



**SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR**  
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**QUESTION BANK (DESCRIPTIVE)**

**Subject with Code :** EM-III (13A03701)

**Course & Branch:** B.Tech - EEE

**Year & Sem:** III-B.Tech & I-Sem

**Regulation:** R13

**UNIT –I**

**SYNCHRONOUS GENERATORS**

- |   |     |
|---|-----|
| 1. A) Explain the principle of operation of Synchronous Generator.  | 5M  |
| B) Compare between DC Generator and AC Generator  | 5M  |
| 2. Explain the constructional details of salient pole and Round rotor machines  | 10M |
| 3. Explain the different types of Armature windings   | 10M |
| 4. Write short notes on a) Pitch factor   | 5M  |
| b) Distribution factor  | 5M  |
| 5. Derive the EMF equation of an Alternator from fundamentals   | 10M |
| 6. Define Harmonics and how the harmonics are generated in EMF wave form? How they are suppressed   | 10M |
| 7. Define Armature reaction? Discuss the armature reaction at UPF, lagging PF and leading PF with Necessary wave forms  | 10M |
| 8. Calculate the rms value of induced voltage per phase and line of a 10pole, 3 $\phi$ , 50HZ, alternator with 2 slots per pole per phase and 4conductors per slot. If the coil span is 150° electrically. If the flux per Pole has a fundamental component of 0.12wb and 20% of 3 <sup>rd</sup> harmonic component | 10M |
| 9. Find the number of armature conductors are connected in Series per phase required for the armature Has 3- $\phi$ , 10pole alternator with 90slots, the winding is to be star connected with a given line voltage of 11KV. Assume flux/pole is 0.16wb.  | 10M |
| 10. Define  |     |
| a) Effective resistance   | 2M  |
| b) Leakage reactance  | 2M  |
| c) Armature reactance   | 2M  |
| d) Synchronous reactance  | 2M  |
| e) Synchronous impedance  | 2M  |

**UNIT -II****REGULATION OF SYNCHRONOUS GENERATORS**

1. How do you calculate Synchronous reactance experimentally with suitable tests 10M
2. Explain the procedure for calculation voltage regulation by synchronous impedance method with  $I_f$  Phasor diagram 10M
3. A 3- $\Phi$  star connected alternator is rated at 1600KVA and synchronous reactance are  $1.5\Omega$  and  $30\Omega$  respectively. Calculate the voltage regulation by EMF method for a load of 1280KW at  
a) 0.8PF lagging      b) UPF      c) 0.8PF leading 10M
4. The following test results are obtained on a 3- $\Phi$ , 6600V, 50HZ star connected alternator as follows

$I_f$ (A)	16	25	37.5	50	70
$V_{oc}$ (V)	3100	4900	6600	7500	8300

A field current of 20A is necessary to circulate the full load current on short circuit of the alternator. Determine voltage regulation by MMF method at

- a) 0.8PF lagging      b) 0.8PF leading      c) UPF 10M
5. a) Explain the procedure for construction of potier triangle by ZPF method 5M  
b) How do you calculate the no load voltage and voltage regulation by ZPF method with phasor diagram 5M
6. A 11KV, 1000 KVA, 3- $\Phi$  star connected alternator has a resistance of  $2\Omega$ /phase. The O.C and FL ZPFC are given below. Find the voltage regulation of an alternator for FL current at 0.8PF Lagging by potier method 10M

$I_f$ (A)	40	50	110	140	180
$V_{oc}$ (V)	5800	7000	12,500	13,750	15,000
$V_{zpf}$ (V)	0	1500	8500	10,500	12,500

7. By using the above data calculate the voltage regulation by ASA method. Compare the results and comment them. 10M
8. Explain the procedure for calculation of voltage regulation of salient pole Alternator and draw the suitable phasor diagram and assumptions. 10M
9. A 3 $\Phi$  star connected synchronous generator supplies a current of 10A having phase angle of  $20^\circ$  Lagging at 400 V. Find the load angle and components of armature current. If  $X_d=10\Omega$ ,  $X_q=6.5\Omega$  Assume  $R_a$  is neglected. Find the no load EMF and voltage regulation. 10M
10. a) Define synchronous impedance as per O.C and S.C tests 2M  
b) What is the meaning of potier reactance 2M  
c) What are the features of short circuit ratio 2M  
d) Express the formulae for direct and quadrature reactances 2M  
e) Define load angle and phase angle 2M

