501 MCQ Questions on DC Machine

1. A DC cumulatively compounded motor delivers rated load torque at rated speed. If the series field is short-circuited, then the armature current and speed will

(a) both decrease.

(b) both increase.

(c) increase and decrease respectively.

(d) decrease and increase respectively.

Answer: (b) both increase.

2. A dc cumulatively compounded generator was operating satisfactorily and supplying power to an infinite bus when the mechanical power supply from the prime mover failed. The machine will then run as a

(a) differentially compounded motor with speed reversed.

(b) differentially compounded motor with the direction of speed the same as before.

(c) cumulatively compounded motor with the same direction of speed as before.

(d) cumulatively compounded motor with speed reversed.

Answer: (b) differentially compounded motor with the direction of speed the same as before.

3. A cumulatively compounded dc motor runs at 1000 rpm at no-load. On full load, the flux increases by 10%, whereas the full load drop in the combined resistance of the armature and series field is 5%. Neglecting magnetic saturation, the full load speed will be nearly

(a) 863 rpm.

(b) 909 rpm.

(c) 1000 rpm.

(d) 1050 rpm

Answer: (a) 863 rpm.

4. A separately excited dc machine, having an armature resistance of 2 ohms was working on a 220 V supply and drawing 10 A armature current from the source when the supply voltage suddenly dropped to 200 V. Assuming that the field circuit source voltage remained unaffected how will the armature current of the machine react to the change?

(a) It will initially rise to 11A and then settle down to 10A.

(b) It will fall momentarily to 9.09A and then slowly attain 10A.

(c) It will reduce to zero first and then settle back to 10A.

(d) It will remain unaffected by the change and continue to be 10A.

Answer: (b) It will fall momentarily to 9.09A and then slowly attain 10A.

5. A dc overcompound generator is supplying power to an infinite bus. If the prime mover is accidentally cut off, the dc machine will

(a) stop running.

(b) run as cumulatively compounded motor in reverse direction.

(c) run as differentially compounded motor in reverse direction.

Answer: (c) run as differentially compounded motor in reverse direction.

6. A 6-pole lap-connected de generator with 480 conductors has an armature resistance of 0.06 ohm. If the conductors are reconnected to form a wave winding, other things remaining unchanged, the value of the armature resistance will be

(a) 0.01 ohm

(b) 0.06 ohm

(c) 0.36 ohm

(d) 0.54 ohm

Answer: (d) 0.54 ohm

7. The introduction of interpoles in between the main poles improves the performance of a dc machine, because

(a) the interpoles produce additional flux to augment the developed torque.

(b) the flux waveform is improved with reduction in harmonics.

(c) the inequality of air-gap flux on the top and bottom halves of the armature is removed.

(d) a counter-emf is induced in the coil undergoing commutation.

Answer: (d) a counter-emf is induced in the coil undergoing commutation.

8. In a dc machine, the armature mmf is

(a) rectangular and directed along the inter-polar axis.

(b) triangular and directed along the inter-polar axis.

(c) triangular and directed along the brush axis.

(d) rectangular and directed along the brush-axis.

Answer: (c) triangular and directed along the brush axis.

9. A shunt motor is running at its rated speed on rated load. If the field circuit gets suddenly opened

(a) torque developed by the motor will be almost zero and the motor will stop without causing any damage to the motor.

(b) the motor will draw very high armature current but it will continue to drive the load at a reduced speed.

(c) the motor would tend to race to a high speed while driving the load.

(d) the motor would draw very high armature current and will stall with consequent damage to the armature.

Answer: (c) the motor would tend to race to a high speed while driving the load.

10. When starting a differentially connected compound motor, it is desirable to short-circuit the series field winding to

(a) avoid very high starting time.

(b) avoid excessive starting speed.

(c) prevent the motor from starting in the reverse direction.

(d) avoid heavy in-rush of current.

Answer: (c) prevent the motor from starting in the reverse direction.

11. A separately excited de motor is fed from a phase- controlled converter. The motor exhibits poor speed regulation, this is due to

(a) inductive voltage drop of the converter and possible discontinuous conduction.

(b) harmonics in the armature current.

(c) large inductance of the load current.

(d) poor power factor of the converter.

Answer: (a) inductive voltage drop of the converter and possible discontinuous conduction.

12. In a loaded de generator, if the brushes are given a shift from the inter polar axis in the direction of rotation, then the commutation will

(a) improve with fall of terminal voltage.

(b) deteriorate with fall of terminal voltage.

(c) improve with rise in terminal voltage.

(d) deteriorate with rise in terminal voltage.

Answer: (a) improve with fall of terminal voltage.

13. A dc shunt motor is required to drive a constant power load at rated speed while drawing rated armature current. Neglecting saturation and all machine losses, if both the terminal voltage and the field current of the machine are halved, then

(a) the speed becomes 2 pu (per unit) but armature current remains at 1 pu.

(b) the speed remains at 1pu but armature current becomes 2 pu.

(c) both speed and armature current becomes 2 pu.

(d) both speed and armature current remain at 1 pu.

Answer: (b) the speed remains at 1pu but armature current becomes 2 pu.

14. The series winding of a cumulatively compounded dc motor is short-circuited while driving a load at rated torque. This results in

(a) reduction in both the armature current and the motor speed.

(b) increase in the armature current and reduction in the motor speed.

(c) increase in both the armature current as well as the motor speed.

(d) reduction in the armature current and increase in the motor speed.

Answer: (c) increase in both the armature current as well as the motor speed.

15. Which one of the following statements for a dc machine which is provided with interpole windings (IW) as well as compensating winding (CW) is correct?

(a) Both IW and CW are connected in series with the armature winding.

(b) Both IW and CW are connected in parallel with the armature winding.

(c) IW is connected in series but CW is connected in parallel with the armature winding.

(d) IW is connected in parallel but CW is connected in series with the armature winding.

Answer: (a) Both IW and CW are connected in series with the armature winding.

16. Which one of the following is the correct statement? Field control of d.c. shunt motor gives

(a) Constant kW drive

(b) Constant torque drive

(c) Constant speed drive

(d) Variable load speed drive

Answer: (a) Constant kW drive

17. To prevent the shifting of the magnetic neutral axis, caused by the armature reaction in a d.c machine, the most effective method, to neutralize the armature-flux is to

(a) shift the 'brush-axis.'

(b) provide high-reluctance main pole tips.

(c) cut horizontal slots in the main poles.

(d) place compensating windings on the main-pole faces.

Answer: (d) place compensating windings on the main-pole faces.

18. A separately excited d.c. motor takes a current I of a speed N. If it draws a current I/3 at a speed 3N, this condition is obtained with

(a) field control under constant torque.

(b) voltage control under constant torque.

(c) field control under constant output.

(d) voltage control under constant output.

Answer: (c) field control under constant output.

19. Consider the following statements in respect of compensating windings in d.c. motors:

1. Compensating windings are connected in series with the armature.

2. Compensating windings improves commutation.

3. Compensating windings produce mmf in the same direction as that of armature mmf.

Which of these statements is/are correct?

(a) 2 and 3

(b) only 1

(c) 1 and 3

(d) 1 and 2

Answer: (d) 1 and 2

20. Match List-I (Test) with List-II (Object) and select the correct answer using the codes given below the lists:

List-I

A. Slip test

B. Open circuit and zero power factor test

C. Sumpner's test

D. Swinburne's test

List-II

1. Determination of constant losses of a d.c shunt machine.

2. Determination of efficiency and regulation of transformer.

3. Determination of synchronous Potier reactance of synchronous machine.

4. Determination of direct and quadrature axis synchronous reactances of salient pole synchronous machine.

(a) A-2, B-1, C-3, D-4

(b) A-4, B-3, C-2, D-1

(c) A-2, B-3, C-1, D-4

(d) A-4,B-1, C-3, D-2

Answer: (b) A-4, B-3, C-2, D-1

21. The series and shunt field windings of a short shunt cumulatively compound d.c. motor get interchanged by mistake. On supplying rated voltage, the motor shall

(a) run normally.

(b) run in the reverse direction.

(c) run as differentially compounded.

(d) not run.

Answer: (a) run normally.

22. In a d.c. motor if the brushes are shifted opposite to its direction of rotation, then

(a) commutation is worsened and speed decreases.

(b) commutation is improved and speed decreases.

(c) commutation is worsened and speed increases.

(d) commutation is improved and speed increases.

Answer: (d) commutation is improved and speed increases.

23. A d.c. shunt motor with negligible armature resistance is required to drive a constant power load, under normal rated-load operating conditions when the terminal voltage V, 1.0 p.u., the speed N = 1.0 p.u. and the armature current I, = 1.0 p.u. and, with linear magnetizing characteristic the field flux = 1.0 p.u. If V1 = 0.5 p.u. and the flux 4 is kept constant at 1.0 p.u., then

(a) N = 1/2 p.u. and I = 2.0 p.u.

(b) N = 1.0 p.u. and I = 2.0 p.u.

(c) N = 2.0 p.u. and I = 1.0 p.u.

(d) N = 1/2 p.u. and I, = 1/2 p.u.

Answer: (a) N = 1/2 p.u. and I = 2.0 p.u.

24. A dc shunt generator builds up to a voltage of 220 V at no-load while running at rated speed If the speed of the generator is raised by 25% keeping the circuit conditions unaltered, then the voltage to which the machine would build up will

(a) not change and remain at 220 V.

(b) increase to 1.25 times 220 V.

(c) increase to a value lying between 220 V and 1.25 times 220 V.

(d) increase to a value greater than 1.25 times 220 V.

Answer: (b) increase to 1.25 times 220 V.

25. In a dc machine, the demagnetizing effect of armature reaction is due to

(a) component of armature mmf along field axis.

(b) non-sinusoidal nature of armature mmf.

(c) magnetic saturation in half of the field pole.

(d) uneven air gap length.

Answer: (c) magnetic saturation in half of the field pole.

26. Plugging of dc motors is normally done by

(a) connecting a resistance across the armature.

(b) reversing simultaneously the armature and field polarity.

(c) reversing the field polarity.

(d) reversing the armature polarity.

Answer: (d) reversing the armature polarity.

27. A dc shunt wound motor finds application in

(a) electric trains.

(b) tape recorders.

(c) mixer.

(d) steel rolling mills.

Answer: (d) steel rolling mills.

28. Consider the following statements: A dc shunt motor starter ensures that

1. Armature current is under limit during starting.

2. Field flux is maintained at the maximum value

3. Acceleration time is controlled.

4. Field failure is prevented.

5. Starting torque is always more than the load torque.

Of these statements:

(a) 1, 2, 3 and 5 are correct

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

(c) 1 and 4 are correct

(d) 1, 3 and 4 are correct

Answer: (a) 1, 2, 3 and 5 are correct

29. Fleming's Right Hand Rule is used for the determination of direction of

(a) force acting on a current carrying conductor kept in a magnetic field.

(b) motion of a current carrying conductor kept in on electric field.

(c) current induced in a conductor due to its motion in a magnetic field

(d) deflection of a charged particle moving in a magnetic field.

Answer: (c) current induced in a conductor due to its motion in a magnetic field

30. A torque is developed in an electro mechanical energy conversion device, the value of which depends upon

(a) stator field strength and torque angle.

(b) stator field and rotor field strengths.

(c) stator field and rotor field strengths and the torque angle.

(d) stator field strength only.

Answer: (c) stator field and rotor field strengths and the torque angle.

31. If the field of a dc shunt motor gets opened while the motor is running, then the

(a) speed of the motor will be reduced.

(b) motor will attain dangerously high speed.

(c) armature current will drop.

(d) armature will oscillate about original speed as the mean speed.

Answer: (b) motor will attain dangerously high speed.

32. The residual magnetism of a self-excited dc generator is lost. To build up its emf again

(a) the field winding must be replaced.

(b) the armature connection must be reversed.

(c) the field winding connection must be reversed.

(d) field winding must be excited by low voltage dc supply.

Answer: (d) field winding must be excited by low voltage dc supply.

33. In a large DC series motor, why is shunt field winding provided?

(a) To avoid field distortion.

(b) To generate working flux.

(c) To improve commutation.

(d) To avoid runaway speeds at no-load.

Answer: (d) To avoid runaway speeds at no-load.

34. A DC motor on switching was found to rotate in a direction opposite to the normal direction of rotation. What type of motor is?

(a) Cumulative compound

(b) Differential compound

(c) Series

(d) Shunt

Answer: (b) Differential compound

35. In a regenerative braking, which of the following is generally true?

(a) Back e.m.f. in the motor exceeds the applied voltage.

(b) Back e.m.f is less than applied voltage.

(c) Kinetic energy of the motor is dissipated in a resistance.

(d) Kinetic energy of the motor is dissipated through free wheeling diode across the motor.

Answer: (a) Back e.m.f. in the motor exceeds the applied voltage.

36. Wave winding is employed in a dc machine of

(a) high current and low voltage rating.

(b) low current and high voltage rating.

(c) high current and high voltage rating.

(d) low current and low voltage rating.

Answer: (b) low current and high voltage rating.

37. If a 230 V DC series motor is connected to a 230 V ac supply

(a) the motor will vibrate violently.

(b) the motor will run with less efficiency and more sparking.

(c) the motor will not run.

(d) the fuse will be blown.

Answer: (b) the motor will run with less efficiency and more sparking.

38. The value of back emf (E) in a dc motor in maximum at

(a) no load.

(c) half full load.

