

Alternator MCQ PDF

1. Salient pole type alternators are generally used on

- (a) low voltage alternators.
- (b) hydrogen cooled prime-movers.
- (c) high speed prime-movers.
- (d) low and medium speed prime-movers.

Answer: (d)

2. Turbo-alternators are generally used to run at

- (a) 500 R.P.M.
- (b) 3000 R.P.M.
- (c) 5000 R.P.M.
- (d) 16000 R.P.M.

Answer: (b)

3. The rotor preferred for alternators applied to hydraulic turbines are

- (a) salient pole type.
- (b) cylindrical rotor type.
- (c) solid rotor type.
- (d) any of the above.

Answer: (a)

4. Which of the following prime-mover is least efficient?

- (a) Gas turbine (b) Petrol engine
(c) Diesel engine (d) Steam engine

Answer: (d)

5. In which coil the harmonic component of the generated e.m.f. will be more?

- (a) Full pitch coil (b) Short pitch coil
(c) Long pitch coil (d) Same in all coils

Answer: (a)

6. In case of [turbo-alternators the rotor](#) is usually made of

- (a) cast iron (b) forged steel
(c) laminated stainless steel (d) manganese steel

Answer: (b)

7. The number of [poles in turbo-alternators](#) is usually

- (a) 2 (b) 4 (c) 6 (d) 8

Answer:

8. In huge alternators, the moving part is

- (a) brushes . (b) poles.
- (c) armature. (d) none of the above.

Answer: (b)

9. When a three-phase alternator supplies capacitive load, armature reaction will be

- (a) opposing the main magnetic field.
- (b) helping the main magnetic field.
- (c) none of the above.

Answer: (b)

10. Due to which of the following reasons, for aircraft alternators high frequency is used ?

- (a) To reduce the bulk
- (b) To compensate for high speeds
- (c) To compensate for high altitudes
- (d) To free the systems from external disturbance

Answer: (a)

11. In case of a uniformly distributed winding, the value of distribution factor is

- (a) 0.65 (b) 0.76
- (c) 0.85 (d) 0.995

Answer: (d)

12. Unbalanced three-phase stator currents cause

- (a) vibrations. (b) heating of rotor.
- (c) double frequency currents in the rotor.
- (d) all of the above.

Answer: (d)

13. In a large generator, dampers

- (a) reduce frequency fluctuations.
- (b) reduce voltage fluctuations.
- (c) increase stability.
- (d) none of the above.

Answer: (c)

14. In an alternator, the armature reaction will be completely magnetizing in case the load power factor is

- (a) zero lagging
- (b) zero leading
- (c) 0.860
- (d) unity

Answer: (b)

15. In a star connected armature winding

- (a) phase voltage contains 3rd harmonic e.m.f. but line voltage does not contain it.
- (b) phase voltage contains 3rd harmonic e.m.f. and line voltage also contains third harmonic component.
- (c) phase voltage does not contain third harmonic e.m.f. and line voltage also does not contain it.
- (d) none of the above.

Answer: (a)

16. The slip rings employed in a 3-phase alternator in hydro station are insulated for

- (a) low voltage.
- (b) very low voltage.
- (c) full armature voltage.

(d) extra high tension voltage.

Answer: (a)

17. In an alternator, for a coil having a span of $\frac{2}{3}$ of pole pitch, the coil span-factor will be

(a) 0.866 (b) 0.707

(c) 0.6 (d) 0.2

Answer: (a)

18. Excessive windage loss and noise occur with

(a) cylindrical rotors

(b) [salient pole rotors](#)

(c) either of the above

(d) none of the above

Answer: (b)

19. Regulation of an alternator supplying leading load is

(a) always negative.

(b) always positive.

(c) sometimes positive and sometimes negative depending upon load and power factor.

Answer: (c)

20. Which harmonic will be totally eliminated in an alternator by using fractional pitch of $\frac{4}{5}$?

- (a) Third
- (b) Fifth
- (c) Seventh
- (d) Ninth

Answer: (b)

21 Dirt accumulation in generators can cause all of all of the following except

- (a) low power factor.
- (b) poor voltage regulation.
- (c) flashovers.
- (d) overheating.

Answer: (a)

22. If an alternator is operating at leading power factor, then it can be concluded that

- (a) the alternator is under- excited.

(b) the alternator is over-excited.

(c) the torque angle of the alternator has negative value.

(d) the residual magnetism of the poles is zero.

Answer: (b)

23. Which fractional pitch will eliminate the seventh harmonic from the voltage waveform of an alternator ?

(a) $6/7$ (b) $7/8$ (c) $5/6$

(d) None of the above

Answer: (a)

24. [Damper winding](#) on alternator results in all of the following except

(a) increases instability of machine.

