of a transformer has two components. They are eddy current and hysteresis loss. In which part of a transformer hysteresis will occur? [DMRC - 2015]

(a) Core

(b) Breather

(c) Transformer oil

(d) Conservator

Answer: (a) Core

272. What principle makes the instrument transformer working?

(a) Self induction

(b) Lenz law

(c) Mutual induction

(d) Fleming's right hand rule

Answer: (c) Mutual induction

273. Step up transformer increase

(a) power.

(b) power factor.

(c) frequency.

(d) voltage.

Answer: (d) voltage.

274. Which of the following prevents the damage to a transformer due to lightening? [DMRC - 2015]

(a) Buchholz relay

(b) Conservator

(c) Breather

(d) Horn gap

Answer: (d) Horn gap

275. The frequency of ac supply is increased keeping impressed voltage of a transformer constant. Its core loss will:

(a) increase.

(b) decrease.

(c) not change.

(d) depends upon the design of transformer.

Answer: (b) decrease.

276. Power transformers are designed with:

(a) low leakage reactances.

(b) high leakage reactances.

(c) high all day efficiency.

(d) low full load voltage regulation.

Answer: (b) high leakage reactances.

277. A delta/delta connected three-phase transformer can be connected in parallel with:

(a) star/delta.

(b) delta/star.

(c) star/star.

(d) star/zigzag. [DMRC - 2015]

Answer: (c) star/star.

278. To conduct Sumpners test on a transformer

(a) only one transformer is sufficient.

(b) two identical transformers are needed.

(c) two un-identical transformers are needed.

(d) at least three transformers are necessary.

Answer: (b) two identical transformers are needed.

279. Distribution transformers have core losses:

(a) more than full load copper losses.

(b) equal to full load copper losses.

(c) less than full load copper losses.

(d) negligible compared to full load copper losses.

Answer: (c) less than full load copper losses.

280. Distribution transformers have the rating of

(a) up to 50 kVA

(b) up to 100 kVA

(c) up to 150 kVA

(d) up to 200 kVA [RRB JE - 2015]

Answer: (d) up to 200 kVA [RRB JE - 2015]

281. When power is drawn from secondary coil of a transformer, the dynamic resistance:

(a) increases.

(b) decreases.

(c) remains constant.

(d) changes erratically.

Answer: (a) increases.

282. A transformer steps up or down:

(a) a.c. only.

(b) d.c. only.

(c) either a.c. or d.c.

(d) a.c. mixed with d.c.

Answer: (a) a.c. only.

283. The equivalent resistance of the primary of a transformer whose transformation ratio is 5 and resistance is 0.1 ohms, when referred to the secondary will be:

(a) 0.5 ohms

(b) 2.5 ohms

(c) 0.02 ohms

(d) 0.004 ohms

Answer: (b) 2.5 ohms

284. Buchholz relay is used on:

(a) welding transformers.

(b) air cooled transformers.

(c) furnace transformers.

(d) oil cooled transformers.

Answer: (d) oil cooled transformers.

285. The primary to secondary turns ratio of a transformer is 1 : 2. If primary is connected to 50 Hz supply, then the frequency of secondary side in Hz is:

(a) 50 Hz

(b) 50/2 Hz

(c) 2 x 50 Hz

(d) 3 × 50 Hz

Answer: (a) 50 Hz

286. One 200 V, 100 W bulb is connected in series with primary of a 200 V, 10 kVA transformer. If its secondary is left open circuited then the bulb would have:

(a) full brightness.

(b) poor brightness.

(c) a little less than full brightness.

(d) more than full brightness.

Answer: (b) poor brightness.

287. In a Y-Y system, a line voltage of 220 V produces a phase voltage of

(a) 381 V

(b) 311 V

(c) 220 V

(d) 127 V

Answer: (b) 311 V

288. When a 400-Hz transformer is operated at 50 Hz, its rating is:

(a) reduce to 1/8.

(b) increased 8 times.

(c) unaffected.

(d) increased 64 times.

Answer: (a) reduce to 1/8.

289. What is the use of higher flux density in the transformer design?

(a) For increasing the weight/kVA.

(b) For decreasing the weight/kVA.

(c) For reducing iron losses.

(d) For improving insulation.