(b) full load.

(d) none of the above.

Answer: (a) no load.

39. The function of a commutator in a dc machine is

(a) to improve commutation.

(b) to change ac current to dc current.

(c) to change de voltage to ac voltage.

(d) to provide easy speed control.

Answer: (b) to change ac current to dc current.

40. As the speed of dc generator is increased, the generated emf

(a) increases.

(b) decreases.

(c) remains constant.

(d) first increases and then decreases.

Answer: (a) increases.

41. The induced e.m.f. in the armature conductors of a d.c. motor is

(a) sinusoidal.

(b) trapezoidal.

(c) rectangular.

(d) alternating. [RRB SSE - 2015]

Answer: (a) sinusoidal.

42. In a Brush Less DC (BLDC) motor, the construction of motor is similar to

(a) stepper motor.

(c) dc motor.

(b) universal motor.

(d) synchronous motor.

Answer: (d) synchronous motor.

43. Which of the following results in an increase in the induced voltage?

(a) When we decrease the speed at which a conductor is moved through a magnetic field.

(b) When we increase the speed at which a conductor is moved through a magnetic field.

(c) When we first increase and then decrease the speed at which a conductor is moved through a magnetic field.

(d) None of these.

Answer: (b) When we increase the speed at which a conductor is moved through a magnetic field.

44. The direction of the magnetic field reverses when

(a) the current through the coil of an electromagnet increases beyond certain limit.

(b) the current through the coil of an electromagnet reverses.

(c) the voltage through the coil of an electromagnet halves.

(d) none of these.

Answer: (b) the current through the coil of an electromagnet reverses.

45. What is the induced voltage across a coil with 220 turns located in a magnetic field that is changing at a rate of 10 Wb/s?

(a) 22V

(c) 2200 V

(b) 220V

(d) None of these

Answer: (c) 2200 V

46. The flux density in a wire wound core can be increased by

(a) decreasing the current through the coil.

(b) increasing the current through the coil.

(c) increasing the ambient pressure.

(d) none of these.

Answer: (b) increasing the current through the coil.

47. Consider a 100-turn coil of wire with 0.5 A of current through it. What is the magnetomotive force?

(a) 50 AT

(b) 500 AT

(c) 5 AT

(d) None of these

Answer: (a) 50 AT

48. What is the flux density of a magnetic field whose flux is 1000 μWb and cross-sectional area is 0.5 m^2?

(a) 500 μT

(b) 5000 μT

(c) 2000 μT

(d) None of these

Answer: (a) 500 μT

49. Which of the following does Faraday's law deal with?

(a) A magnetic field and a conductor.

(b) A conductor in an extremely low temperature.

(c) A magnetic field of the planes.

(d) None of these.

Answer: (a) A magnetic field and a conductor.

50. A 250 V de motor has an armature resistance of 0.25Ω. It is drawing an armature current of 25A, driving a certain load. Calculate the induced emf in the motor under this condition. [UPPCL JE - 2014]

(a) 180.5 V

(b) 243.75 V

(c) 192.5 V

(d) 625 V

Answer: (b) 243.75 V

51. Which of the following is the standard requirement of a dc armature winding? [UPPCL JE 2014]

(a) It should be a closed one.

(b) It should be a lap winding.

(c) It should be a wave winding.

(d) It should be either a wave winding or a lap winding.

Answer: (a) It should be a closed one.

52. The poorest voltage regulation exists in case of which of the following generators? [UPPCL JE - 2014]

(a) Compound generators

(b) Shunt generators

(c) Series generators

(d) High generators

Answer: (c) Series generators

53. What would be the value of pole pitch if there are 80 conductors and 8 poles? [UPPCL JE - 2014]

(a) 640

(c) 80

(b) 64

(d) 10

Answer: (d) 10

54. What is the value of flux in the section of yoke, if the pole flux is 4 weber? [UPPCL JE 2014]

(a) 2ϕ

(b) √ϕ

(c) ϕ/2

(d) ϕ

Answer: (c) ϕ/2

55. The transformer that should never have the secondary open-circuited when primary is energised is

(a) power transformer.

(b) voltage transformer.

(c) auto transformer.

(d) current transformer.

Answer: (d) current transformer.

56. Speed of a DC motor is

(a) inversely proportional to the air gap flux.

(b) directly proportional to the air-gap flux.

(c) inversely proportional to the square of air-gap flux.

(d) not related to the air-gap flux. [UPPCL JE - 2014]

Answer: (a) inversely proportional to the air gap flux.

57. What is the relationship between the speed (N) and armature current (I_a) in case of a dc-series motor? [UPPCL JE - 2014]

(a) $N \alpha 1/I_a$

(b) $N \alpha \sqrt{I_a}$

(c) $N \alpha I_a^2$

(d) $N = I_a$

Answer: (a) $N \alpha 1/I_a$

58. What is the value of reflection coefficient for a short circuit line? [UPPCL JE 2014]

(a) 1

(b) 0

(c) -1

(d) 0.5

Answer: (c) -1

59. The method of speed control of DC shunt motors used for applications where a very wide range sensitive speed control is required, is:

(a) Ward-Leonard System

(b) Multiple Voltage Control

(c) Tapped Field Control

(d) Rheostatic Control [NMRC JE-2017]

Answer: (a) Ward-Leonard System

60. The DC shunt motor is running with a certain load. The effect of adding an external resistance in field circuit is to

(a) increase the motor speed.

(b) stop the motor.

(c) reduce the motor speed.

(d) reduce the armature current of the motor. [NMRC JE-2017]

Answer: (a) increase the motor speed.

61. In DC motor, the speed depends upon

(a) Applied voltage alone

(b) Back emf alone

(c) Back emf and flux

(d) Flux only [NMRC JE-2017]

Answer: (c) Back emf and flux

62. Three point starter can be used for

(a) both shunt and compound motors.

(b) shunt motor only.

(c) series motor only.

(d) compound motor only. [NMRC JE-2017]

Answer: (a) both shunt and compound motors.

63. Voltage equation of DC motor is given by

(a) $V = E_b + I_aR_a$

(b) $V = E_b - I_aR_a$

(c) $V = E_bI_a - R_a$

(d) $V = E_bI_a + R_a$ [NMRC JE-2017]

Answer: (a) $V = E_b + I_aR_a$

64. DC motor recommended for locomotive drive is

(a) DC series motor.

(b) DC long shunt compound motor.

(c) DC shunt motor.

(d) DC short shunt compound motor. [NMRC JE-2017]

Answer: (a) DC series motor.

65. Brushes are provided in DC machine for

(a) smooth rotation.

(b) preventing sparking.

(c) providing a path for flow of current.

(d) reducing the losses. [NMRC JE-2017]

Answer: (c) providing a path for flow of current.

66. A DC shunt motor is running at 1200 rpm, when excited with 220V dc. Neglecting the losses and saturation, the speed of the motor when connected to a 175 V supply is

(a) 70 rpm

(c) 1050 rpm

(b) 900 rpm

(d) None of these

Answer: (d) None of these

67. Armature shunting method of speed control of dc shunt motor is preferred over armature resistance method due to

(a) better speed regulation.

(b) less loss in external resistance.

(c) simplicity in control circuit.

(d) reduced cost of controller.

Answer: (a) better speed regulation.

68. Carbon brushes are used in electric motors to

(a) brush off carbon deposit on the commutator .

(b) provide a path for flow of current.

(c) prevent overheating of armature windings.

(d) prevent sparking during commutation.

Answer: (b) provide a path for flow of current.

69. The function(s) of pole shoes in DC machine is/are to

(a) support the field coils.

(b) reduce the reluctance of the magnetic path.

(c) spread out the flux to achieve uniform flux distribution in the air gap.

(d) all of the above.

Answer: (d) all of the above.

70. The condition for a maximum power output from dc motor is

(a) $E_b = V$

(b) $E_b = V/2$

(c) $E_b = 0$

(d) $E_b = V/\sqrt{2}$ [SSC JE 2010]

Answer: (b) $E_b = V/2$

71. Fleming's left hand rule is applicable to

(a) dc generator.

(c) alternator.

(b) dc motor.

(d) transformer.

Answer: (b) dc motor.

72. DC motors are still preferred for use in

(a) electric excavators steel mills and cranes.

(b) lathes and machine tools.

(c) flour mills and jaw crushers.

(d) paper industry.

Answer: (a) electric excavators steel mills and cranes.

73. The number of parallel paths in the armature winding of a 4-pole, wave connected d.c. machine having 28 coil side is

(a) 28

(c) 4

(b) 14

(d) 2

Answer: (d) 2

74. Which of the following parameters is changed to increase the speed of DC motor more than its base speed?

(a) Flux

(c) Field

(b) Voltage

(d) Firing Angle [UPRVUNL AE 2016]

Answer: (a) Flux

75. The back e.m.f of a motor at the moment of starting

(a) Zero

(c) Minimum

(b) Maximum

(d) Optimum

Answer: (a) Zero

76. In a d.c. series motor, the torque developed is 20 Nm at 10 A. If the load current is doubled, the new torque will be

(a) 60 Nm

(b) 45 Nm

(c) 80 Nm

(d) 100 Nm

Answer: (c) 80 Nm

77. The torque speed characteristic of a Repulsion motor same as the following DC motor characteristic

(a) separately excited.

(b) shunt.

(c) series.

(d) compound.

Answer: (c) series.

78. A DC machine is provided with both inter pole winding (IPW) and compensating winding (CPM). With respect to armature

(a) both IPW and CPW are in parallel.

(b) both IPW and CPW in series.

(c) IPW is in series CPW is in parallel.

(d) IPW is in parallel and IPW is in series.

Answer: (b) both IPW and CPW in series.

79. The function of equalizing ring in lap wound DC generator is

(a) to avoid SC current.

(b) to neutralise the armature reaction.

(c) to help get sparkless commutation.

(d) all the above.

Answer: (c) to help get sparkless commutation.

80. In a level compound generator, the series field AT are

(a) in direct opposition to the shunt field AT.

(b) in the same direction as the shunt field AT.

(c) at 90° to the shunt filed AT.

(d) placed on inter pole.

Answer: (c) at 90° to the shunt filed AT.

81. In series parallel control of dc series motor the total field turns are N, then

(a) AT parallel = 2AT series.

(b) AT parallel = AT series.

(c) AT parallel = 1/2 AT series.

(d) AT parallel = 1/4 AT series.

Answer: (c) AT parallel = 1/2 AT series.

82. Field control of a DC shunt motor gives

(a) Constant torque drive

(b) Constant kW drive

(c) Constant speed drive

(d) Variable speed driver

Answer: (b) Constant kW drive

83. Which of the motor is used for rolling mills?

(a) DC shunt motor.

(b) DC commulatively compound motor.

(c) DC series motor.

(d) DC differentially compound motor.

Answer: (b) DC commulatively compound motor.

84. What will happen if the supply terminals of DC shunt motor are inter changed?

(a) motor will stop.

(b) motor will run at its normal speeds in the same direction as it was running.

(c) the direction of rotation will reverse.

(d) motor will run at speeds lower than the normal speeds in the same direction.

Answer: running.

85. Which of the following test can be conducted on other than shunt machines?

(a) Swinburne test.

(b) Retardation test.

(c) Field's test.

(d) Blocked rotor test.

Answer: (c) Field's test.

86. During the regenerative breaking energy is

(a) dissipated in resistor.

(b) returned to the supply lines.

(c) stored in the form KE.

(d) all the above.

Answer: (b) returned to the supply lines.

87. The field poles and armature core of a d.c. generator are laminated in order to reduce

(a) hysteresis loss.

(b) eddy current loss.

(c) weight.

(d) speed. [UPPCL JE - 2007]

Answer: (b) eddy current loss.

88. The mechanical power developed in a d.c. motor is equal to

(a) power input - core losses.

(b) power input - mechanical losses.

(c) armature current × counter e.m.f.

(d) armature current x supply voltage. [UPPCL JE - 2007]

Answer: (c) armature current × counter e.m.f.

89. An electric train employing a d.c. series motor is running at a fixed speed. When a sudden drop in voltage of supply takes place, then this results in

(a) drop in speed and rise in current.

(b) rise in speed and drop in current.

(c) rise in speed and rise in current.

(d) drop in speed with current unaltered. [UPPCL JE - 2007]

Answer: (d) drop in speed with current unaltered. [UPPCL JE - 2007]

90. For D.C. shunt motor, speed control by armature resistance variations is best suited for

(a) constant power drive.

(b) variable power drive.

(c) constant torque drive.

(d) variable torque drive. [UPRVUNL AE-2016]

Answer: (c) constant torque drive.

91. If number of poles in lap wound d.c. generator are doubled, the generated e.m.f. will be

(a) increased by a factor of 2.

(b) decreased by a factor of 2.

(c) increased by a factor of 4.

(d) unchanged. [UPPCL JE 2007]

Answer: (d) unchanged.

92. A DC series motor has linear magnetization characteristics and negligible armature resistance. The motor speed is

(a) Directly proportional to T

(b) Inversely proportional to T

(c) Directly proportional to T^2

(d) Inversely proportional to T^2

Where T = load torque

Answer: (b) Inversely proportional to T

93. A 4-pole dc generator runs at 1500 rpm. The frequency of current in armature winding is

(a) Zero

(b) 25 Hz

(c) 50 Hz

(d) 100 Hz [UPPCL JE - 2007]

Answer: (c) 50 Hz

94. For a d.c. series motor, which of the following expression is correct assuming torque (T) versus armature current (I_a) characteristics unsaturated? [UPPCL JE - 2007]

(a) $T \alpha \sqrt{I_a}$

(b) $T \alpha I_a$

(c) $T \alpha -I_a$

(d) $T \alpha I_a^2$

Answer: (d)

95. A d.c. series motor should never be started at

(a) normal load condition.