(b) elimination of harmonics.

(c) absorption of energy of oscillations when operating in parallel with other alternators.

(d) suppression of spontaneous hunting when supplying power to transmission line with high resistance to reactance ratio.

Answer: (a)

25. In a cylindrical rotor how much portion of the rotor is wound

(a) One third (b) Half

(c) Two third (d) Full

Answer: (c)

26. The speed of an alternator is changed from 3000 r.p.m. to 1500 r.p.m. The generated e.m.f./phase will become

(a) one fourth. (b) half.

(c) double. (d) unchanged.

Answer: (b)

27. Zero power factor method for an alternator is generally used to determine

(a) synchronous impedance of alternator.

(b) efficiency of alternator.

(c) voltage regulation of the alternator.

(d) none of the above.

Answer: (c)

28. In an alternator the armature reaction is mainly influenced by

- (a) power factor of the load.
- (b) short- circuit ratio.
- (c) speed of the alternator.
- (d) total current drawn.

Answer: (a)

29. Regulation of an alternator supplying resistive or inductive load is

- (a) always negative
- (b) always positive
- (c) either of the above
- (d) none of the above

Answer: (b)

30. To obtain sinusoidal flux distribution

- (a) chamfering of poles is done in turbo alternators only
- (b) chamfering of poles is done in salient pole alternators only
- (c) either of the above
- (d) none of the above

Answer: (b)

31. In air-crafts, alternators have operating frequency of

- (a) 800 Hz
- (b) 400 HZ
- (c) 60 Hz
- (d) 50 HZ

Answer: (b)

32. Alternators, now-a-days, are designed to have poor regulation because

- (a) it reduces the construction cost.
- (b) it limits the value of short-circuit current.
- (c) we employ automatic voltage regulators.
- (d) none of the above.

Answer: (b)

33. Voltage regulation of an alternator is usually

- (a) equal to that of power transformer
- (b) much lower than that of a power transformer
- (c) much higher than that of a power transformer

Answer: (c)

34. In an alternator, the stator frame serves

- (a) to verticate the armature
- (b) to hold the armature stampings
- (c) to protect the whole machine
- (d) as a return path for the flux

Answer: (d)

35. For a given output steam turbo-alternators are much smaller in size than water turbine alternators because

- (a) steam turbo-alternators are built with smaller capacities.
- (b) steam turbo-alternators have long rotors.
- (c) steam turbo-alternators run at high speed.
- (d) all of the above.

Answer: (c)

36. [Non-salient pole type of rotor construction](#) is usually provided in the alternators used in

- (a) hydropower stations.
- (b) thermal power stations.
- (c) either of the above.

(d) none of the above.

Answer: (b)

37. In an alternator terminal voltage rise will be more

(a) when leading load is thrown off.

(b) when lagging load is thrown off.

(c) when unity power factor load is thrown off.

(d) none of the above

Answer: (b)

38. In an alternator short pitch coils are used

(a) to reduce the stray losses.

(b) to reduce the size of the machine.

(c) to provide accurate phase difference of 120 degrees between each phase.

(d) to reduce the harmonics in generated e.m.f.

Answer: (d)

39. If the input to the prime-mover of an alternator is kept constant but the excitation is increased, then

- (a) kVA will be lagging.
- (b) kVA will be leading.
- (c) kW will be changed.
- (d) the power factor of the load remains constant.

Answer: (a)

40. Generated e.m.f. for same field current and double speed will be

- (a) same
- (b) double
- (c) less than double
- (d) more than double

Answer: (b)

41. If the space flux distribution is non-sinusoidal, e.m.f. induced in the distributed winding

- (a) will be less sinusoidal than flux distribution.
- (b) will be more sinusoidal than flux distribution.
- (c) will be equally non-sinusoidal.
- (d) none of the above.

Answer: (b)

42. Voltage regulation obtained by synchronous impedance method is

- (a) equal to that given by actual tests.
- (b) less than that given by actual tests.
- (c) more than that given by actual tests.
- (d) none of the above.

Answer: (c)

43. In an alternator short-circuit current is limited by

- (a) the saturated synchronous impedance.
- (b) the unsaturated synchronous impedance.
- (c) either of the above.
- (d) none of the above.

