Chettinad College of Engineering & Technology
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Department of EEE

EE8401 –Electrical Machines-II

Unit I - MCQ Bank

1.-Voltage drop occur in an alternator in
A. Armature resistance only
B. Armature resistance and leakage reactance
C. **leakage reactance Armature resistance and armature reaction**
D. leakage reactance ,armature reaction, Armature resistance and earth connection
Answer:C

2-The load factor of alternator or generator depend on
A. Speed of rotor
B. Core losses
C. **Load**
D. Armature losses
Answer:C

3-which kind of rotor is most suitable for turbo alternator which are designed to run with high speed
A. **None-salient pole**
B. Salient Pole
C. Both
D. None of above
Answer:A

4-Salient pole are generally used on
A. Medium speed prime movers only
B. **Low and medium speed prime movers**
C. High speed prime mover only
D. Low speed prime mover only
Answer:B

5-In an alternator or generator ,at lagging power factor the generated voltage per phase as compare to that at unity power factor

A. Must be less than terminal voltage
B. Must be same as terminal voltage
C. **Must be more then terminal voltage**
D. Must be 1.4 time the terminal voltage

Answer:C

6-Various voltage drops magnitude ,that occurs in an alternator depend on

A. **Load current**
B. Power factor X load current
C. Power factor X square of load current
D. Power factor of load

Answer:A

7-Fleming left hand rule may be applied to an electric generator to find

A. Polarity of induced emf
B. Direction of rotor rotation
C. Direction of magnetic field
D. **Direction of induced emf** .

Answer:D

8-The frequency of voltage generated in an alternator depend

A. Rotative speed
B. No of poles
C. **No pole and rotative speed**
D. No of pole ,rotative speed and type of winding

Answer:C

9-The number of electrical degree passed through in one revolution of a six pole synchronous Generator is

A. 720
B. 360
C. **1080**
D. 2160

Answer:C

10-A 10 pole ac generator rotates at 1200 rpm .The frequency of ac voltage in cycles per second will be

A. 110
B. **100**
C. 50
D. 120

Answer:B

11-An synchronous generator power at 210v per phase while running at 1500 rpm .If the speed of the alternator drops to 1000 rpm the generated voltage per phase will be

A. **140v**
B. 180v
C. 150v
D. 105V

Answer:A

12-If the input to the prime mover remain constant and excitation changed then the

A. Active component of output is change
B. **Reactive component of output is change**
C. Power factor of the load remain constant
D. Power factor of load reduces

Answer:B

13-As the speed of the alternator increase

A. The frequency decrease
B. **Frequency increase**
C. Frequency remain constant and power factor decrease
D. None of the above

Answer:B

14-. If the DC excitation is suddenly dropped to 0, the three phase alternator _____

A) runs as motor
B) stops to zero speed in few seconds
C) continues to run as motor but at lower speed
D) no change in the operating conditions.

Answer:A

15-For an alternator when the load power factor is unity then

A. Armature flux will be demagnetizing

B. Armature flux will have square waveform
C. **Armature flux will be cross-magnetizing**
D. Armature flux reduced to zero

Answer:C

16-The driving power from the prime mover driving an alternator is lost but alternator remain connected to the supply network and the field is also remain on .The alternator will

A. Behave as an induction motor but run in opposite direction
B. **Behave as a synchronous motor but will run in the same direction**
C. Behave as a synchronous motor but run in reverse direction to that corresponding to generator action
D. Will burn

Answer:B

17-If the input of the prime mover of an alternator is kept constant and excitation is changed then

A. Reactive component of the output is changed
B. Active component is changed
C. **Power factor of load remain constant**
D. Power factor of load changes from lagging to leading

Answer:C

18-For 50 Hz system the maximum speed of an alternator is

A. Approximately 3600 rpm
B. Above 3600 rpm
C. **3000 rpm**
D. 3600 rpm

Answer:C

19-For parallel operation of two Synchronous Generator which of the following should be identical for both

A. Frequency
B. Voltage
C. Phase sequence
D. **All of above**

Answer:D

20-When two alternators are running in parallel their KVAR load share is changed by change in their …….. while their KW load share is changed by changing their,,,,,,