(b) full load condition.

(c) no load condition.

(d) slightly overload condition. [UPPCL JE - 2007]

Answer: (c) no load condition.

96. In a d.c. generator, 8 parallel paths and 16 brushes for collection of current are used. If voltage drop per brush is 1 V, then reduction in the induced e.m.f. will be

(a) 2 V

(b) 4 V

(c) 8 V

(d) 16 V [UPPCL JE - 2007]

Answer: (d) 16 V

97. For DC motor magnets ..... is preferred.

(a) tungsten steel

(b) silicon steel

(c) carbon steel

(d) iron cobalt alloy [UPPCL JE - 2016]

Answer: (a) tungsten steel

98. The speed control of dc shunt motor in both directions can be obtained by

(a) armature resistance control method.

(b) armature voltage control method.

(c) field diverter method.

(d) ward leonard method. [UPPCL AE 2016]

Answer: (d) ward leonard method.

99. In which of the following methods of speed control of DC series motor, "Field ampere-turns are adjusted in steps by varying the number of turns included in the circuit"?

(a) Diverter field control

(b) Tapped field control

(c) Series-parallel control

(d) Rheostatic control [UPPCL AE - 2016]

Answer: (b) Tapped field control

100. The armature resistance of a DC motor is 0.4 Ω, the supply voltage is 200 V and the back e.m.f. is 198 V at full speed. The armature current is

(a) 4A

(b) 8A

(c) 5A

(d) 0.5A [UPPCL AE - 2016]

Answer: (c) 5A

101. In dc machines, the field-flux axis and armature-mmf axis are respectively along

(a) direct axis and indirect axis.

(b) quadrature axis and direct axis.

(c) direct axis and inter-polar axis.

(d) quadrature axis and inter-polar axis. [UPPCL AE - 2016]

Answer: (c) direct axis and inter-polar axis.

102. If the speed of a DC machine is doubled and the flux remains constant, the generated e.m.f.

(a) remains the same.

(b) is doubled.

(c) is halved.

(d) is thrice. [UPPCL AE 2016]

Answer: (b) is doubled.

103. If the flux per pole of a shunt-wound DC generator is halved, the generated e.m.f. at constant speed

(a) is doubled.

(b) is halved.

(c) remains the same.

(d) becomes three times. [UPPCL AE - 2016]

Answer: (b) is halved.

104. Assertion (A): A d.c. motor draws high current at the time of starting.

Reason (R) While starting a d.c. motor, it takes some time to develop a non-zero value of back e.m.f.

(a) Both A and R are individually true and R is the correct explanation of A.

(b) Both A and R are individually true but R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true. [UPPCL AE - 2016]

Answer: (a) Both A and R are individually true and R is the correct explanation of A.

105. In DC machines, the main parts where core losses significantly occurs at

(a) the armature only.

(b) both the armature and pole faces.

(c) the yoke only.

(d) the pole faces only. [UPPCL AE 2016]

Answer: (b) both the armature and pole faces.

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

(a) No load

(b) Half load

(c) Near full load

(d) 10% overload [UPPCL AE - 2016]

Answer: (c) Near full load

107. If the total number of slots in a D.C machine is 25 and the total number of poles is 5, then what is the coil span of the machine?

(a) 5

(c) 20

(b) 30

(d) 125 [UPPCL JE 2018]

Answer: (a) 5

108. To save energy during braking, which type of braking is used? [UPPCL JE - 2018]

(a) Regenerative

(c) Dynamic

(b) Plugging

(d) All of these

Answer: (a) Regenerative

109. Which of the following DC generators is employed in arc welding? [UPPCL JE - 2018]

(a) Shunt

(b) Cumulative Compound

(c) Series

(d) Differential Compound

Answer: (d) Differential Compound

110. Which one acts as a mechanical rectifier in the process of converting AC current into DC current where the emf is induced in the armature winding? [UPPCL JE - 2018]

(a) Rheostat

(b) Rotor

(c) Commutator

(d) Stator

Answer: (c) Commutator

111. Shunt motors CANNOT be employed for

1. Machine tools

2. Blowers

3. Elevators

4. Lathes

(a) Only 3

(b) Both 1 and 4

(c) Both 3 and 4

(d) Only 2 [UPPCL AE - 2016]

Answer: (a) Only 3

112. Select the three methods of improving commutation. [UPPCL JE - 2018]

(a) Ring windings, Armature winding and Series commutation

(b) Resistance commutation, Voltage Commutation and Compensating Windings

(c) Capacitance commutation, Voltage Commutation and Series Windings

(d) Capacitance commutation, Inductance Commutation and Compensating Windings

Answer: (b) Resistance commutation, Voltage Commutation and Compensating Windings

113. How can we find the applications of Differentially compound D.C. motors? [UPPCL JE - 2018]

(a) Zero torque

(b) Armature resistance

(c) Constant speed

(d) Low starting torque

Answer: (d) Low starting torque

114. A conductor of length L has current I passing through it, when it is placed parallel to a magnetic field. The force experienced by the conductor will be? [UPPCL JE 2018]

(a) BLI

(b) B^2LI

(c) Zero

(d) None of these

Answer: (c) Zero

115. Commutator motors have

(a) absolutely uniform torque.

(b) approximately uniform torque.

(c) non-uniform torque.

(d) none of these. [UPPCL JE - 2018]

Answer: (c) non-uniform torque.

116. The speed of a D.C. Motor is directly proportional to

(a) armature current.

(b) field current.

(c) impressed voltage.

(d) number of poles.

Answer: (a) armature current.

117. A shunt generator gives the greatest voltage at

(a) No-load

(b) Full-load

(c) Open field

(d) Drooping

Answer: (a) No-load

118. Which of the following could be aproximately the thickness of laminations of a D.C. machine?

(a) 0.005 mm

(c) 0.5 mm

(b) 0.05 mm

(d) 5 mm

Answer: (c) 0.5 mm

119. In D.C. generators, the cause of rapid brush wear may be

(a) severe sparking.

(b) rough commutator surface.

(c) imperfect contact.

(d) any of the above.

Answer: (d) any of the above.

120. In lap winding, the number of brushes is always

(a) double the number of poles.

(b) same as the number of poles.

(c) half the number of poles.

(d) two.

Answer: (b) same as the number of poles.

121. For a D.C. generator when the number of poles and the number of armature conductors is fixed, then which winding will give the higher e.m.f.? [DSSSB JE - 2015]

(a) Lap winding

(b) Wave winding

(c) Both (a) and (b)

(d) Depends on other features of design

Answer: (b) Wave winding

122. In a four-pole D.C. machine

(a) all the four poles are north poles.

(b) alternate poles are north and south.

(c) all the four poles are south poles.

(d) two north poles follow two south poles. [DSSSB JE - 2015]

Answer: (b) alternate poles are north and south.

123. Copper brushes in D.C. machine are used

(a) where low voltage and high currents are involved.

(b) where high voltage and small currents are involved.

(c) both of the above cases.

(d) none of the above cases. [DSSSB JE - 2015]

Answer: (a) where low voltage and high currents are involved.

124. A separately excited generator as compared to a self-excited generator

(a) is enable to better voltage control.

(b) is more stable.

(c) has exciting current independent of load current.

(d) has all above features

Answer: (d) has all above features

125. Iron losses in a D.C. machine are independent of variations in

(a) speed.

(b) load.

(c) voltage.

(d) speed and voltage. [DSSSB JE - 2015]

Answer: (b) load.

126. In D.C. generators, current to the external circuit from armature is given through

(a) commutator.

(b) solid connection.

(c) slip rings.

(d) none of the above.

Answer: (a) commutator.

127. Brushes of D.C. machines are made of

(a) carbon.

(b) soft copper.

(c) hard copper.

(d) all of the above.

Answer: (a) carbon.

128. For a DC motor, E is the back emf, I is the armature current and R is the armature resistance, then the terminal voltage equals

(a) E

(b) IR

(c) E + IR

(d) E - IR [UPPCL AE - 2016]

Answer: (c) E + IR

129. The insulating material used between the commutator segments is normally

(a) graphite.

(c) mica.

(b) paper.

(d) insulating varnish.

Answer: (d) insulating varnish.

130. Welding generator will have

(a) lap winding.

(b) wave winding.

(c) delta winding.

(d) duplex wave winding.

Answer: (a) lap winding.

131. In case of D.C. machine winding, number of commutator segments are equal to

(a) number of armature coils.

(b) number of armature coil sides.

(c) number of armature conductors.

(d) number of armature turns.

Answer: (a) number of armature coils.

132. For a D.C. machines laboratory following type of D.C. supply will be used.

(a) Rotary converter.

(b) Mercury arc rectifier.

(c) Induction motor D.C. generator set.

(d) Synchronous motor D.C. generator set.

Answer: (c) Induction motor D.C. generator set.

133. The function of pole shoes in the case of D.C. machine is

(a) to reduce the reluctance of the magnetic path.

(b) to spread out the flux to achieve uniform flux density.

(c) to support the field coil.

(d) all the above functions. [DSSSB JE 2015]

Answer: (d) all the above functions.

134. In the case of lap winding resultant pitch is

(a) multiplication of front and back pitches.

(b) division of front pitch by back pitch.

(c) sum of front and back pitches.

(d) difference of front and back pitches. [DSSSB JE - 2015]

Answer: (d) difference of front and back pitches.

135. In a D.C. generator the critical resistance can be increased by

(a) increasing its field resistance.

(b) decreasing its field resistance.

(c) increasing its speed.

(d) decreasing its speed.

Answer: (c) increasing its speed.

136. The number of armature parallel paths in a two-pole D.C. generator having duplex lap winding is

(a) 2

(c) 6

(b) 4

(d) 8

Answer: (a) 2

137. For both lap and wave windings, there are as many commutator bars as the number of

(a) slots.

(b) armature conductors.

(c) winding elements.

(d) poles.

Answer: (a) slots.

138. The series field of a short-shunt D.C. generator is excited by

(a) external current

(b) armature current

(c) shunt current

(d) load current [DSSSB JE - 2015]

Answer: (d) load current

139. As a result of armature reaction, the reduction in the total mutual air gap flux in a D.C. generator is approximately

(a) 40 percent

(b) 25 percent

(c) 10 percent

(d) 5 percent [DSSSB JE 2015]

Answer: (d) 5 percent

140. No-load speed of which of the following motor will be highest?

(a) Shunt motor

(b) Series motor

(c) Cumulative compound motor

(d) Differential compound motor [DSSSB JE 2015]

Answer: (b) Series motor

141. The direction of rotation of a D.C. series motor can be changed by

(a) interchanging supply terminals.

(b) interchanging field terminals.

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

(d) none of the above. [DSSSB JE 2015]

Answer: (b) interchanging field terminals.

142. Which of the following application requires high starting torque?

(a) Lathe machine

(b) Centrifugal pump

(c) Locomotive

(d) Air blower [DSSSB JE - 2015]

Answer: (c) Locomotive

143. If a D.C. motor is to be selected for conveyors, which motor would be preferred?

(a) Series motor

(b) Shunt motor

(c) Differential compound motor

(d) Cumulative compound motor [DSSSB JE - 2015]

Answer: (a) Series motor

144. Which D.C. motor will be preferred for machine tools?

(a) Series motor

(b) Shunt motor

(c) Cumulative compound motor

(d) Differential compound motor [DSSSB JE 2015]

Answer: (b) Shunt motor

145. Differential compound D.C. motors can find applications requiring

(a) high starting torque.

(b) low starting torque.

(c) variable speed.

(d) frequent on-off cycles. [DSSSB JE - 2015]

Answer: (b) low starting torque.

146. Which D.C. motor is preferred for elevators?

(a) Shunt motor

(b) Series motor

(c) Differential compound motor

(d) Cumulative compound motor [DSSSB JE - 2015]

Answer: (d) Cumulative compound motor

147. As the load is increased the speed of D.C. shunt motor will

(a) reduce slightly.

(b) increase slightly.

(c) increase proportionately.

(d) remains unchanged. [DSSSB JE - 2015]

Answer: (a) reduce slightly.

148. The armature torque of the D.C. shunt motor is proportional to

(a) field flux only.

(b) armature current only.

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

(d) none of the above.

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

149. Which of the following methods of speed control of D.C. machine will offer minimum efficiency?

(a) voltage control method.

(b) field control method

(c) armature resistance control method.

(d) all the above methods. [DSSSB JE - 2015]

Answer: (c) armature resistance control method.

150. Which one of the following is not necessarily the advantage of D.C. motors over A.C. motors?

(a) low cost.

(c) stability.

(b) wide speed range.

(d) high starting torque.

Answer: (a) low cost.

151. For a D.C. shunt motor if the excitation is changed

(a) torque will remain constant.

(b) torque will change but power will remain constant.

(c) torque and power both will change.

(d) torque, power and speed, all will change.

Answer: (b) torque will change but power will remain constant.

152. Which motor has the poorest speed control? [DSSSB JE - 2015]

(a) Differentially compounded motor

(b) Cumulatively compounded motor

(c) Shunt motor

(d) Series motor

Answer: (a) Differentially compounded motor

153. The plugging gives the

(a) zero torque braking.