Answer: (b)

44. In an alternator, armature reaction is considered equivalent to

- (a) fictitious impedance
- (b) fictitious conductance
- (c) fictitious reactance
- (d) fictitious resistance

Answer: (c)

45. Synchronous impedance method gives more regulation as compared to ampere-turn method because

- (a) armature reaction is considered negligible.
- (b) saturation effect is ignored in the synchronous impedance.
- (c) saturation effect is taken into account in the synchronous impedance method.

Answer: (a)

46. Leakage reactance of the armature of a salient pole synchronous machine which varies with the position of the rotor is due to

- (a) leakage flux which remains within the slot
- (b) leakage flux of end connections
- (c) leakage flux which comes out of slot teeth, crosses the air gap and enters pole faces
- (d) none of the above

Answer: (c)

47. Turbo-rotor is made up of

- (a) solid steel forging having milled slots for field winding.
- (b) large spider to which laminated pole shoes are secured.
- (c) laminations

(d) none of the above.

Answer:

48. For the alternators operating in parallel, if the load shared by one of them is to be increased, its field excitation is

(a) to be weakened keeping input torque same.

(b) to be strengthened keeping input torque same.

(c) to be kept constant but input torque should be increased.

(d) to be kept constant but input torque should be decreased.

Answer: (c)

49. Which of the following methods is best for finding the voltage regulation?

(a) Synchronous impedance method

(b) M.M.F. method

(c) Pointer triangle method

(d) All are equally good

Answer: (c)

50. For a 3-phase winding with 5 slots per pole per phase and with coil span of 12 slot pitch, the value of pitch factor is

(c) speed. (d) voltage rating.

Answer: (d)

54. An alternator running in parallel with other alternators all having automatic voltage regulators is to be taken off the bus. The usual procedure before opening the switch is to

(a) reduce the power fed to the prime-mover.

(b) reduce alternator excitation.

(c) increase alternator excitation.

(d) none of the above.

Answer: (a)

55. Due to which of the following reasons concentrated winding are not used in alternators ?

(a) Concentrated windings increase voltage harmonics.

(b) Concentrated windings decreases induced e.m.f./phase.

(c) Concentrated windings increase copper-to-iron ratio thereby decreasing the capacity.

(d) Concentrated winding require deep slots for accommodation which leads to increased armature leakage reactance.

Answer: (d)

56. A stationary alternator should not be connected to a live bus-bar because it

- (a) will get short-circuited.
- (b) will disturb the generated e.m.fs. of other alternators connected in parallel.
- (c) is likely to run as a synchronous motor.
- (d) will decrease bus-bar voltage momentarily.

Answer: (a)

57. The power drawn by the prime-mover of an alternator, under no-load conditions, goes to

- (a) meet copper losses both in armature and rotor windings.
- (b) produce power in armature.
- (c) meet no-load losses.
- (d) produce e.m.f. in armature winding.

Answer: (c)

58. In a larger generator dampers

- (a) reduce frequency fluctuations.
- (b) increase stability.

(c) reduce voltage fluctuations.

(d) none of the above.

Answer: (b)

59. The choice of field construction, in an alternator, is basically determined by

(a) generated voltage needed by the customers.

(b) comparative cost of the field systems.

(c) supply frequency required by the consumers.

(d) the kind of energy source available in the geographic location.

Answer: (d)

60. The load between two steam-driven [alternators operating in parallel](#) may be adjusted by varying

(a) steam supply to their prime movers.

(b) speed of the alternators.

(c) field strengths of the alternators.

(d) power factors of the alternators.

Answer: (a)

61. Overheating of generator's winding

- (a) reduces life of the machine
- (b) does not have any significant effect
- (c) reduces generated voltage
- (d) reduces power factor

Answer: (a)

62. The maximum current that can be supplied by an alternator depends on

- (a) exciter current.
- (b) strength of the magnetic field.
- (c) number of poles.
- (d) speed of the exciter.

Answer: (d)

63. The regulation of an alternator is likely to be negative in case of

- (a) lagging power factor of the load.
- (b) leading power factor of the load.
- (c) high speed alternators.
- (d) low speed alternators.

Answer: (b)

64. The regulation of an alternator is

- (a) the increase in terminal voltage when load is thrown off.
- (b) the reduction in terminal voltage when alternator is loaded.
- (c) the variation of terminal voltage under the condition of maximum and minimum excitation.
- (d) the change in terminal voltage from lagging power factor to leading power factor.

Answer: (a)

65. An alternator driven by a Francis hydraulic turbine is aalternator.

- (a) low speed (b) medium speed
- (c) high speed (d) low or medium speed

Answer: (d)

66. If two alternators are running in proper synchronism and the voltage of one machine is suddenly increased

- (a) both machines will stop.
- (b) one machine will stop.