Answer: (b) For decreasing the weight/kVA.

290. When a sinusoidal exciting current is applied to a transformer, what is the mutual flux produced?

(a) Flat top

(c) Zero

(b) Sinusoidal

(d) Second harmonic only

Answer: (a) Flat top

291. The efficiency of a transformer at full load, 0.8 p.f. lagging is 95%. What will its efficiency at full load, 0.8 p.f. leading be?

(a) 85%

(c) 95%

(b) 90%

(d) 100%

Answer: (c) 95%

292. A transformer is connected to a constant voltage supply. As the supply frequency increases, what happens to the magnetic flux in the core?

(a) Decreases

(b) Increases towards saturation

(c) Becomes zero

(d) Become constant

Answer: (a) Decreases

293. The degree of mechanical vibrations produced by the laminations of a transformer depends on

(a) tightness of clamping.

(b) gauge of laminations.

(c) size of laminations.

(d) all of the above.

Answer: (d) all of the above.

294. Which of the following is the main advantage of an auto-transformer over a two winding transformer?

(a) Hysteresis losses are reduced.

(b) Saving in winding material.

(c) Copper losses are negligible.

(d) Eddy losses are totally eliminated.

Answer: (b) Saving in winding material.

295. When a given transformer is run at its rated voltage but reduced frequency, its

(a) flux density remains unaffected.

(b) iron losses are reduced.

(c) core flux density is reduced.

(d) core flux density is increased.

Answer: (d) core flux density is increased.

296. If the supply frequency to the transformer is increased, the iron loss will

(a) no change.

(b) decrease.

(c) increase.

(d) any of the above.

Answer: (c) increase.

297. In an actual transformer the iron loss remains practically constant from no load to full load because

(a) value of transformation ratio remains constant.

(b) permeability of transformer core remains constant.

(c) core flux remains practically constant.

(d) primary voltage remains constant.

Answer: (c) core flux remains practically constant.

298. The transformer equation $V_1I_1 = V_2I_2$, is the manifestation of

(a) Ampere's law.

(b) Coloumb's law.

(c) Law of energy conservation.

(d) Biot Savart's law.

Answer: (c) Law of energy conservation.

299. Which three-phase connection can be used in a transformer to introduce a phase difference of 30° between its output and corresponding input line voltages? [RRB SSE - 2014]

(a) Star-Delta

(b) Star-Star

(c) Delta-Delta

(d) Delta-Zigzag

Answer: (a) Star-Delta

300. With core type transformers, the limbs are stepped to

(a) reduce the zinc material and, therefore, zinc loss.

(b) reduce the conductor material and, therefore I^2R loss.

(c) provide better cooling.

(d) supply more mechanical strength to the core. [MP JE - 2016]

Answer: (b) reduce the conductor material and, therefore I2R loss.

301. Which one of the following relay has the capability of anticipating the possible major fault in a transformer? [MP JE - 2015]

(a) Buchholz relay

(b) Over current relay

(c) Differential relay

(d) Over flux relay

Answer: (a) Buchholz relay

302. In Merz Price percentage differential protection of Δ-Y transformer, the CT secondary connection in the primary and secondary windings of the transformer would be in the form of

(a) Δ-Y

(b) Y-Δ

(c) Δ-Δ

(d) Y-Y

Answer: (b) Y-Δ

303. Under heavy loads, transformer efficiency is comparatively low because

(a) voltage drop both in primary and secondary becomes large.

(b) secondary output is much less as compared to primary input.

(c) copper loss becomes high in proportional to the output.

(d) iron loss is increase considerably.

Answer: (c) copper loss becomes high in proportional to the output.

304. Transformer oil is used as

(a) insulant only.

(b) coolant only.

(c) inert medium.

(d) both insulant and coolant.

Answer: (d) both insulant and coolant.

305. Out of following choices for poly-phase transformer connections which one will you select for three-to-two phase?

(a) Scott

(b) Star/Star

(c) Double Scott

(d) Star/double

Answer: (a) Scott

306. Before disconnecting an ammeter from an energized current transformer circuit, the current transformer

(a) primary should be opened.

(b) secondary should be opened.

(c) primary should be shorted.

(d) secondary should be shorted.

Answer: (d) secondary should be shorted.