(b) smallest torque braking.

(c) highest torque braking.

(d) none of the above.

Answer: (c) highest torque braking.

154. If the speed of a D.C. shunt motor is increased, the back e.m.f. of the motor will

(a) increase

(b) decrease

(c) remain same

(d) become zero

Answer: (a) increase

155. Which motor should not be started on no-load?

(a) Series motor

(b) Shunt motor

(c) Cumulatively compounded motor

(d) Differentially compounded motor

Answer: (a) Series motor

156. Ward-Leonard control is basically a

(a) voltage control method.

(b) field divertor method.

(c) field control method.

(d) armature resistance control method.

Answer: (a) voltage control method.

157. For constant torque drive which speed control method is preferred? [DSSSB JE 2015]

(a) Field control

(b) Armature voltage control

(c) Shunt armature control

(d) Mechanical loading system

Answer: (b) Armature voltage control

158. In a D.C. generator all of the following could be the effects of iron losses except

(a) loss of efficiency.

(b) excessive heating of core.

(c) increase in terminal voltage.

(d) rise in temperature of ventilating air.

Answer: (c) increase in terminal voltage.

159. The losses occurring in a D.C. generator are given below. Which loss is likely to have highest proportion at rated load of the generator? [DSSSB JE 2015]

(a) Hysteresis loss

(b) Field copper loss

(c) Armature copper loss

(d) Eddy current loss

Answer: (c) Armature copper loss

160. Which of the following loss in a D.C. generator varies significantly with the load current?

(a) Field copper loss

(b) Windage loss

(c) Armature copper loss

(d) None of the above

Answer: (c) Armature copper loss

161. A rotary converter in general construction and design, is more or less like

(a) a transformer.

(b) an induction motor.

(c) an alternator.

(d) any D.C. machine. [DSSSB JE - 2015]

Answer: (d) any D.C. machine.

162. A rotary converter operates at a

(a) low power factor.

(b) high power factor.

(c) zero power factor.

(d) none of the above.

Answer: (b) high power factor.

163. In a rotary converter I^2R losses as compared to a D.C. generator of the same size will be

(a) same.

(b) less.

(c) double.

(d) three times.

Answer: (b) less.

164. For a 'P' pole machine, the relation between electrical and mechanical degree is

(a) $\theta_{elec} = 2\theta_{mech}/P$

(b) $\theta_{elec} = 4\theta_{mech}/P$

(c) $\theta_{elec} = \theta_{mech}$

(d) $\theta_{elec} = P\theta_{mech}/2$

Answer: (d) $\theta_{elec} = P\theta_{mech}/2$

165. Why is the armature core of a DC machine laminated?

(a) to reduce hysteresis loss.

(b) to reduce eddy current loss.

(c) to improve voltage regulation.

(d) to reduce armature reaction.

Answer: (b) to reduce eddy current loss.

166. Lap winding is suitable for

(a) low voltage low current dc generators.

(b) high voltage low current dc generators.

(c) high voltage high current dc generators.

(d) low voltage high current dc generators. [UPRVUNL JE 2016]

Answer: (d)

167. In DC generator eddy current loss is nothing but

(a) iron loss.

(b) friction loss.

(c) windage loss.

(d) copper loss. [LMRC JE - 2016]

Answer: (a) iron loss.

168. An electrical generator is a machine which convert

(a) electrical energy to electrical energy.

(b) mechanical energy to mechanical energy.

(c) electrical energy to mechanical energy.

(d) mechanical energy to electrical energy. [UPRVUNL JE 2016]

Answer: (d)

169. In a generator a dynamically induced emf is produced according to

(a) Faraday's law.

(b) Biot Savart's law.

(c) Ohm's law.

(d) Kirchoff's law.

Answer: (a) Faraday's law.

170. Compensating windings are used when loads are

(a) have small fluctuations.

(b) fluctuations of all kinds.

(c) steady.

(d) have large fluctuations.

Answer: (d) have large fluctuations.

171. Use of fractional pitch winding

(a) make it stiffer.

(b) results in reduced leakage reactance.

(c) results in reduced axial length of the machine.

(d) all of the above.

Answer: (d) all of the above.

172. Where the shunt generators are widely used?

(a) Where the load is very high.

(b) Where a constant voltage is required over a narrow load range.

(c) Where often fluctuation is occurred.

(d) None of the above. [UP JAL NIGAM AE - 2016]

Answer: (b) Where a constant voltage is required over a narrow load range.

173. What happens if the magnetic neutral axis coincide with the geometrical neutral axis in case of DC generator ? [JUVNL JE - 2017]

(a) The generator runs on designed speed.

(b) The generator runs on over load.

(c) There is no load on the generator.

(d) The generator runs at full load.

Answer: (c) There is no load on the generator.

174. The EMF induced in the armature of a shunt generator is 500 V. The armature resistance is 0.2 Ω if the armature current is 200 A. What is the terminal voltage? [JUVNL JE - 2017]

(a) 500 V

(b) 520 V

(c) 460 V

(d) 540 V

Answer: (c) 460 V

175. Which of the following statement is WRONG regarding cumulative compound Motor? [UPPCL AE - 2016]

(a) Variable speed

(b) Low starting torque

(c) Speed control possible

(d) Adjustable varying speed

Answer: (b) Low starting torque

176. Shunt generators are most suited for stable parallel operation as their voltage characteristics are

(a) drooping.

(c) linear.

(b) identical.

(d) rising. [Uttarakhand JE 2013]

Answer: (a) drooping.

177. As we go from generator end towards load, the severity of a particular fault

(a) decreases.

(b) does not depend on location.

(c) remains same.

(d) increases. [Coal India Ltd. - 2017]

Answer: (a) decreases.

178. The length of the air gap under the poles of a DC machine is not kept uniform so as to

(a) obtain a suitable main field flux.

(b) obtain better cooling.

(c) obtain sinusoidal armature mmf wave.

(d) minimize the effect of armature mmf on main field. [Coal India Ltd. - 2017]

Answer: (d)

179. In a DC generator current to external circuit from armature is given through

(a) slip rings and brushes.

(b) commutator and brushes.

(c) solid connections.

(d) starter circuit.

Answer: (b) commutator and brushes.

180. The machine which works on dynamically induced emf is

(a) dc motor.

(b) dc generator.

(c) transformer.

(d) induction motor. [LMRC JE - 2016]

Answer: (b) dc generator.

181. Iron losses in DC machine take place in

(a) yoke and armature only.

(b) armature core only.

(c) armature winding only.

(d) yoke only. [LMRC JE - 2016]

Answer: (b) armature core only.

182. Maximum efficiency of D.C. Machines occurs when

(a) machine is running at no load.

(b) core gets fully saturated.

(c) constant losses = losses proportional to square of current.

(d) constant losses = variable losses.

Answer: (d) constant losses = variable losses.

183. In D.C. generator inter poles field coils are connected

(a) in series with armature winding.

(b) in parallel with armature winding.

(c) in series with load.

(d) in parallel with load. [UJVNL-2016]

Answer: (a) in series with armature winding.

184. Match the following correctly

List I

A. DC Series motor

B. Squirrel-cage induction motor

C. DC shunt motor

List - II

1. Shearing and Pressing

2. Haulage and Hoisting

3. Rolling mill

(a) A-1, B-2, C-3

(b) A-2, B-3, C-1

(d) A-3, B-2, C-1

(c) A-3, B-1, C-2

Answer: (b) A-2, B-3, C-1

185. The polarity of a D.C. generator can be reversed by

(a) increasing field current.

(b) reversing the field current.

(c) reversing the field current & also direction of rotation.

(d) none of these. [UJVNL-2016]

Answer: (b) reversing the field current.

186. In case of four pole, lap wound machine if the air gap under each pole is the same, then what will be the result? [J & K JE - 2016]

(a) There will be reduced eddy current.

(b) There will be reduced hysteresis loss.

(c) Current in each path will not be the same.

(d) It will result in higher terminal voltage.

Answer: (b) There will be reduced hysteresis loss.

187. Which loss has least proportion in DC machines? [J & K JE - 2016]

(a) Armature copper loss

(b) Field copper loss

(c) Magnetic loss

(d) Mechanical loss.

Answer: (d) Mechanical loss.

188. A DC shunt generator supplies 450 A at 230 V. The resistances of shunt field and armature are 50Ω and 0.025Ω respectively. What will be the armature voltage drop? [J & K JE - 2016]

(a) 11.24 V

(b) 22.7 V

(c) 31.6 V

(d) 38.4 V

Answer: (a) 11.24 V

189. In which of the following de motor the value of power drawn remains same at different loads? [UPRVUNL AE 2014]

(a) Cumulative compound

(b) Differential compound

(c) Series

(d) Shunt

Answer: (c) Series

190. In case of 4-pole D.C. generator provided with a two layer lap winding with sixteen coils, the pole pitch will be

(a) 4

(b) 8

(c) 16

(d) 32 [ESIC JE - 2016]

Answer: (b) 8

191. In a D.C. generator, the armature reaction results in

(a) demagnetisation of the centres of poles.

(b) magnetisation of interpole.

(c) demagnetisation of leading pole tip and magnetisation of the trailing pole tip.

(d) magnetisation of leading pole tip and demagnetisation of the trailing pole tip. [ESIC JE - 2016]

Answer:

192. The demagnitisation component of armature reaction in D.C. generator

(a) reduces generator e.m.f.

(b) increases armature speed.

(c) reduces interpole flux density.

(d) results in sparking trouble. [ESIC JE 2016]

Answer: (c) demagnetisation of leading pole tip and magnetisation of the trailing pole tip.

193. In DC generators, the polarity of the interpole is

(a) same as that of the main pole ahead.

(b) same as that of immediately preceding pole.

(c) opposite to that of the main pole ahead.

(d) neutral as these poles do not play part in generating emf. [ESIC JE 2016]

Answer: (a) same as that of the main pole ahead.

194. In DC generators on no-load, the air gap flux distribution in space is

(a) sinusoidal.

(b) triangular.

(c) pulsating.

(d) flat topped. [ESIC JE - 2016]

Answer: (d) flat topped.

195. Flashing the field of DC generator means

(a) neutralising residual magnetism.

(b) creating residual magnetism by a dc source.

(c) making the magnetic losses of force parallel.

(d) increasing flux density by adding extra turns of windings on poles.

Answer: (b) creating residual magnetism by a dc source.

196. In a DC machine stray loss is the sum of

(a) total copper loss and mechanical loss.

(b) armature copper loss and iron loss.

(c) shunt field copper loss and mechanical loss.

(d) iron loss and mechanical loss. [ESIC JE - 2016]

Answer: (d) iron loss and mechanical loss.

197. Which one of the following is not the function of pole shoes in a DC machine?

(a) To reduce eddy current loss.

(b) To support the field coils.

(c) To spread out flux for better uniformity.

(d) To reduce the reluctance of the magnetic path.

Answer: (a) To reduce eddy current loss.

198. Match List I with List II and select the correct answer by using the given codes:

List-I Type of Generators

A. Series wound

B. Separately Excited

C. Shunt wound

D. Differentially Compounded

List-II Load Characteristics

1. Rising

2. Almost constant voltage

3. Slightly dropping

4. Rapidly falling

(a) A-4, B-3, C-2, D-1

(b) A-1, B-2, C-4, D-4

(c) A-3, B-2, C-4, D-1

(d) A-3, B-4, C-2, D-1

Answer: (b) A-1, B-2, C-4, D-4

199. If 't' be the thickness of the lamination, then eddy current loss in a generator will vary to

(a) 1/t

(b) $1/t^2$

(c) t

(d) t^2 [ESCI JE 2016]

Answer: (d)

200. In d.c. generator armature reaction is produced by

(a) field or armature current.

(b) field and armature current.

(c) field current.

(d) armature current. [FCI - 2015]

Answer: (d)

201. Critical speed of d.c. shunt generator is the speed below which

(a) the generator fails to build up voltage.

(b) the generator build up voltage.

(c) the generator can not take load.

(d) the generator can take load. [FCI - 2015]

Answer: (a) the generator fails to build up voltage.

202. The current drawn by a 460 V dc motor of armature resistance 0.5 ohm and back emf 420 V is

(a) 8 Amp

(b) 0.8 Amp

(c) 80 Amp

(d) 800 Amp [UPRVUNL AE - 2014]

Answer: (c) 80 Amp

203. When the series field is so connected that its ampere turns act in the same direction as those of shunt field, the generator is said to be

(a) shunt generator.

(b) differentially compound generator.

(c) series generator.

(d) cumulatively compound generator.

Answer: (d) cumulatively compound generator.

204. Which of the following theorem uses current generator

(a) Superposition theorem.

(b) Maximum power transfer theorem.

(c) Thevenin's theorem.

(d) Norton's theorem.

Answer: (d) Norton's theorem.