(c) synchronizing torque will be produced to restore further synchronism.

(d) none of the above.

Answer: (c)

67. If the steam supply of an alternator running in parallel with another identical alternator is increased keeping its excitation constant, then

(a) it will supply greater portion of the load.

(b) the power factor would be decreased.

(c) it would over-run the other alternator.

(d) its rotor will fall back in phase with respect to the other machine.

Answer: (a)

68. An exciter for a generator is a

(a) shunt motor. (b) series motor.

(c) shunt generator. (d) series generator.

Answer: (c)

69. Two alternators '1' and '2' sharing an inductive load equally. If the excitation of alternator '1' is increased

- (a) the alternator '2' will deliver less current and alternator '1' will deliver more current .
- (b) alternator '2' will deliver more current and alternator '1' will deliver less current.
- (c) both will deliver more current.
- (d) both will continue to share the load equally.

Answer: (a)

70. Which of the following coils in an alternator will have e.m.f. closer to sine waveform ?

- (a) Distributed winding in full pitch coils.
- (b) Distributed winding in short pitch coils.
- (c) Concentrated winding in full pitch coils
- (d) Concentrated winding in short pitch coils.

Answer: (b)

71. The distribution factor, in alternators, is defined as the ratio of e.m.fs. of

- (a) distributed winding to full pitch winding.
- (b) concentrated winding to distributed winding.
- (c) distributed winding to concentrated winding.

(d) full pitch winding to distributed winding.

Answer: (c)

72. As load power factor of an alternator becomes more leading the value of generated voltage required to give rated terminal voltage

(a) decreases. (b) increases.

(c) varies with rotor speed.

(d) remains unchanged.

Answer: (a)

73. In an alternator the flux created by the armature m.m.f. subtracts directly from the main flux for the following conditions of the load

(a) load power factor is unity.

(b) load power factor is 0.6 lagging.

(c) load power factor is zero lagging.

(d) load power factor is zero leading.

Answer: (c)

74. Synchronous impedance method of finding voltage regulation of an alternator is called pessimistic method because

- (a) it is simplest to perform and compute.
- (b) it gives regulation value higher than is actually found by direct loading.
- (c) armature reaction is wholly magnetizing.
- (d) none of the above.

Answer: (b)

75. Two alternators are running in parallel. If the field of one of the alternators is adjusted it will

- (a) change its power factor
- (b) change its frequency
- (c) reduce its speed
- (d) change its load

Answer: (a)

76. In a synchronous machine. If the field flux axis is ahead of the armature field axis, in the direction of rotation, the machine is working as

- (a) synchronous generator.
- (b) asynchronous generator.
- (c) synchronous motor.

(d) asynchronous motor.

Answer: (a)

77. The advantage of salient poles in an alternator is

(a) reduced windage loss.

(b) reduced bearing loads and noise.

(c) reduced noise.

(d) adaptability of low and medium speed operation.

Answer: (d)

78. For [parallel operation of the two alternators](#), desirable feature is that both should have

(a) same reactance. (b) same resistance.

(c) more of resistance as compared to synchronous reactance.

(d) less resistance as compared to synchronous reactance.

Answer: (d)

79. If two alternators are running in parallel and the excitation of one of the alternators is increased, then

(a) power output will decrease.

- (b) wattless component will change.
- (c) machine with excess excitation will burn.
- (d) both machines will start vibrating.

Answer: (b)

80. When an alternator is supplying unity power factor load, the armature reaction will produce

- (a) distortion of the main field.
- (b) magnetisation of the main field.
- (c) demagnetisation of the main field.
- (d) none of the above.

Answer: (a)

81. If the driving force of both the alternators running in parallel is changed, this will result in change in

- (a) generated voltage.
- (b) frequency.
- (c) back e.m.f.
- (d) all of the above.

Answer: (b)

82. In an alternator, when the load power factor is unity

- (a) the armature flux will be demagnetising
- (b) the armature flux will be cross-magnetising
- (c) the armature flux will reduce to zero
- (d) the armature flux will have square wave form

Answer: (b)

83. The Poiter's triangle separates the

- (a) stator voltage and rotor voltage.
- (b) field m.m.f. and armature m.m.f.
- (c) armature leakage reactance and armature reaction m.m.f.
- (d) iron losses and copper losses.

Answer: (c)

84. In an alternator zero power factor method is used to find the

- (a) synchronous impedance.
- (b) efficiency.
- (c) armature resistance.
- (d) voltage regulation.

Answer: (d)

85. If the driving power from the prime-mover driving an alternator is lost but the alternator remains connected to the supply network and field supply is on, then the alternator will

(a) behave as an induction motor but will rotate in an opposite direction.