307. The essential feature of an auto-transformer is that it

(a) is more suited for single-phase supply.

(b) is completely automatic in its operation.

(c) uses only one winding.

(d) is particularly suited for situations where voltage transformation ratio exceeds unity.

Answer: (c) uses only one winding.

308. When a given transformer is operating at its rated voltage with reduced frequency, its

(a) iron losses are reduced.

(b) flux density remains unaffected.

(c) core flux density is increased.

(d) core flux density is reduced.

Answer: (c) core flux density is increased.

309. Two transformers are connected in parallel. These transformers do not have equal percentage impedance. This is likely to result in

(a) short-circuiting of the secondaries.

(b) power factor of one of the transformers is leading while that of the other is lagging.

(c) loading of the transformers not in proportion to their kVA ratings.

(d) transformers having higher copper losses will have negligible core losses.

Answer: (c) loading of the transformers not in proportion to their kVA ratings.

310. The cold rolled grain oriented steel has …… permeability in the direction of the grain orientation.

(a) minimum

(b) maximum

(c) nil

(d) none of these

Answer: (b) maximum

311. The machine in which energy transfer happens both through induction and conduction, in called

(a) two winding transformer.

(b) auto transformer.

(c) three phase induction motor.

(d) single phase induction motor.

Answer: (b) auto transformer.

312. Transformer oil should have

(a) high flash point.

(b) high viscosity.

(c) high sludging tendencies.

(d) none of the above.

Answer: (a) high flash point.

313. In star-star connected transformer

(a) line voltage is equal to phase voltage.

(b) line voltage is equal to √3 phase voltage.

(c) there is no line current.

(d) there flows no phase current. [UPSSSC - 2015]

Answer: (b) line voltage is equal to √3 phase voltage.

314. Distribution transformers have core losses

(a) more than full load copper losses.

(b) equal to full load copper losses.

(c) less than full load copper losses.

(d) negligible compared to full load copper losses.

Answer: (c) less than full load copper losses.

315. A CT is connected in …… with the line. [UPSSSC - 2015]

(a) series

(b) across

(c) both a and b

(d) not connected

Answer: (a) series

316. As compared to an amplifier, a transformer cannot

(a) decrease the output voltage.

(b) increase the input current.

(c) increase the output power.

(d) none of these. [MP JE 2016]

Answer: (c) increase the output power.

317. What is the energy efficient transformer core made up of? [MP JE 2016]

(a) Silicon alloyed iron (grain oriented)

(b) Iron

(c) Amorphous core-metallic glass alloy

(d) None of these

Answer: (a) Silicon alloyed iron (grain oriented)

318. Two transformers when operating in parallel will share the load depending upon their

(a) alternating current.

(b) inductive reactance.

(c) per unit impedance.

(d) efficiency. [MP JE 2016]

Answer: (c) per unit impedance.

319. If a transformer has hysteresis loss of 10 watts on AC and is changed to DC supply of the same magnitude, then the hysteresis loss will be

(a) double.

(b) half.

(c) zero.

(d) none of these. [MP JE - 2016]

Answer: (c) zero.

320. A transformer having 1000 primary turns is connected to a 250 V ac supply. For a secondary voltage of 400 V, then number of secondary turns should be

(a) 1600

(b) 250

(c) 400

(d) 1250 [MP JE 2016]

Answer: (a) 1600

321. Ferrite cores are used in high frequency transformer, because it has

(a) average permeability.

(b) low hysteresis.

(c) low impedance.

(d) high resistance. [MP JE 2016]

Answer: (d) high resistance.

322. The efficiency of ……. is more than 90%.

(a) motor

(b) transformer

(c) generator

(d) none of these

Answer: (b) transformer

323. Which part of the transformer is constructed by the L, I and E type of laminated steel?

(a) Coils

(b) Insulating Materials

(c) Magnetic core

(d) Tank and Cooling system

Answer: (c) Magnetic core

324. Which type of connection is used for both large voltage and low voltage rating transformers? [MP JE - 2016]

(a) Delta-Delta connection

(b) Delta-Wye connection

(c) Wye-Wye connection

(d) Wye-Delta connection

Answer: (b) Delta-Wye connection

325. Which type of transformer is used to conduct assessment at high and ultra-high voltages? [MP JE - 2016]

(a) Power transformer

(b) Testing transformer

(c) Radio transformer

(d) Auto transformer

Answer: (a) Power transformer

326. In which type of immersed transformer, the oil is pumped through windings to extract heat from oil? [MP JE - 2016]

(a) Oil immersed water cooled transformer.