205. The mechanical power developed by a d.c. motor is maximum when the ratio of back emf and applied voltage is

(a) 1.5

(b) 0.7

(c) 0.5

(d) 1.0 [LMRC - 2015]

Answer: (c) 0.5

206. A 6 pole, wave connected DC armature has 250 conductors and runs at 1200 rpm. The emf generated is 600 V. The useful Flux/pole is

(a) 0.04 Wb

(b) 0.4 Wb

(c) 4.0 Wb

(d) 0.44 Wb [Uttarakhand AE 2013]

Answer: (a) 0.04 Wb

207. The commercial efficiency of a shunt generator is maximum when its variable loss equals the ..... loss.

(a) constant

(c) iron

(b) stray

(d) friction and windage [BSNL TTA - 2016]

Answer: (a) constant

208. The basic requirement of a d.c. armature winding is that it must be

(a) a lap winding

(b) a closed one

(c) a wave winding

(d) either 'a' or 'c' [BSNL TTA - 2016]

Answer: (d) either 'a' or 'c'

209. Ward-Leonard system of speed control is NOT recommended for

(a) frequent motor reversals.

(b) very low speeds.

(c) constant speed operation.

(d) wide speed range. [LMRC - 2015]

Answer: (c) constant speed operation.

210. The critical resistance of the D.C. generator is the resistance of

(a) armature.

(c) load.

(b) field.

(d) brushed. [BSNL TTA - 2016]

Answer: (b) field.

211. When there is a variation of load resistance which of the following DC generator can not deliver power at constant voltage

(a) separately excited generator.

(b) shunt generator.

(c) series generator.

(d) compound generator. [BSNL TTA 2016]

Answer: (b) shunt generator.

212. Which loss in a DC generator significantly varies with the load current? [BSNL TTA 2013]

(a) Armature copper loss

(b) Field copper loss

(c) Windage loss

(d) Hysteresis loss

Answer: (a) Armature copper loss

213. In a DC machine if 'P' is the number of poles, 'N' is the Armature speed in r.p.m., then the frequency of magnetic reversals will be

(a) PN/60

(b) PN/100

(c) PN/120

(d) PN/180 [BSNL TTA - 2013]

Answer: (c) PN/120

214. Load saturation characteristics of a DC generator gives relation between

(a) V and I_a

(b) E and I_a

(c) Eo and I_f

(d) V and I_f [BSNL TTA - 2016]

Answer: (a) V and I_a

215. In a d.c. generator the generated e.m.f. is directly proportional to the

(a) field current.

(b) number of armature parallel paths.

(c) number of dummy coils.

(d) pole flux. [BSNL TTA - 2016]

Answer: (d) pole flux.

216. The brushes in d.c. machines are made of carbon

(a) to reduce the size of brushes.

(b) to reduce the wear and tear of commutator.

(c) to increase the efficiency of the commutator.

(d) none of these. [BSNL TTA - 2016]

Answer: (b) to reduce the wear and tear of commutator.

217. In d.c. generators, supply to external load is tapped through

(a) brush and springs.

(b) brush and commutator.

(c) solid connection.

(d) helical springs. [BSNL TTA - 2016]

Answer: (b) brush and commutator.

218. An AC generator running at 1000 rpm produced emf of 50 Hertz. The number of poles on the generator is

(a) 2

(b) 4

(c) 6

(d) 8 [BSNL TTA 2016]

Answer: (c) 6

219. What would be the value of pole pitch if there are 80 conductors and 8 poles?

(a) 640

(c) 80

(b) 64

(d) 10 [UPRVUNL - 2014]

Answer: (d) 10

220. Match List-I (types of DC machines) with List- II (applications) and select the correct answer using given the codes. [UPRVUNL - 2015]

List-I

A. Series Generator

B. Shunt Generator

C. Cumulative Compounded

D. Differentially Compounded

List-II

1. Arc welding

2. Supply of distance loads

3. Booster

4. Battery Charging

(a) A-1, B-4, C-3, D-2

(b) A-3, B-4, C-2, D-1

(c) A-3, B-4, C-1, D-2

(d) A-4, B-3, C-2, D-1

Answer: (b) A-3, B-4, C-2, D-1

221. In a shunt generator the voltage build up is generally restricted by

(a) speed limitation.

(b) armature heating.

(c) insulation restrictions.

(d) saturation of iron. [UPRVUNL - 2015]

Answer: (d) saturation of iron.

222. The emf induced in the armature of a shunt generator is 600 V. The armature resistance is 0.1 ohm. If the armature current is 200 A, the terminal voltage will be

(a) 640 V

(b) 620 V

(c) 600 V

(d) 580 V [UPRVUNL - 2015]

Answer: (d) 580 V

223. In DC generator, pole shoes are fastened to pole core by

(a) rivets.

(b) brazing.

(c) welding.

(d) counter shunk screws. [UPRVUNL - 2015]

Answer: (d) counter shunk screws.

224. In DC generators, current to the external circuit from the armature is given through

(a) commutator.

(b) slip rings.

(c) solid connection.

(d) yoke. [UPRVUNL-2015]

Answer: (a) commutator.

225. The bearing used to support the rotor shaft are generally

(a) ball bearing.

(b) bush bearing.

(c) magnetic bearing.

(d) needle bearing. [UPRVUNL - 2015]

Answer: (a) ball bearing.

226. An exciter is nothing but a

(a) DC shunt motor.

(b) DC series motor.

(c) DC shunt generator.

(d) DC series generator. [DMRC - 2015]

Answer: (c) DC shunt generator.

227. The generator which gives d.c. supply to the rotor is called:

(a) converter.

(b) exciter.

(c) inverter.

(d) rectifier. [DMRC - 2014]

Answer: (b) exciter.

228. The field coils of DC generator are generally made up of

(a) mica.

(b) copper.

(c) cast iron.

(d) carbon. [LMRC - 2015]

Answer: (b) copper.

229. Which type of winding is generally preferred for generating large currents on DC generators? [LMRC 2015]

(a) progressive wave winding.

(b) lap winding.

(c) retrogressive wave winding.

(d) current depends on design.

Answer: (b) lap winding.

230. If residual magnetism is present in a DC generator, the induced e.m.f. at zero speed will be

(a) zero.

(b) small.

(c) the same as rated voltage.

(d) high. [LMRC - 2015]

Answer: (a) zero.

231. Variation in speed by Ward-Leonard control method of D.C. motors occurs due to variation in

(a) field excitation.

(b) armature current.

(c) armature voltage.

(d) supply voltage. [UPSSSC-JE-2016]

Answer: (c) armature voltage.

232. For a generator, Shaft Power Input - Rotational Losses = ? [UPPCL AE - 2016]

(a) Zero

(b) Electrical Power Output

(c) All copper losses

(d) Armature power developed

Answer: (b) Electrical Power Output

233. What is proportional to the critical resistance of dc generator? [JMRC - 2012]

(a) Speed

(b) Speed x Speed

(c) 1/Speed

(d) Independent of Speed

Answer: (a) Speed

234. If a d.c. series motor is operated on a.c. supply, it will show

(a) poor effeciency.

(b) poor p.f.

(c) spark excessively.

(d) all of the above. [Uttarakhand AE 2013]

Answer: (d) all of the above.

235. If an AC voltage is applied on the field of a DC generator, then what will be the output of the DC generator? [JMRC - 2012]

(a) AC voltage

(b) DC voltage

(c) Zero

(d) Machine will burn out

Answer: (c) Zero

236. Which is the following dc generators is most suited for parallel operation?

(a) Series generator

(b) Shunt generator

(c) Compound Generator

(d) Differential Generator

Answer: (b) Shunt generator

237. In D.C. generators, the cause of rapid brush wear may be

(a) severe sparking.

(b) rough commutator surface.

(c) imperfect contact.

(d) any of the above. [DSSB - 2015]

Answer: (d) any of the above.

238. In lap winding, the number of brushes is always

(a) double the number of poles.

(b) same as the number of poles.

(c) half the number of poles.

(d) two. [UPSSC - 2016]

Answer: (b) same as the number of poles.

239. For a D.C. generator when the number of poles and the number of armature conductors is fixed, then which winding will give the higher emf?

(a) Lap winding

(b) Wave winding

(c) Both (a) and (b)

(d) Depends on other features of design

Answer: (b) Wave winding

240. Welding generator will have

(a) Lap winding

(b) Wave winding

(c) Delta winding

(d) Duplex wave winding

Answer: (a) Lap winding

241. The torque-speed characteristic of a D.C. shunt motor is

(a) a rectangular hyperbola.

(b) a drooping straight line.

(c) a parabola.

(d) None of the above [UPSSC-JE-2016]

Answer: (b) a drooping straight line.

242. For both lap and wave windings, there are as many commutator bars as the number of

(a) slots.

(b) armature conductors.

(c) winding elements.

(d) poles. [DSSB - 2015]

Answer: (c) winding elements.

243. In a D.C. generator all of the following could be the effects of iron losses except

(a) loss of efficiency.

(b) excessive heating of core.

(c) increase in terminal voltage.

(d) rise in temperature of ventilating air.

Answer: (c) increase in terminal voltage.

244. The losses occuring in a D.C. generator are given below. Which loss is likely to have highest proportion at rated load of the generator? [DSSB - 2015]

(a) Hysteresis loss

(b) Field copper loss

(c) Armature copper loss

(d) Eddy current loss

Answer: (c) Armature copper loss

245. In a rotary convertor I^2R losses as compared to a D.C. generator of the same size will be

(a) same

(b) less

(c) double

(d) three times [DSSB - 2015]

Answer: (b) less

246. With the increase in speed of a DC motor

(a) both back emf as well as line current increase.

(b) both back emf as well as line current fall.

(c) back emf increases but line current fall.

(d) back emf fall and line current increases. [UPSSSC-JE-2016]

Answer: (c) back emf increases but line current fall.

247. The DC generator runs at a speed of 1000 rpm and flux per pole is 0.2 Wb, number of poles are 2, the winding is wave wound and having 480 conductors. The critical speed is 1200 rpm. Then the generated emf (E) will be

(a) 0 V

(b) 1500 V

(c) 160 V

(d) 2000 V [MPJE - 2015]

Answer: (a) 0 V

248. A D.C. Generator has 6 poles, a brush shift of 6° actual means a brush shift of

(a) 6° electrical

(b) 18° electrical

(c) 30° electrical

(d) 2° electrical

Answer: (b) 18° electrical

249. A shunt generator has a full load voltage regulation of 10%. If the generator is separately excited and delivers rated load the regulation will be

(a) 10%

(b) More than 10%

(c) Less than 10%

(d) 0

Answer: (c) Less than 10%

250. A 130 MW generator is usually cooled by

(a) air.

(b) oxygen.

(c) nitrogen.

(d) hydrogen.

Answer: (d) hydrogen.

251. In a DC motor the windage losses are proportional to

(a) supply voltage.

(b) square of supply voltage.

(c) square of flux density.

(d) square of the armature speed. [UPSSSC-JE-2016]

Answer: (d) square of the armature speed.

252. The function of equalising connections in a lap wound d.c. generator is

(a) to neutralise the armature reaction effect .

(b) to avoid unequal distribution of currents at brushes.

(c) to avoid short circuit current.

(d) none of these. [MPJE - 2016]

Answer: (b) to avoid unequal distribution of currents at brushes.

253. In which type of compound generator the terminal voltage rises with application of load so that its full load voltage exceeds its no load voltage? [MP JE 2016]

(a) flat compound generator.

(b) under compound generator.

(c) series compound generator.

(d) over compound generator.

Answer: (d) over compound generator.

254. In a DC machine which statement states the purposes of compensating winding and interpoles? [LMRC - 2015]

(a) Compensating winding to improve commutation. Interpoles to neutralize armature reaction.

(b) Compensating winding to neutralize armature reaction. Interpoles to improve commutation.

(c) Compensating winding to improve commutation. Interpoles to produce residual flux.

(d) Compensating winding to neutralize armature reaction. Interpoles to produce residual flux.

Answer: (b) Compensating winding to neutralize armature reaction. Interpoles to improve commutation.

255. An electric motor with constant output power will have a torque-speed characteristic in the form of a

(a) straight line through the origin.

(b) straight line parallel to the speed axis.

(c) circle about the origin.

(d) rectangular hyperbola. [DMRC 2015]

Answer: (d) rectangular hyperbola.

256. If number of poles in lap wound d.c. generator are doubled, the generated e.m.f. will be

(a) increased by a factor of 2.

(b) decreased by a factor of 2.

(c) increased by a factor of 4.

(d) unchanged. [Uttarakhand - 2013]

Answer: (d) unchanged.

257. A 4-pole d.c. generator runs at 1500 rpm. The frequency of current in armature winding is

(a) zero.

(b) 25 Hz.

(c) 50 Hz.

(d) 100 Hz. [Uttarakhand - 2013]

Answer: (c) 50 Hz.

258. In order to reverse the polarity of a DC generator,

1. field current should reversed.

2. field current should be increased.

Which of the following is/are correct?

(a) Only 2

(b) Only 1

(c) Both 1 and 2

(d) Neither 1 nor 2 [UPPCL - 2016]

Answer: (b) Only 1

259. Self-excitation of a series generator

(a) is possible only when load current is zero.

(b) is independent of the load current.

(c) is not possible.

(d) is possible only when load current is not zero. [UPPCL - 2016]

Answer: (d) is possible only when load current is not zero.

260. Harmonics in a generator are developed due to

(a) saturation of core.

(b) vibration in the core.

(c) fluctuating load.

(d) poor insulation. [UPPCL - 2016]

Answer: (a) saturation of core.

261. What will be the approximate value of the open circuit voltage, if a 220V generator is run at full speed without any excitation?

(a) 220 V

(c) 2 V

(b) 110 V

(d) 0 V [UPPCL - 2016]

Answer: (c) 2 V

262. Critical resistance in a DC generator increased by

(a) increasing speed.

(b) decreasing speed.