(b) behave as a synchronous motor and will rotate in the same direction.

(c) get burnt.

(d) none of the above.

Answer: (b)

86. In turbo-alternators, smooth cylindrical type rotors used have long axial length because

(a) it gives smooth running of the rotor.

(b) it reduces windage loss.

(c) centrifugal force is reduced.

(d) number of armature conductors being less they have to be necessarily long for generating the required voltage.

Answer: (d)

87. Large diameter salient-pole rotors have short axial length mainly because

- (a) it occupies much less space.
- (b) it reduces rotor weight.
- (c) number of armature conductors held in the large circumference, rotor being very large, they need not be long.
- (d) it saves lot of copper in stator winding.

Answer: (c)

88. At leading power factor, the armature flux in an alternator

- (a) distorts the rotor flux.
- (b) aids the rotor flux.
- (c) opposes the rotor flux.
- (d) does not affect the rotor flux.

Answer: (b)

89. Three-phase alternators are invariably [star-connected](#) because

- (a) higher terminal voltage is obtained.
- (b) less turns of wire are required.
- (c) small conductors can be used.
- (d) magnetic losses are the minimum.

Answer: (a)

90. Which of the following conditions does not have to be met by alternators working in parallel ?

- (a) Alternators must operate at the same frequency.
- (b) Machines must have the same phase rotation.
- (c) The terminal voltage of each machine must be the same.
- (d) The machines must have equal kVA ratings.

Answer: (d)

91. The fictitious part of synchronous reactance takes care of

- (a) inductive reactance.
- (b) armature reaction.
- (c) voltage regulation.
- (d) none of the above.

Answer: (b)

92 In an alternator, the voltage of field system is usually

- (a) more than 1000 V
- (b) between 400 V and 600 V
- (c) less than 200 V
- (d) none of the above

Answer: (c)

93. In an alternator, pitch factor is the ratio of the e.m.fs. of

- (a) full pitch winding to short pitch winding.
- (b) short pitch coil to full pitch coil.
- (c) distributed winding to full pitch winding.
- (d) full pitch winding to concentrated winding.

Answer: (b)

94. When two alternators are running in exact synchronism, the synchronizing power will be

- (a) unity.
- (b) zero.
- (c) sum of the output of two
- (d) none of the above.

Answer: (b)

95. In an alternator if the armature reaction produces demagnetization of the main field, the power factor should be

- (a) unity.
- (b) zero, lagging load.
- (c) zero, leading load.

(d) none of the above.

Answer: (b)

96. In an alternator, the armature reaction influences

(a) generated voltage per phase.

(b) waveform of voltage generated.

(c) operating speed.

(d) windage losses.

Answer: (a)

97. An alternator operating at lower voltage for the same power rating will be

(a) more efficient

(b) costlier

(c) less noisy

(d) larger in size

Answer: (d)

98. When two alternators are running in parallel their kVAR load share and kW load share are changed by changing their

(a) driving torque, driving torque respectively.

(b) driving torque, excitation respectively.

(c) excitation, driving torque respectively.

(d) excitation and excitation.

Answer: (c)

99. In an alternator one of the advantages of distributing the winding is to

(a) improve voltage waveform.

(b) reduce noise.

(c) save on copper.

(d) reduce harmonics.

Answer: (a)

100. plays an important role in over speed protection of a generator ?

(a) Governor

(b) Differential protection

(c) Over current relay

(d) Alarm

Answer: (a)

101. Which of the following is the common synchronous speed in R.P.M. between 50 Hz and 60 Hz alternators ?

- (a) 200 (b) 300
- (c) 600 (d) 900

Answer: (c)

102. Salient pole type rotors as compared to cylindrical pole type are

- (a) small in diameter as well as axial length.
- (b) large in diameter as well as axial length.
- (c) smaller in diameter and larger in axial length.
- (d) larger in diameter and smaller in axial length.

Answer: (d)

103. Which of the following relays come into operation in the event of the failure of prime-mover connected to the generator ?

- (a) Buchholz relay
- (b) Reverse power relay
- (c) Differential relay
- (d) All of the above

Answer: (b)

104. In order to reduce the harmonics in the e.m.f. generated in an alternator

- (a) winding is well distributed.
- (b) slots are skewed.
- (c) salient pole tips are chamfered.
- (d) all of the above.

Answer: (d)

105. The permissible duration for which a generator of rated frequency 50 Hz can run at 46 Hz is

- (a) one cycle (b) one second
- (c) one minute (d) none of the above

Answer: (b)

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