(b) Oil immersed forced air cooled transformer.

(c) Oil immersed forced oil cooled transformer.

(d) Oil immersed self cooled transformer.

Answer: (c) Oil immersed forced oil cooled transformer.

327. The reason why open circuit test is performed on the low voltage of the winding is that it

(a) needs minimum power input.

(b) draws large current to facilitate reading.

(c) requires less voltage to perform the test.

(d) involves less core losses. [LMRC - 2015]

Answer: (b) draws large current to facilitate reading.

328. The value of flux involved in the emf equation of transformer is

(a) instantaneous

(b) maximum

(c) average

(d) rms [RRB JE - 2015]

Answer: (b) maximum

329. The essential condition for parallel operation of two single phase transformers is that they should have the same

(a) polarity

(b) kVA rating

(c) voltage ratio

(d) percentage impedance

Answer: (a) polarity

330. Assertion A: A distribution transformer has low flux density.

Reason B: It is constantly connected to the supply.

Which of the following is correct? [UPPCL - 2016]

(a) A and B are true, but B is not the correct explanation of A.

(b) A and B are true, and B is the correct explanation of A.

(c) A is true, but B is false.

(d) B is true, but A is false.

Answer: (d) B is true, but A is false.

331. In a transformer, the applied voltage leads the no-load current by an angle of

(a) 75°

(b) 90°

(c) 180°

(d) 45° [UPPCL - 2016]

Answer: (b) 90°

332. The number of secondary turns of a coil in a transformer is 4 times the number of turns in primary coil. If the voltage in primary coil is 200 V, the secondary voltage would be

(a) 800 V

(b) 50 V

(c) 200 V

(d) 2000 V [UPPCL - 2016]

Answer: (a) 800 V

333. Which of the following is/are the requirements of a good transformer oil? [UPPCL - 2016]

1. Low Viscosity

2. Low Volatility

3. High Viscosity

4. High Volatility

(a) Only 1 and 2

(b) Only 3 and 4

(c) Only 1 and 4

(d) Only 2 and 3

Answer: (a) Only 1 and 2

334. The magnitude of mutual flux in a transformer

(a) is same at all loads.

(b) is constant at high loads but varies at low loads.

(c) varies at high loads.

(d) varies at low loads. [UPPCL - 2016]

Answer: (a) is same at all loads.

335. Which test helps in determining the efficiency of two identical transformers under load conditions? [UPPCL - 2016]

(a) Back to Back Test

(b) Short Circuit Test

(c) No such test exists

(d) Open Circuit Test

Answer: (a) Back to Back Test

336. The Potential transformer's Nominal Ratio is defined as the ratio of

(a) primary winding voltage and secondary winding voltage.

(b) rated primary winding voltage and rated secondary winding voltage.

(c) primary windings turns and secondary winding turns.

(d) any of these. [DMRC - 2016]

Answer: (b) rated primary winding voltage and rated secondary winding voltage.

337. In which type of windings extra insulation between layers is required in addition to insulation of conductors?

(a) Cross over windings

(b) Continuous disc windings

(c) Sandwich windings

(d) Helical windings

Answer: (d) Helical windings

338. In current transformer

(a) secondary winding must be closed.

(b) secondary winding must be open.

(c) primary winding must be closed.

(d) primary winding must be open. [UPSSC JE 2016]

Answer: (a) secondary winding must be closed.

339. A transformer may have two or more ratings depending upon the type of

(a) insulation used.

(b) winding.

(c) core used.

(d) cooling used.

Answer: (d) cooling used.

340. The 25 kVA transformer has a voltage ratio 3300/400V. Find the primary current.

(a) 6.25 A

(b) 75.8 A

(c) 62.5 A

(d) 7.58 A

Answer: (d) 7.58 A

341. The core in a large power transformer is unit of

(a) mild steel.

(b) ferrite.

(c) cast iron.

(d) silicon steel.

Answer: (d) silicon steel.