(c) keeping field resistance constant.

(d) continuously fluctuating field resistance. [UPPCL - 2016]

Answer: (a) increasing speed.

263. Two DC series generators are running in parallel. An equalizer bar will be employed in order to

(a) increase the speed.

(b) increase the generated emf.

(c) pass equal currents to the load by two similar machines.

(d) increase the series flux. [UPPCL - 2016]

Answer: (c) pass equal currents to the load by two similar machines.

264. I have to get my automobile's battery charged. Out of the following, which generator should I prefer? [UPPCL - 2016]

(a) Series generator

(b) Shunt or Series motor

(c) Compound Generator

(d) Shunt generator

Answer: (d) Shunt generator

265. Emf generated in a DC generator is directly proportional to

1. flux.

2. number of poles.

3. speed of armature.

(a) Only 2 and 3

(b) 1, 2 and 3

(c) Only 1 and 3

(d) Only 1 [UPPCL - 2016]

Answer: (b) 1, 2 and 3

266. If once destroyed, the residual magnetism of a shunt generator can be restored by connecting its shunt field

(a) to a battery.

(b) in reverse.

(c) to earth.

(d) to transformer. [UPPCL - 2016]

Answer: (a) to a battery.

267. Full-load terminal voltage in an over-compounded generator with respect to no-load terminal voltage is

(a) equal.

(b) zero.

(c) less.

(d) more. [UPPCL-2016]

Answer: (d) more.

268. Iron losses in DC machines are independent of variation in

(a) speed.

(b) load.

(c) voltage.

(d) speed and voltage. [LMRC - 2015]

Answer: (b) load.

269. Pole shoe of a D.C. machine is laminated for the purpose of

(a) decreasing hysteresis loss.

(b) decreasing eddy current loss.

(c) decreasing both hysteresis and eddy current.

(d) manufacturing ease. [UPSSC JE - 2016]

Answer: (b) decreasing eddy current loss.

270. What is the unit of torque of a DC Motor in SI unit? [DMRC - 2015]

(a) Kilogram-meter

(b) Newton-meter

(c) Joule

(d) Newton per meter

Answer: (b) Newton-meter

271. The armature current in a D.C. shunt generator is given as

(a) $(E_g + V)/R_a$

(b) E_g/R_a

(c) $(E_g - V)/R_a$

(d) $I_L + I_{sh}$ [UPSSC JE 2016]

Answer: (d) $I_L + I_{sh}$

272. In the case of lap winding resultant pitch is

(a) multiplication of front and back pitches.

(b) division of front pitch by back pitch.

(c) sum of front and back pitches .

(d) difference of front and back pitches. [DSSB - 2015]

Answer: (d) difference of front and back pitches.

273. If an excited D.C. generator does not produce voltage after installing. What does first at all?

(a) Increase speed of prime mover.

(b) Increase the field resistance.

(c) Check armature winding.

(d) Reverse field connection. [LMRC - 2015]

Answer: (d) Reverse field connection.

274. In a D.C. machine, on no load the magnetic neutral axis

(a) moves from geometrical neutral axis in the direction of rotation.

(b) moves from geometrical neutral axis in the opposite direction of rotation.

(c) concides with the geometrical neutral axis.

(d) none of the above. [UPSSSC - 2016]

Answer: (c) concides with the geometrical neutral axis.

275. Why interpoles are used in dc machines?

(a) To counteract the reactance voltage.

(b) To counteract the demagnetizing effect of armature mmf in the commutating zone.

(c) To counteract the magnetizing effect of armature mmf in the commutating zone.

(d) To convert dc emf to ac emf. [UPRVUNL AE-2014]

Answer: To counteract the reactance voltage.

276. What is the effect of armature flux on the main field?

(a) Cross magnetizing only.

(b) Demagnetizing only.

(c) Cross magnetizing as well as demagnetizing.

(d) Neither cross nor demagnetizing. [UPPCL AE - 2016]

Answer: (c) Cross magnetizing as well as demagnetizing.

277. If in a DC machine, the ratio of constant losses to armature resistance is 2, then at maximum efficiency, the magnitude of current flowing would be

(a) 6.667 A

(b) 2 A

(c) 4 A

(d) 1.414 A [UPPCL AE]

Answer: (d) 1.414 A

278. Series field winding of a DC machine

1. has less turns.

2. is thick.

3. carries large current

Correct amongst the given is are

(a) Only 1

(b) 1, 2 and 3

(c) 2 and 3

(d) 1 and 3 [UPPCL AE - 2016]

Answer: (b) 1, 2 and 3

279. Choose the INCORRECT statement amongst the given statements.

(a) Magnetic flux usually flows through a minimum reluctance path.

(b) Field winding produces the working flux.

(c) Working emf is induced by working flux in armature winding.

(d) Commutator serves as mechanical inverter for DC generator. [UPPCL AE - 2016]

Answer: d) Commutator serves as mechanical inverter for DC generator.

280. A 6-pole DC machine having wave winding has ……. number of parallel paths. [UPPCL AE - 2016]

(a) 3

(b) 1

(c) 2

(d) 6

Answer: (c) 2

281. Which of the following speed control method of a DC machine is not a constant torque drive? [UPPCL AE - 2016]

(a) Armature voltage control.

(b) Armature resistance control.

(c) Field flux control.

(d) Armature voltage, Armature resistance and Field flux control.

Answer: (c) Field flux control.

282. Constant current region I external characteristics (V-I) of a series generator is best suited for

(a) line drop compensation.

(b) welding.

(c) rectification.

(d) drilling. [UPPCL AE - 2016]

Answer: (b) welding.

283. The detrimental effects of Armature reaction CANNOT be controlled by

(a) providing the machine with a compensating winding.

(b) using commutation poles.

(c) reducing the cross section of poles pieces.

(d) decreasing the length of air gap. [UPPCL AE - 2016]

Answer: (d) decreasing the length of air gap.

284. If δ is the torque angle, then interaction torque in a DC machine is proportional to

(a) sin δ

(b) tan δ

(c) $\cos^2\delta$

(d) $\sin^2\delta$ [UPPCL AE - 2016]

Answer: (a) sin δ

285. In a 6 pole D.C. machine, 100° mechanical corresponds to how many electrical degrees?

(a) 600°

(b) 300°

(c) 200°

(d) 150° [UPRVUNL AE - 2016]

Answer: (b) 300°

286. Armature reaction in a D.C. shunt generator runing at full load with brushes not shifted from the geometrical neutral plane and saturation neglected is

(a) non-existent.

(b) cross magnetizing.

(c) demagnetizing.

(d) magnetizing. [UPRVUNL AE - 2016]

Answer: (b) cross magnetizing.

287. What do we call a winding when the ends of a coil are joined to a commutator bar at a distance of one pole pitch? [UPPCL JE - 2016]

(a) Lap winding

(b) Wave winding

(c) Ring winding

(d) Rectangular winding

Answer: (b) Wave winding

288. For a Lap wound generator, the number of parallel paths in armature is taken to be

(a) 2

(b) 4

(c) number of poles/2

(d) number of poles [UPPCL JE - 2016]

Answer: (d) number of poles

289. The E_b/V ratio of a d.c. motor is an indication of its

(a) efficiency.

(b) speed regulation.

(c) starting torque.

(d) running torque.

Answer: (a) efficiency.

290. In DC generator, which type of electricity is produced in the armature? [UPPCL JE - 2016]

(a) DC

(b) AC

(c) AC and DC

(d) No electricity is produced in the armature

Answer: (b) AC

291. Tension in brushes of DC generator is quite important for its working. With excess tension in brushes

(a) velocity of machine decreases.

(b) output voltage decreases.

(c) output voltage increases.

(d) commutator gets over heated and surface wears out. [UPPCL JE - 2016]

Answer: (d) commutator gets over heated and surface wears out.

292. In which one of the following, the armature brushes are shorted together rather than connected in series with the field? [UPPCL JE - 2016]

(a) Universal motor

(b) Repulsion motor

(c) Exterior motor

(d) Sliding rotor motor

Answer: (b) Repulsion motor

293. Whenever machine is operating as generator the emf is called as..... whereas when machine is operated as motor the emf is called as……. [UPPCL JE - 2016]

(a) generated emf, generated emf

(b) back emf, back emf

(c) generated emf, back emf

(d) back emf, generated emf

Answer: (c) generated emf, back emf

294. Power output in a motor is 140 W. Input to the motor is 176.84 W including losses. Then, the efficiency is

(a) 76%

(b) 79%

(c) 81%

(d) 74% [LMRC - 2015]

Answer: (b) 79%

295. The yoke of small DC machine is made up of

(a) cast iron

(b) aluminium

(c) stainless steel

(d) copper [RRB JE 2015]

Answer: (a) cast iron

296. The field of self-exited generator is excited by

(a) AC.

(b) DC.

(c) by its own current.

(d) either AC or DC. [RRB JE - 2015]

Answer: (c) by its own current.

297. For constant speed line shafting …….. type of DC motor is used. [UPPCL - 2016]

(a) under compounded

(b) shunt

(c) over compounded

(d) series

Answer: (b) shunt

298. The terminal voltage of a DC shunt generator ……. on loading.

(a) increases slightly.

(b) increases sharply.

(c) remains constant.

(d) decreases slightly. [RRB JE - 2015]

Answer: (d) decreases slightly.

299. A D.C. series motor is best suited for driving

(a) lathes.

(b) cranes and hoists.

(c) shears and punches.

(d) machine tools. [RRB JE - 2015]

Answer: (b) cranes and hoists.

300. The counter e.m.f. of a d.c. motor

(a) often exceeds the supply voltage.

(b) aids the applied voltage

(c) helps in energy conversion.

(d) regulates its armature voltage. [RRB SSE 2015]

Answer: (c) helps in energy conversion.

301. D.C. generators works on the principle of

(a) Electromagnetic Induction

(b) Ohm's Law

(c) Lenz's Law

(d) Kirchoff's Law [RRB JE 2015]

Answer: (a) Electromagnetic Induction

302. Frequency of a generator when the number of poles are 8 and speed is 750 rpm will be

(a) 50 Hz

(b) 52 Hz

(c) 60 Hz

(d) 65 Hz [UPPCL JE - 2016]

Answer: (a) 50 Hz

303. In electrical machines, magnetic leakage is undesirable. This is due to the fact that it

1. Lowers the power efficiency

2. Produces fringing

3. Leads to their increased weight

The correct amongst them is/are

(a) Only 1

(b) 1, 2 and 3

(c) Only 2

(d) Both 2 and 3 [UPPCL - 2016]

Answer: (b) 1, 2 and 3

304. When a dynamo convertes electrical energy into mechanical energy, it is called

(a) motor

(b) generator

(c) producer

(d) inverter [RRB-JE - 2015]

Answer: (a) motor

305. When a DC series motor is connected to AC supply, the power factor will be low because of

(a) high inductance of field and armature circuits.

(b) induced current in rotor due to variation of flux.

(c) fine copper wiring winding.

(d) low inductance of field and armature circuits.

Answer: (a) high inductance of field and armature circuits.

306. For punch and crane applications the ……. are used. [UPRVUNL JE - 2016]

(a) starting, stopping, speed controllers and reversing

(b) speed controllers

(c) starting, stopping

(d) reversing

Answer: (a) starting, stopping, speed controllers and reversing

307. The mechanical power developed by a motor is maximum when

(a) back emf is zero.

(b) back emf is equal to half the applied voltage.

(c) back emf is less than the applied voltage.

(d) back emf is greater than the applied voltage [UPRVUNL JE 2016]

Answer: (b) back emf is equal to half the applied voltage.

308. If we connect two DC series motor in parallel, then in comparison to the normal speed, the resultant speed will be

(a) less.

(b) equal.

(c) more.

(d) zero.

Answer: (c) more.

309. ……..braking is generally used in braking of battery operated scooters.

(a) Plugging

(b) Regerative

(c) Mechanical

(d) Rheostatic [UPPCL JE - 2016]

Answer: (c) Mechanical

310. For a DC Motor for constant load torque, what will happen to the armature current if armature resistance increases? [UP JAL NIGAM AE-2016]

(a) Remain unchanged

(b) Increases

(c) Decreases

(d) None of the above

Answer: (a) Remain unchanged

311. If the variable losses in a DC motor is 600 W. Then for maximum efficiency of the motor, the constant losses must be

(a) 300 W

(b) 1200 W

(c) 600 W

(d) 100 W

Answer: (c) 600 W

312. Which type of frame is preferred for motors in moisture surrondings? [JUVNL JE - 2017]

(a) Splash proof

(b) Drip proof

(c) Open type

(d) Totally enclosed fan cooled

Answer: (d) Totally enclosed fan cooled

313. What is the maximum power rating of DC motor to start with a direct on-line starter?

(a) 5 HP

(b) 1 HP

(c) 20 HP

(d) 10 HP

Answer: (b) 1 HP

314. Which type of DC motor is confined for a brake test?

(a) Small horse power motors

(b) High speed motors

(c) High horse power motors

(d) Variable speed motors

Answer: (a) Small horse power motors

315. Which element(s) is/are used in the starter for a DC shunt motor?

(a) Inductor

(b) Capacitor

(c) Combination of resistor and capacitor

(d) Resistor

Answer: (d) Resistor

316. The method of speed control of DC shunt motors used for application where a very wide range sensitive speed control is required is

(a) Ward-Leonard system.

(b) multiple voltage control.