A. Excitation ,excitation
B. **Excitation, driving torque**
C. Driving torque, excitation
D. Driving torque ,excitation

Answer:B

21-Two alternator running in parallel .If driving force of both the alternator is changed this will changed in

A. Back emf
B. **Frequency**
C. Generated voltage
D. All of above

Answer:B

22-Three phase alternator has a phase sequence of RYB .In case the field current is reversed., the phase sequence will be

A. **RYB**
B. RBY
C. YRB
D. All

Answer:A

23-The armature reaction of a Synchronous Generator effect

A. Operating speed
B. Winding losses
C. **Generated voltage per phase**
D. Waveform of voltage generated

Answer:C

24.For same power rating the lower voltage alternator will be

A. **Large in size**
B. More efficient
C. Operating at high speed
D. More costly

Answer:A

25.Damper in a large alternator

A. Reduced voltage fluctuations
B. Reduced frequency fluctuation
C. **Increase stability**
D. None of above

Answer:C

26.An alternator is rated for 75kw at 0.8 power factor ..its means that

A. **Alternator can supply 75kw at 0.8 power factor**
B. Alternator can supply power only to load having power factor 0.8
C. The peak efficiency of an alternator occurs only at 75kw load having 0.8 lagging power factor
D. Alternator has 4 pole

Answer:A

27.The regulation of generator is

A. The variation in terminal voltage under condition of maximum and minimum excitation .
B. **Increase in terminal voltage when the load thrown off**
C. The change in terminal voltage from lagging power factor to leading power factor
D. The reduction in terminal voltage when alternator is loaded

Answer:B

28.Magnetisation curve represents the relationship between

A. **Excitation current and terminal voltage**
B. Power factor and terminal voltage
C. Magnetic flux and armature current
D. Reactive and non-reactive components of voltages

Answer:A

29.If the armature reaction in an alternator produces magnetization of the main field the power should be

A. Zero, leading load
B. **Zero, lagging load**
C. Unity
D. None of above

Answer:A

30.The Potier's triangle separate

A. Filed mmf and armature mmf
B. Stator voltage and rotor voltage
C. Iron losses and copper losses
D. **Armature leakage reactance and armature reaction mmf.**

Answer:D

31.when an alternator supply unity power factor load ,the armature reaction will be produced

A. Magnetization of the main field
B. **Distortion of the main field**
C. Demagnetization of the main field
D. None of above

Answer:B

32.The synchronous impedance method of finding voltage regulation of an alternator is called the pessimistic method because **(SSC-2015)**

A. It is simplest to perform and compute
B. Armature reaction is wholly magnetizing
C. It gives regulation value lower than its actual found by direct loading
D. **It gives the regulation value higher than its actual found by direct loading**

Answer:D

33.Hydrogen is used in large alternator mainly to **(SSC-2015)**

A. Reduce eddy current losses
B. Reduce distortion of the waveform
C. **Cool the machine**
D. Strengthen the magnetic field

Answer:C

34.An alternator is supplying a load of 300 kW at a power factor of 0.6 lagging. If the power factor is raised to unity, How many more kW can the alternator supply? **(SSC-2016)**

A. 300 kW
B. 100 kW
C. 150 kW
D. **200 kW**

Answer:D

35.Which of the following motor is not self-starting? **(SSC-2016)**

A. DC series motor
B. Slip ring Induction motor
C. **Synchronous motor**
D. Squirrel cage induction motor

Answer:C

36.Which of the following condition is **NOT** mandatory for alternators working in parallel? **(SSC-2015)**

A. The alternators must have the same phase sequence
B. The terminal voltage of each machine must be the same
C. **The machines must have equal kVA ratings**
D. The alternators must operate at the same frequency

Answer:C

37.Regulation of an alternator supplying resistive or inductive load is **(SSC-2015)**

A. Infinity
B. Always Negative
C. **Always Positive**
D. Zero

Answer:C

38.The positive, negative and zero sequence impedances of 3-phase synchronous generator are j 0.5 pu, j 0.3 pu and j 0.2 pu respectively. When the symmetrical fault occurs on the machine terminals. Find the fault current. The generator neutral is grounded through reactance of j0.1 pu **(SSC-2015)**