342. Power transformed from primary to secondary in a transformer depends upon:

(a) number of primary turns.

(b) transformation ratio.

(c) number of secondary turns.

(d) magnetic coupling between windings. [LMRC - 2015]

Answer: (d) magnetic coupling between windings.

343. In a transformer, variable losses = 600 W, hysteresis loss 20 W and Iron loss = 500 W. What is magnitude of Eddy current losses? [UPPCL (AE) - 2016]

(a) 1120 W

(b) 100 W

(c) 480 W

(d) 1080 W

Answer: (c) 480 W

344. Consider the following given statements about auto-transformers and choose the one which is/ are correct. [UPRVUNL AE - 2014]

1. Auto-transformers require less copper is compared to a conventional, 2-winding transformer of the same capacity.

2. Auto-transformers provide isolation between the primary and secondary windings.

3. Auto-transformer has less leakage reactance as compared to the conventional, 2-winding transformer of the same capacity.

(a) Only 1 and 2

(b) Only 1 and 3

(c) Only 2 and 3

(d) Only 1

Answer: (b) Only 1 and 3

345. If frequency of a transformer is increased 3 times, maximum flux density in the core

(a) increases 3 times.

(b) decreases 3 times.

(c) increases 9 times.

(d) decreases 9 times. [UPPCL AE - 2016]

Answer: (b) decreases 3 times.

346. Voltage regulation in a transformer is always positive at all.....

(a) lagging p.f. load.

(b) zero p.f.

(c) lagging and unity p.f. loads.

(d) leading p.f. loads. [UPPCL AE 2016]

Answer: (c) lagging and unity p.f. loads.

347. Short circuit test is conducted at.... side while……. side is…….

(a) H.V., L.V., short circuited with thick conductor

(b) L.V., H.V., short circuited with thick conductor

(c) H.V., L.V., open circuited

(d) L.V., H.V., open circuited with thin conductor

Answer: (a) H.V., L.V., short circuited with thick conductor

348. Primary current in a current transformer is increased to a very high voltage. It will cause

(a) increase in ratio error.

(b) increase in phase angle error but decrease in ratio error.

(c) reduction in both ratio error and phase angle.

(d) increase in phase angle error only.

Answer: (c) reduction in both ratio error and phase angle.

349. T-T scott connection is suitable for

(a) large HV transformers.

(b) small HV transformers.

(c) supply networks.

(d) AC motor starting. [UPPCL AE - 2016]

Answer: (a) large HV transformers.

350. A shell type transformer has ..... limbs and ..... yoke. [UPPCL AE 2016]

(a) 2, 1

(b) 2, 2

(c) 3, 2

(d) 2, 3

Answer: (c) 3, 2

351. For an ideal transformer, the incorrect statement is:

(a) transformer core has infinity permeability.

(b) primary winding has zero resistance.

(c) infinite resistive voltage drop.

(d) zero magnetic leakage flux.

Answer: (c) infinite resistive voltage drop.

352. Auto transformer has:

1. higher efficiency

2. lower p.u. impedance

3. high voltage regulation

as compared to 2-winding transformer.

Which of these is/are INCORRECT?

(a) Only 1

(b) Only 3

(c) 1, 2 and 3

(d) None of these

Answer: (b) Only 3

353. Open circuit test and short circuit test does not determines

1. Parameters of equivalent circuit

2. Constant losses

3. Voltage regulation

4. Efficiency

INCORRECT amongst the given is/are:

(a) 1, 2, 3 and 4

(b) Only 1

(c) Only 3

(d) None of these

Answer: (c) Only 3

354. An additional condition for parallel operation of three-phase transformers over single-phase transformers is that

(a) the transformers should belong to the same vector group.

(b) ratios of the winding resistance to resistances for the transformers should be equal.

(c) the transformes should have the same kVA ratings.

(d) the transformers should not belong to the same vector group.

Answer: (a) the transformers should belong to the same vector group.

355. The inrush current of a transformer at no load is maximum if the supply voltage is switched on

(a) at peak voltage value.

(b) at zero voltage value.

(c) at half voltage value.

(d) at 0.866 time voltage value.

Answer: (b) at zero voltage value.