(c) tapped field control.

(d) rheostatic control. [NMRC - 2017]

Answer: (a) Ward-Leonard system.

317. The three-point starter can be used for

(a) both shunt and compound motors

(b) shunt motor only

(c) series motor only

(d) compound motor only [NMRC - 2017]

Answer: (a) both shunt and compound motors

318. There will be ……. in the speed of DC shunt motor with the increasing load. [UPPCL - 2016]

(a) slight reduction

(c) no change

(b) proportional change

(d) slight enhancement

Answer: (a) slight reduction

319. Which motor is used where high starting torque and wide speed range control is required? [LMRC JE - 2016]

(a) Single phase capacitor start motor

(b) DC motor

(c) Induction motor

(d) Synchronous motor

Answer: (b) DC motor

320. For a DC series motor, if T_a be the torque and I_a the armature current, then which relation is valid for the condition before saturation?

(a) $T_a \alpha I_a$

(b) $T_a \alpha I_a^2$

(c) $T_a \alpha 1/I_a$

(d) $T_a \alpha 1/I_a^2$

Answer: (b) $T_a \alpha I_a^2$

321. Which of the following is not necessarily the advantage of D.C. motor over A.C. motor?

(a) High starting torque

(b) Wide speed range

(c) Better speed control

(d) Low cost [UJVNL-2016]

Answer: (d) Low cost

322. The armature current of a D.C. motor is given by

(a) $I_a = (V + E_b)/R_a$

(b) $I_a = (V - E_b)/R_a$

(c) $I_a = (V - R_a)/E_b$

(d) $I_a = (R_a - E_b)/V$

Answer: (b) $I_a = (V - E_b)/R_a$

323. A D.C. motor can easily be Identified by

(a) yoke.

(b) size of conductor.

(c) commutator.

(d) windings.

Answer: (c) commutator.

324. A 150 kW electric motor has an efficiency of 90%, when it operates at full load. Calculate the losses in the machine. [Jammu & Kashmir JE - 2016]

(a) 92 kW

(b) 150 kW

(c) 163 kW

(d) 16.66 kW

Answer: (d) 16.66 kW

325. If the load current and flux of a DC motor are held constant, and voltage applied across its armature is increased by 10%, its speed will

(a) decreased by 10%.

(b) remain unchanged.

(c) increase by 10%.

(d) increase by 20%. [J&K JE - 2016]

Answer: (c) increase by 10%.

326. A shunt motor rotating at 1500 r/min is fed by a 120 V source. The line current is 51 A and the shunt field resistance is 120 ohm. If the armature resistance is 0.1 ohm, calculate the current in the armature. [J & K JE - 2016]

(a) 1 A

(b) 51 A

(c) 50 A

(d) 12 A

Answer: (c) 50 A

327. The d.c. series motor should always be started with load because

(a) it will fail to start.

(b) it will not develop high starting torque.

(c) at no load, it will rotate at dangerously high speed.

(d) all are true. [Uttarakhand AE 2013]

Answer: (a) it will fail to start.

328. Which of the following testing methods is a direct testing of DC machine? [J&K JE - 2016]

(a) Swinburne's test

(b) Field test

(c) Hopkinson's test

(d) Brake test

Answer: (d) Brake test

329. Ward-leonard controlled DC drives are generally used for

(a) light duty excavators.

(b) medium duty excavators.

(c) heavy duty excavators.

(d) low duty excavators. [J&K JE - 2016]

Answer: (c) heavy duty excavators.

330. What is the order of the characteristic equation of an armature controlled DC motor? [J & K JE - 2016]

(a) First order equation

(b) Second order equation

(c) Zero order equation

(d) Third order equation

Answer: (d) Third order equation

331. The armature windings in a dc motor are placed on

(a) stator only.

(b) rotor only.

(c) either stator or rotor.

(d) none of the other options. [UPRVUNAL AE-2014]

Answer: (b) rotor only.

332. ……. is a property of differentially compounded DC motor.

(a) Low starting torque

(b) Variable speed

(c) High starting toque

(d) Infinite speed at no-load

Answer: (a) Low starting torque

333. For a d.c. series motor, which of the following expression is correct assuming torque (T) versus armature current (I) Characteristics unsaturated? [Uttarakhand - 2013]

(a) $T \alpha \phi \sqrt{I_a}$

(b) $T \alpha \phi I_a$

(c) $T \alpha \sqrt{(\phi I_a)}$

(d) $T \alpha \phi^2 I_a^2$

Answer: (b) $T \alpha \phi I_a$

334. In shunt motors, the method of speed control is/are

1. Variable resistance in field circuit

2. Variable resistance in armature circuit

3. Tapping the field

4. Field diverter

(a) 2 and 4

(b) 3 and 4

(c) 1 and 4

(d) 1 and 2 [UPPCL 2016]

Answer: (d) 1 and 2

335. In DC shunt motors, as load is reduced then the speed will be

(a) increase abruptly.

(b) increase in proportion to reduction in load.

(c) remain almost constant.

(d) reduce. [ESIC JE - 2016]

Answer: (c) remain almost constant.

336. Which DC motor has got maximum self loading property? [ESIC JE 2016]

(a) Series motor

(b) Shunt motor

(c) Cumulatively compounded motor

(d) Differentially compounded motor

Answer: (d) Differentially compounded motor

337. As compared to an induction motor, the air gap in a DC motor is

(a) less than 50%.

(b) between 50% to 90%.

(c) same.

(d) more. [ESIC JE 2016]

Answer: (d) more.

338. Field winding of a DC series motor is usually provided with thick wire

(a) to provide large flux.

(b) to reduce the use of insulating materials.

(c) as it carries large load current.

(d) in order to reduce eddy current. [ESIC JE - 2016]

Answer: (c) as it carries large load current.

339. For a DC shunt motor if the excitation is changed then

(a) torque will remain constant.

(b) torque will change but power will remain constant.

(c) torque and power both will change.

(d) all torque, speed and power will change. [ESIC JE - 2016]

Answer: (b) torque will change but power will remain constant.

340. Ward-Leonard control is basically a

(a) voltage control method.

(b) field diverter method.

(c) field control method.

(d) armature resistance control method. [ESIC JE - 2016]

Answer: (a) voltage control method.

341. DC shunt motors are used for driving

(a) trains.

(b) cranes.

(c) hoist.

(d) machine tools. [ESIC JE - 2016]

Answer: (d) machine tools.

342. Which of the following tests will be suitable for testing two similar DC series motors of large capacity? [ESIC JE - 2016]

(a) Swinburne's test

(b) Hopkinson's test

(c) Field test

(d) Brake test

Answer: (c) Field test

343. If a DC shunt motor is working at full load and if shunt field circuit suddenly opens

(a) this will make armature to take heavy current, possibly burning it.

(b) this will result in excessive speed, possibly destroying armature due to excessive centrifugal stress.

(c) nothing will happen to motor.

(d) motor will come to stop. [ESIC JE 2016]

Answer: (a) this will make armature to take heavy current, possibly burning it.

344. A 230 V DC shunt motor takes 32 A at full load. The back e.m.f. on the full load, if the resistance of motor armature and shunt field winding are 0.2Ω and 115 Ω respectively, will be

(a) 210 V

(b) 215 V

(c) 220 V

(d) 224 V [ESIC JE 2016]

Answer: (d) 224 V

345. In a DC motor constant torque is produced due to

(a) rotor laminations.

(b) end-plates.

(c) pole shoes.

(d) commutator. [ESIC JE 2016]

Answer: (d) commutator.

346. The maximum end play of a motor is about

(a) 10 mm

(c) 2 mm

(b) 6 mm

(d) 0.4 mm [ESIC JE - 2016]

Answer: (d) 0.4 mm

347. The mechanical power developed by a DC motor is equal to

(a) power input + losses.

(b) back e.m.f. x armature current.

(c) power output x losses.

(d) power output x efficiency.

Answer: (b) back e.m.f. x armature current.

348. The variable resistor shunting the field of a DC series motor is called

(a) armature diverter.

(b) voltage regulator.

(c) field diverter.

(d) potential diverter. [ESIC JE - 2016]

Answer: (c) field diverter.

349. Speed control by varying the armature circuit resistance, in a DC motor provides a

1. Constant torque drive

2. Constant power drive

3. Variable power drive

(a) Only 1

(b) Only 1 and 3

(c) Only 3

(d) Only 2 and 3 [ESIC JE - 2016]

Answer: (b) Only 1 and 3

350. Cranes generally offers

(a) reversing load and light start.

(b) gradually varying load.

(c) non reversing load and heavy start.

(d) reversing load and heavy start.

Answer: (d) reversing load and heavy start.

351. Which is the correct statement?

(a) In a dc commutator motor, the rotor has permanent magnet.

(b) In a brush less dc motor, the rotor has permanent magnet.

(c) In a hybrid stepper motor, the stator has a permanent magnet.

(d) Multi stack variable reluctance motor has permanent magnet on rotor. [FCI - 2015]

Answer: (b) In a brush less dc motor, the rotor has permanent magnet.

352. In an electromechanical energy conversion device, the developed torque depends upon

(a) stator field strength and torque angle.

(b) stator field strength and rotor field strength.

(c) stator field and rotor field strengths and torque angle

(d) stator field strength only. [FCI - 2015]

Answer: (c) stator field and rotor field strengths and torque angle

353. A d.c. series motor is accidently connected to single phase a.c. supply. The torque produced will be

(a) of zero average value.

(b) oscillating.

(c) steady and unidirectional.

(d) pulsating and unidirectional. [FCI - 2015]

Answer: (d) pulsating and unidirectional.

354. In a separately excited dc motor controlled by a single phase semi-converter drive, under continuous armature current condition, no load speed is proportional to

(a) $1 + \cos \alpha$

(b) $\cos \alpha$

(c) $\sin \alpha$

(d) $1 + \sin \alpha$

Answer: (a) $1 + \cos \alpha$

355. In case of DC series motor, it is possible to have finite no-load speed if a resistance is connected across its

(a) field terminals.

(b) armature terminals.

(c) field and armature together.

(d) It is not possible. [Uttarakhand AE 2013]

Answer: (d) It is not possible.

356. Two identical loss less series motors are connected in series across a DC supply voltage run at speeds of N_1, and N_2. The ratio of their output will be

(a) $N_2^2 : N_1^2$

(b) $N_1 : N_2$

(c) $N_2 : N_1$

(d) 1 : 1 [Uttarakhand AE - 2013]

Answer: (b) $N_1 : N_2$

357. Field control of a DC shunt motor gives

(a) constant kW drive.

(b) constant torque drive.

(c) constant speed drive.

(d) variable load speed drive. [Uttarakhand AE - 2013]

Answer: (a) constant kW drive.

358. Which of the following motors is preferred when quick speed reversal is the main consideration? [Uttarakhand AE - 2013]

(a) Squirrel cage induction motor.

(b) Wound rotor induction motor.

(c) Synchronous motor.

(d) D.C. motor.

Answer: (d) D.C. motor.

359. In a DC machine, the angle between the stator and rotor fields is

(a) dependent upon the load.

(b) 45°

(c) 90°

(d) 180° [Uttarakhand AE - 2013]

Answer: (c) 90°

360. At the time of starting the motor current …….. than normal.

(a) same

(b) high

(c) low

(d) none of these

Answer: (b) high

361. In a DC motor, unidirectional torque is produce with the help of

(a) brushes

(b) commutator

(c) end plates

(d) both a and b

Answer: (d) both a and b

362. The current drawn by a 120 V DC motor of armature resistance 0.5 Ω and back emf 110 V is ……. (ampere).

(a) 20

(b) 240

(c) 220

(d) 5

Answer: (a) 20

363. When the direction of power flow reverses, a differentially compounded DC motor becomes

(a) a shunt motor.

(b) a series motor.

(c) a cumulatively compounded generator.

(d) a differentially compounded generator. [BSNL TTA - 2016]

Answer: (c) a cumulatively compounded generator.

364. In a DC motor which of the following can sustain the maximum temperature rise?

(a) armature winding.

(b) field winding.

(c) commutator.

(d) slip-ring.

Answer: (b) field winding.

365. If the flux of a dc motor approached zero

(a) its speed will approach zero.

(b) the motor will tend to run at infinite speed.

(c) the motor will stop.

(d) its speed will remain unchanged. [BSNL TTA - 2016]

Answer: (b) the motor will tend to run at infinite speed.

366. The speed of a DC series motor decreases if the flux in the field winding

(a) remains constant.

(b) increases.

(c) decreases.

(d) None of these. [BSNL TTA - 2015]

Answer: (b) increases.

367. A DC shunt motor is running at light load. What will happen if the field winding gets opened. [BSNL TTA 2016]

(a) Motor will pick up high speed.

(b) Motor will stop.

(c) Motor will make noise.

(d) Motor will burn.

Answer: (a) Motor will pick up high speed.

368. In AC series motor, armature coils are usually connected to commutator through

(a) resistance.

(b) inductors.

(c) capacitors.

(d) solid contact. [UPRVUNL - 2015]

Answer: (a) resistance.

369. Which of the following motors is used for centrifugal pumps?

(a) Series Motor

(b) Shunt motor

(c) Induction motor

(d) Either series or shunt [UPRVUNL - 2015]

Answer: (c) Induction motor

370. A DC motor is preferred over an AC motor due to

(a) high speed operation.

(b) low speed operation.

(c) fixed speed operation.