A. -j 3.33 pu
B. **-j 1.67 pu**
C. -j2.0 pu
D. -j 2.5 pu

Answer:B

39.Which of the following methods would give a higher than the actual value of the regulation of an alternator? **(SSC-2015)**

A. ZPF method
B. MMF method
C. **EMF method**
D. ASA method

Answer:C

40.If the excitation an alternator operating in parallel with other alternators is increased above the normal value of excitation, its. **(SSC-2015)**

A. **Power factor becomes more lagging**
B. Power factor becomes more leading
C. Output current decreases
D. Output kW decreases

Answer:A

41.In an alternator, the effect of armature reaction is minimum at the power factor of **(SSC-2015)**

A. 0.5 Lagging
B. 0.866 Lagging
C. 0.866 Leading
D. **Unity**

Answer:D

42.Damper winding in synchronous motors is used to **(SSC-2015)**

A. **Suppress hunting**
B. Improve power factor
C. Develop reluctance torque
D. Improve the efficiency

Answer:A

43.Turbo alternators have rotors of **(SSC-2014)**

A. **Small diameter and long axial length**
B. Large diameter and long axial length
C. Large diameter and small axial length
D. Small diameter and axial length

Answer:A

44.A 3-phase synchronous motor is started by utilizing the torque developed in **(SSC-2014)**

A. The high-speed steam turbine
B. **The damper winding on the rotor**
C. The damper winding on the stator
D. The low-speed water-turbine

Answer:B

45.Alternators are usually designed to generate which type of ac voltage? **(SSC-2014)**

A. **With fixed frequency**
B. With variable frequency
C. Fixed current

D. Fixed power factor

Answer:A

46.A 300 kW alternator is driven by a prime mover of speed regulation 4% while the prime mover of another 200 kW alternator has a speed regulation of 3%. When operating in parallel, the total load they can take without any of them being overloaded is

A. 500 kW
B. 567 kW
C. 425 kW
D. 257 Kw

Answer:C

47.The emf induced per phase in a three-phase star connected synchronous generator having the following data (SSC-2013)

Distribution factor = 0.955

Coil-span factor = 0.966

Frequency = 50 Hz

Flux per pole = 25 mwb

Turns per phase = 240, then emf per phase is

A. 2128.36 Volts
B. 1228.81 Volt
C. 869.46 Volts
D. 1737.80 Volts

Answer:B

48. Alternator used in hydel power station has more number of poles in it than used in thermal power station, because (SSC-2013)

A. Power generated by the alternator is less
B. Speed of the prime mover may be changed whenever required
C. Power generated by the alternator may be changed according to demand
D. Speed of its prime mover is less

Answer:A

49.Which one of the following is correct? **(SSC-2013)**

A. The effect of field current on the main flux of a synchronous machine is called armature reaction
B. The effect of air gap flux on armature current of a synchronous machine is called armature reaction
C. The effect of armature current on main flux of a synchronous machine is called armature reaction
D. The effect of armature current on air-gap flux of a synchronous machine is called armature reaction

Answer:C

50.Two alternators rated 40 MVA and 60 MVA respectively are working in parallel and supplying a total load of 80 MW. Speed regulation of both the alternator is 5%. The load sharing between them will be **(SSC-2012)**

A. 30 MW, 50 MW
B. 32 MW, 48 MW
C. 36 MW, 44 MW
D. 40 MW each

Answer:B

51.In a 3-phase synchronous generator, the stator winding is connected in star, because a delta connection would **(SSC-2011)**

A. Have circulating currents due to triple harmonics
B. Require more insulation and conductor material
C. Require larger conductor and more core material
D. Result in a short circuit

Answer:B

52.While starting synchronous motor its field winding should be **(SSC-2010)**

A. Kept Open
B. Connected to DC source
C. Connected to AC source
D. Kept short-circuited

Answer:D

53.The angle between induced emf and terminal voltage on no-load for a single phase alternator is

A. 180°
B. 90°
C. 0°
D. 270°

Answer:C

54.A salient pole synchronous generator connected to an infinite bus power will deliver maximum power at power angle of **(SSC-2010)**

A. $\delta = 0°$
B. $\delta = 90°$
C. $\delta = 45°$
D. $\delta = 30°$

Answer:B

55. Voltage regulation for an alternator operating at leading power factor is negative due to _____

A. magnetizing nature of armature reaction
B. demagnetizing nature of armature reaction
C. cross-magnetizing nature of armature reaction
D. all of the mentioned

Answer:A

56. Alternator on infinite bus bar has constant _____

A. terminal voltage and frequency
B. frequency
C.power factor
D. power factor and terminal voltage

Answer:B

57. The emf method of the voltage regulation is applicable only to cylindrical rotor alternator due to _____

A. resultant air gap flux is not affected by angular position of rotor
B. uniform angular position of rotor
C. non uniform angular position of rotor
D. saliency of the poles is a trouble while estimating the emf.