356. Two transformers, each having iron loss of P_i watts and full-load copper loss of P_c, are put to back to back test and full-load current is allowed to flow through the secondaries, the total input power will be

(a) $2P_i$

(b) P_c

(c) $P_i + P_c$

(d) $2(P_i + P_c)$

Answer: (d) $2(P_i + P_c)$

357. The phase difference between any two successive third harmonic voltages in 3-ϕ transformers is

(a) zero radians

(b) π/2 radians

(c) π/3 radians

(d) 2π/3 radians

Answer: (a) zero radians

358. A transformer has maximum efficiency at ¾ of full load. The ratio of its iron loss (P_i) and full load copper loss (P_c), is

(a) 3/4

(b) 16/9

(c) 9/16

(d) 4/3

Answer: (c) 9/16

359. An Isolation transformer has primary to secondary turn's ratio of

(a) 1 : 1

(b) 1 : 2

(c) 2 : 1

(d) 1 : 3

Answer: (a) 1 : 1

360. The saving in copper achieved by converting a 2 winding transformer into and auto-transformer is determined by

(a) voltage transformation ratio.

(b) load on the secondary.

(c) iron losses in the transformer.

(d) permeability of core material.

Answer: (a) voltage transformation ratio.

361. Which one of the following connection of 3 phase transformers will give highest secondary voltage?

(a) Delta primary, Delta secondary

(b) Delta primary, Star secondary

(c) Star primary, Star secondary

(d) Star primary, Delta secondary [UPRVUNL AE - 2016]

Answer: (b) Delta primary, Star secondary

362. Transformers are connected in parallel for supplying:

(a) load in excess of rating of an existing transformer.

(b) load less than the rating of an existing transformer.

(c) load equal to the rating of an existing transformer.

(d) load less or equal to the rating of an existing transformer.

Answer: (a) load in excess of rating of an existing transformer.

363. Distribution Transformers

1. Have good voltage regulation

2. Are designed for small value of current.

Which of these is/are correct?

(a) 1

(b) 2

(c) Both 1 and 2

(d) Neither 1 nor 2

Answer: (c) Both 1 and 2

364. Which of the following statements regarding a shell type transformer is INCORRECT?

(a) It provides shorter magnetic path.

(b) Magnetizing current is lesser as compared to core type.

(c) Natural cooling is quite good.

(d) It gives better support against electromagnetic forces between current carrying transformer.

Answer: (c) Natural cooling is quite good.

365. Core of transformer has:

1. High reluctance

2. High permeability

3. Silicon steel lamination

Correct amongst the given is/are

(a) Only 1

(b) 2 and 3

(c) Only 3

(d) 1 and 3

Answer: (b) 2 and 3

366. In a step up transformer:

(a) $N_p > N_s$

(b) $N_s > N_p$

(c) $N_s + N_p$

(d) Varies accordingly

Answer: (b) $N_s > N_p$

367. The best material for the core of transformer is:

(a) mild steel.

(b) stainless steel.

(c) aluminium.

(d) soft iron. [UPPCL (JE) 2016]

Answer: (d) soft iron.

369. If the output power of a transformer is 600 W whereas the losses are 200 W, the efficiency of the transformer will be:

(a) 66.6%

(b) 75%

(c) 50%

(d) 41.4% [UPPCL JE - 2016]

Answer: (b) 75%

370. Due to magnetostriction, which one of the following problem occurs in the transformer?

(a) Oil leakage

(b) Humming sound

(c) Speed destruction

(d) No problem occurs [UPPCL JE 2016]

Answer: (b) Humming sound

371. In an ideal transformer

(a) The flux is 180° out of phase with induced emf.

(b) The applied voltage is in phase with the induced emf.

(c) The phase angle between applied voltage and emf is 90°.

(d) The magnetizing current is in phase with the flux. [UPPCL AE - 2015]

Answer: (d) The magnetizing current is in phase with the flux.

372. The source of harmonics in a transformer supplied by a voltage source of fundamental frequency is:

(a) overloading.

(b) poor insulation.

(c) saturation of core.

(d) loose laminations.

Answer: (c) saturation of core.

373. The winding used in 3-phase shell type transformer is

(a) circular.

(b) cylindrical.

(c) sandwich type.

(d) rectangular. [RRB SSE - 2015]

Answer: (c) sandwich type.