(d) variable speed operation. [UPRVUNL - 2015]

Answer: (d) variable speed operation.

371. Motor used for punching machine is subjected to

(a) no load.

(b) continuous part load.

(c) continuous full load

(d) intermittent load.

Answer: (d) intermittent load.

372. A face plate starter is used to start

(a) induction motor.

(b) universal motor.

(c) synchronous motor.

(d) dc series motor. [UPRVUNL - 2015]

Answer: (d) dc series motor.

373. Plugging provides

(a) zero torque braking.

(b) highest torque braking.

(c) indeterminate torque braking.

(d) smallest torque braking. [UPRVUNL 2015]

Answer: (b) highest torque braking.

374. The speed regulation of a motor falls from 1100 rpm at no load to 1050 rpm at rated load. The speed regulation of the motor is

(a) 2.36%

(b) 4.76%

(c) 6.77%

(d) 8.84% [UPRVUNL - 2015]

Answer: (b) 4.76%

375. Consider the following statements regarding a DC motor. When the speed of a DC motor increases

1. Back emf decreases

2. Current drawn increases

(a) Only 2

(b) Only 1

(c) Both 1 and 2

(d) Neither 1 nor 2 [UPRVUNL - 2015]

Answer: (d) Neither 1 nor 2

376. The ratio of starting torque to full load torque is least in the case of

(a) series motor.

(b) shunt motor.

(c) differentially compounded.

(d) cumulative compounded. [UPRVUNL - 2015]

Answer: (b) shunt motor.

377. Speed of a DC motor is

(a) inversely proportional to the air-gap flux.

(b) directly proportional to the air-gap flux.

(c) inversely proportional to the square of air-gap flux.

(d) not related to the air-gap flux. [UPRVUNL - 2014]

Answer: (a) inversely proportional to the air-gap flux.

378. The function of a starter in a d.c. motor is to

(a) reduce voltage.

(b) insert resistance in field circuit.

(c) insert resistance in armature circuit.

(d) control the speed. [DMRC - 2015]

Answer: (c) insert resistance in armature circuit.

379. A DC shunt motor is running at 1200 rpm, when excited with 220V DC. Neglecting the losses and saturation, the speed of the motor when connected to a 175 V supply is

(a) 70 rpm

(b) 900 rpm

(c) 1050 rpm

(d) None of these [DMRC - 2014]

Answer: (d) None of these

280. As the motion of armature increases, back e.m.f.

(a) increases.

(b) decreases.

(c) remains constant.

(d) may increase or decreases.

Answer: (a) increases.

381. In DC machines, fractional pitch winding is used to

(a) improve cooling.

(b) reduce copper losses.

(c) increase the generated emf.

(d) reduce the sparking. [LMRC 2015]

Answer: (d) reduce the sparking.

382. The speed of DC motor is proportional to the

(a) armature current.

(b) square of armature current.

(c) field current.

(d) inverse of armature current. [LMRC - 2015]

Answer: (d) inverse of armature current.

383. A 4 pole DC machine is running at 1500 rpm. What is the frequency of current in armature winding? [LMRC - 2015]

(a) 25 Hz

(b) 0 Hz

(c) 100 Hz

(d) 50 Hz

Answer: (d) 50 Hz

384. A differentially compound D.C. motor runs at a full load speed of 1000 rpm. If its series field winding is short circuited, then its full-load speed

(a) becomes more than 1000 rpm.

(b) becomes less than 1000 rpm

(c) remains 1000 rpm.

(d) motor first accelerates and then stops with jerks.

Answer: (b) becomes less than 1000 rpm

385. In a dc shunt motor, at 4 amp. the torque developed is 20 Nm. If the load current doubles, what is obtained value of torque? [JMRC - 2012]

(a) 10 Nm

(b) 20 Nm

(c) 40 Nm

(d) 80 Nm

Answer: (c) 40 Nm

356. Two DC series motors connected in series draw current I from supply and run at speed N. When the same motors are connected in parallel to the same supply, what will be the speed of both motors? [JMRC - 2012]

(a) N

(c) 4N

(b) 2N

(d) N/2

Answer: (c) 4N

387. What does the nominal power printed on the name plate of any motor signify? [JMRC - 2012]

(a) Power drawn in KVA

(b) Output power at the shaft

(c) Power drawn in kW

(d) The gross power

Answer: (b) Output power at the shaft

388. Laminations of core are generally made of

(a) cast iron.

(b) carbon.

(c) silicon steel.

(d) stainless steel. [DSSB - 2015]

Answer: (c) silicon steel.

389. Which of the following could be approximately the thickness of laminations of a DC machine? [DSSB - 2015]

(a) 0.005 mm

(b) 0.05 mm

(c) 0.5 mm

(d) 5 m

Answer: (c) 0.5 mm

390. Copper brushes in DC machine are used

(a) where low voltage and high currents are involved.

(b) where high voltage and small currents are involved.

(c) in both of the above cases.

(d) in none of the above cases. [DSSB - 2015]

Answer: (a) where low voltage and high currents are involved.

391. Iron losses in a D.C. machine are independent of variations in

(a) speed.

(b) load.

(c) voltage.

(d) speed and voltage. [DSSB - 2015]

Answer: (b) load.

392. In case of D.C. machine winding, number of commutator segments are equal to

(a) number of armature coils.

(b) number of armature coil sides.

(c) number of armature conductors.

(d) number of armature turns. [DSSB - 2015]

Answer: (a) number of armature coils.

393. For a DC machines laboratory following type of D.C. supply will be

(a) rotary converter.

(b) mercury arc rectifier.

(c) induction motor d.c. generator set.

(d) synchronous motor d.c. generator set [DSSB - 2015]

Answer: (c) induction motor d.c. generator set.

394. Which of the following application requires high starting torque? [DSSB - 2015]

(a) Lathe machine

(b) Centrifugal pump

(c) Locomotive

(d) Air blower

Answer: (c) Locomotive

395. If a D.C. motor is to be selected for conveyors, which motor would be preferred? [DSSB - 2015]

(a) Series motor

(b) Shunt motor

(c) Differential compound motor

(d) Cumulative compound motor

Answer: (a) Series motor

396. Differential compound D.C. motors can find applications requiring

(a) high starting torque.

(b) low starting torque.

(c) variable speed.

(d) frequent on-off cycles. [DSSB - 2015]

Answer: (b) low starting torque.

397. The armature torque of the D.C. shunt motor is proportional to

(a) field flux only.

(b) armature current only.

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

(d) none of the above. [DSSB - 2015]

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

398. Which of the following methods of speed control of D.C. machines will offer minimum efficiency? [DSSB - 2015]

(a) Voltage control method

(b) Field control method

(c) Armature control method

(d) All of the above methods

Answer: (c) Armature control method

399. For a D.C. shunt motor if the excitation is changed

(a) torque will remain constant.

(b) torque will change but power will remain constant.

(c) torque and power both will change.

(d) torque, power and speed, all will change.

Answer: (b) torque will change but power will remain constant.

400. If the speed of a D.C. shunt motor is increased, the back e.m.f. of the motor will

(a) increase.

(b) decrease.

(c) remain same.

(d) become zero. [DSSB - 2015]

Answer: (a) increase.

401. For constant torque drive which speed control method is preferred? [DSSB - 2015]

(a) Field control

(b) Armature voltage control

(c) Shunt armature control

(d) Mechanical loading system

Answer: (b) Armature voltage control

402. Armature reaction in DC motor results

(a) decrease in speed.

(b) increase in speed.

(c) short circuit.

(d) open circuit. [MPJE - 2015]

Answer: (b) increase in speed.

403. In shunt de motor the direction of rotation of the motor will reversed, when

(a) either field terminals are reversed or armature terminals are reversed.

(b) only armature terminals are reversed.

(c) only field terminals are changed.

(d) none of the above. [MP JE - 2015]

Answer: (a) either field terminals are reversed or armature terminals are reversed.

404. For lifts, which of the following types of D.C. motor is used?

(a) Series motor

(b) Compound motor

(c) Shunt motor

(d) Cumulative compound motor

Answer: (a) Series motor

405. With 100% inductive shunt compensation, the voltage profile is flat for

(a) 100% loading of line.

(b) 50% loading of line.

(c) Zero loading of line.

(d) None of these.

Answer: (c) Zero loading of line.

406. The cross-section of conductors for large sizes DC machines are

(a) circular.

(b) rectangular.

(c) triangular.

(d) trapezoidal.

Answer: (b) rectangular.

407. Magnetic cores are made up of thin lightly insulated lamination to reduce

(a) power factor.

(b) hysteresis loss.

(c) load loss.

(d) eddy current loss. [UPSSSC - 2015]

Answer: (d) eddy current loss.

408. In DC machines the value of A equals to 2

(a) for lap winding.

(b) for wave winding.

(c) for field winding.

(d) for armature winding. [UPSSC - 2015]

Answer: (b) for wave winding.

409. Separately excited and self-excited are types of which machine?

(a) dc machine.

(b) synchronous machine.

(c) induction machine.

(d) none of the above.

[UPSSSC - 2015]

Answer: (a) dc machine.

410. Armature reaction of an unsaturated DC machine is

(a) cross magnetizing.

(b) demagnetizing.

(c) magnetizing.

(d) none of the above. [UPSSSC - 2015]

Answer: (a) cross magnetizing.

411. For high values of armature current, the speed of a DC series motor is

(a) proportional to armature current.

(b) inversely proportional to armature current.

(c) constant.

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

Answer: (b) inversely proportional to armature current.

412. If flux of dc series motor reduces, its speed will be

(a) be infinity.

(b) be zero.

(c) be between zero and infinity.

(d) constant. [MP JE - 2016]

Answer: (c) be between zero and infinity.

413. The disadvantages of machine commutation are

(a) large machine size.

(b) restriction of the speed range.

(c) both of the above.

(d) None of the above. [MP JE 2016]

Answer: (c) both of the above.

414. Variable speed cannot be obtained with

(a) dc motors controller.

(b) derivative controller.

(c) soft starter controller.

(d) ac and dc controllers. [MP JE - 2016]

Answer: (c) soft starter controller.

415. The construction of DC motor is

(a) same as that of dc generator.

(b) different than dc generator.

(c) similar but different in frame construction.

(d) different in construction and similar in frame construction.

Answer: (c) similar but different in frame construction.

416. A starter is necessary to start a dc motor because

(a) it is used to start a dc motor.

(b) it restricts the speed of the motor.

(c) it limits the back e.m.f. to a safe value.

(d) it limits the starting current to a safe value.

Answer: (d) it limits the starting current to a safe value.

417. What happens if the field windings of a running shunt motor suddenly break open? [MP JE 2016]

(a) Its speed slows down.

(b) Its speed becomes dangerously high.

(c) It gives out sparks.

(d) It stops at once.

Answer: (b) Its speed becomes dangerously high.

418. If speed of a d.c. shunt motor increases, the back emf

(a) increases.

(b) decreases.

(c) remains fixed.

(d) decreases and then increases.

Answer: (a) increases.

419. In a d.c. machine without inter-poles, to get commutation improved, the brush shift angle must be

(a) varied with change in load.

(b) kept constant.

(c) zero degree.

(d) none of these.

Answer: (a) varied with change in load.

420. Application of DC motors is generally restricted to a few load speed applications. It is due to which of the following factors? [MP JE 2016]

(a) The cost of the motor.

(b) The problems with mechanical commutation.

(c) The maintenance problems.

(d) None of these.

Answer: (b) The problems with mechanical commutation.

421. By providing a variable resistance across the series field (diverter) in a dc series motor, speeds above normal can be obtained because

(a) armature current decreases.

(b) flux is reduced.

(c) line current is decreased.

(d) none of these.

Answer: (b) flux is reduced.

422. Electrical machines are designed to have the maximum efficiency at

(a) full load.

(b) 50% of full load.

(c) near about full load.

(d) no load. [MP JE 2016]

Answer: (c) near about full load.

423. In dc machines, the

(a) torque and induced e.m.f. are produced both in motor and generator.

(b) torque is produced in motor and e.m.f. is in generator.

(c) torque is produced in generator and e.m.f. is in motor.

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

Answer: (a) torque and induced e.m.f. are produced both in motor and generator.

424. Which part of DC machines converts the alternating current induced in armature conductors into unidirectional current in the external load circuit? [MP JE - 2016]

(a) Commutator

(c) Armature core

(d) Armature windings

(b) Pole coils

Answer: (a) Commutator

425. Fly wheel is mounted on the motor shaft in ..... motor. [MP JE - 2016]

(a) compound

(b) simple

(c) variable

(d) complex

Answer: (a) compound

426. In a six pole motor, 4 mechanical degrees is equal to

(a) 4 electrical degrees.

(b) 2 electrical degrees.

(c) 8 electrical degrees.

(d) 12 electrical degrees. [Uttarakhand 2013]

Answer: (d) 12 electrical degrees.

427. An electric train employing a d.c. series motor is running at a fixed speed. When a sudden drop in voltage of supply takes place, then this results in

(a) drop in speed and rise in current.

(b) rise in speed and drop in current.

(c) rise in speed and rise in current.

(d) drop in speed with current unaltered.

Answer: (a) drop in speed and rise in current.

428. A d.c. series motor has linear magnetization characteristics and negligible armature resistance. The motor speed is

(a) directly proportional to √T

(b) inversely proportional to √T

(c) directly proportional to T

(d) inversely proportional to T

Answer: (b) inversely proportional to √T