Answer:A

58. Emf method is also known as _____

A. pessimistic method
B. optimistic method
C. zero power factor method
D. none of the mentioned

Answer:A

59. In mmf method _____

A. all the emf is scaled to mmf

B. only the mmf values are considered neglecting impedance drop
C. all the emf are taken zero
D. emf is converted to saturated impedance drops
Answer:A

60. The preferred order of calculating the voltage regulation is _____
A. ZPF > ASA > MMF > EMF
B. ZPF > MMF > ASA > EMF
C. ASA > MMF > ASA > EMF
D. EMF > ASA > ZPF > MMF
Answer:A

61. If the emf from the air gap line is the 3-phase alternator is 440V per phase and armature current is 110 A. The synchronous reactance is?
A. 4 ohms
B. 2 ohms
C. 6.92 ohms
D. 2.32 ohms
Answer:A

62. Ideally the voltage regulation of an alternator should be _____
A. zero
B. infinite
C. 50%
D. 100%
Answer:A

63. The winding MMF in rotating machines depends on _____
A. winding arrangement
B. winding current
C. air gap length,slot openings etc
D. both winding arrangement and winding current
Answer:D

64. A knowledge of the air gap flux distribution in a machine helps in determining the _____
A. generated EMF waveform and its magnitude
B. electrical torque
C. winding MMF
D. both generated EMF waveform and electrical torque
Answer:D

65. If the current in the coil is DC, then MMF doesn't vary with _____
A. space
B.time
C. both space and time
D. none of the mentioned
Answer:C

66. The armature MMF wave in a DC machine is _____
A. sinusoidal and depends on the speed
B. square and independent of speed
C. triangular and depends on speed
D. triangular and independent of speed
Answer:D

67. MMF produced by one N-turn coil carrying a current i is _____
A. rectangular of amplitude Ni/2
B. trapezoidal of amplitude Ni/2
C. rectangular of amplitude Ni
D. trapezoidal of amplitude Ni
Answer:A

68. The d-axis reactance is determined by _____
A. OCC & SCC
B. OCC
C. Slip test
D. SCC
Answer:A

69. The slip test is used to determine _____
A. Xq
B. Xd
C. Xd and Xq
D.None of the mentioned
Answer:A

70. A 3 Phase 400, 100 MVA alternator is connected to infinite bus bar. If the mechanical power input is more than the maximum reluctance power, the reluctance generator will lose synchronizm if _____
A. field is open circuited
B. field is short-circuited

C. load is removed
D. damper is removed
Answer:A

71. When synchronous motor is running at synchronous speed, the damper winding produces?
A. no torque
B. eddy current torque
C. damping torque
D. torque aiding the developed torque
Answer:A
72. Slip test is performed to obtain _____
A. direct axis reactance and quadrature axis reactance
B. slip
C. positive and negative sequence reactance
D. sub transient reactance
Answer:A

73. In large synchronous machine, field winding is placed on _____ and ac supply on _____
A. rotor, stator
B. stator, rotor
C. armature, slots
D. pole shoes, stator
Answer:A

74. The pilot exciter in dc exciters is _____
A. dc shunt generator feeding field winding of mains
B. universal motor
C. stepper motor feeding the field winding of mains
D. any of the mentioned
Answer:A

75. What are the main problems faced by conventional DC exciters?
A. cooling and maintainance
B. wear and tear
C. additional parasitic losses
D. all of the mentioned
Answer:B

76. If the DC excitation is suddenly dropped to 0, the three phase alternator _____
A) runs as motor
B stops to zero speed in few seconds
C. continues to run as motor but at lower speed
D. no change in the operating conditions.
Answer:A