**UNIT-III****PARALLEL OPERATION OF SYNCHRONOUS GENERATORS**

1. a) Define infinite bus bar? Explain synchronization of alternator with infinite bus bar 5M  
b) Necessity of parallel operation of alternators 5M
2. Derive the expression for power developed of an alternator connected to infinite bus bar with Power angle characteristics 10M
3. Derive the expression for synchronizing current, synchronizing power and synchronizing torque 10M
4. A 5MVA, 10KV, 1500rpm,50HZ alternator runs in parallel with other machines. Its reactance drop is 20%. Find the synchronizing power per unit mechanical degree of displacement and the corresponding torque at  
a) No load      b) Full load at 0.8PF lagging 10M
5. What is meant by synchronization of alternators? Discuss any two methods of synchronization of alternator 10M
6. Derive the expression for circulating current for dissimilar alternators connected by a common load 10M
7. Two 1- $\phi$  alternators are operate in parallel and sharing a load impedance of  $(3+j4)\Omega$  If the impedances of each machine is  $(0.2+j2)\Omega$  and emf's are  $(200+j0)V$  and  $(220+j0)$ volts respectively . Determine 10M  
a) Terminal voltage    b) Current    c) Power factor    d) Output power of each machine
8. Explain in detail about 'V' curve and ' $\Lambda$ ' curve of a synchronous motor 10M
9. Determine Sub transient, Transient and steady state reactances of synchronous machine experimentally 10M
10. a) List out the conditions for parallel operation of alternators 2M  
b) What are the methods used for synchronization of alternators 2M  
c) write the formulae for power developed per phase of an alternator connected to an infinite bus bar 2M  
d) draw the power angle characteristics of synchronous machine 2M  
e) Define synchronous current 2M

**UNIT-IV****SYNCHRONOUS MOTOR**

1. a) Explain the theory of operation of synchronous motor 5M  
b) Compare between synchronous motor and 3 $\phi$  induction motor 5M
2. Draw and explain the phasor diagram of synchronous motor and derive the back EMF. 10M
3. Draw the power flow diagram and explain the equation of different stages in synchronous motor 10M
4. Explain the variation of current and power factor with excitation with suitable curves 10M
5. Write short notes on
  - a) Synchronous condenser 5M
  - b) Hunting and elimination of hunting 5M
6. Briefly discuss about the starting methods of synchronous motor with suitable diagrams 10M
7. a) Explain different torques in synchronous motor 5M  
b) Explain the working operation of synchronous induction motor 5M
8. A 3- $\phi$ , 6600V, 50HZ star connected synchronous motor takes 50A current from mains. The Resistance and synchronous reactance are 1 $\Omega$  and 20 $\Omega$  respectively.
  - i) Power supplied to the motor
  - ii) Induced emf /phase at 0.8PF lagging and 0.8PF leading
  - iii) Rotor retardation angle 10M
9. A 3 $\phi$ , 330V, star connected synchronous motor has synchronous reactance of 5 $\Omega$ /phase. The input to the motor is 1000KW at a normal voltage and a line induced emf of 4000V. calculate the operating Power factor and line current 10M
10. a) What is meant by synchronous phase modifier 2M  
b) Why the synchronous motor is a non self starting 2M  
c) Write the formulae for back EMF of synchronous motor at leading power factor and lag PF 2M  
d) What is the purpose of damper winding used in synchronous motor 2M  
e) List out the application of synchronous motor 2M

**UNIT-V****SINGLE PHASE AND SPECIAL MOTORS**

1. Explain the constructional details of single phase induction motor with neat diagram 10M
2. Why single phase induction motor is non self starting explain
  - a) Double field revolving theory and
  - b) Cross field revolving theory 10M
3. Explain the working of split phase induction motor? List out the advantages, disadvantages and applications 10M
4. Explain the working operation of capacitor start and capacitor run induction motor . List out the advantages, disadvantages and applications 10M
5. Briefly discuss about the shaded pole IM with circuit diagram mention their applications 10M
6. Discuss the working operation of A.C Series motor? What are the drawbacks and their remanders 10M
7. Explain the working operation of Universal motor and list out the applications 10M
8. Write short notes on
  - a) single phase synchronous motor 3M
  - b) Reluctance motor 3M
  - c) Hysteresis motor 4M
9. Explain the working operation of stepper motor? How do you calculate stepping angle and list out the applications 10M
10.
  - a) State double field revolving theory. 2M
  - b) Drawbacks of split phase induction motor 2M
  - c) Compare permanent capacitor motor and two value capacitor motor 2M
  - d) Write the current flow direction of shaded pole induction motor 2M
  - e) Define stepping angle and no.of steps for revolution 2M

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- C)produces asymmetry in the three phase windings  
D)increases 'cu' of end connections
21. What is the value of distribution factor for a uniformly distributed 3-phase winding? [     ]  
A)60° phase spread is 0.955                      B)60° phase spread is 0.8  
C)60° phase spread is 1                              D)60° phase spread 2
22. What will be the number of poles of a 50 Hz alternator if it runs at its greatest speed? [     ]  
A)4    B)0  
C)2    D)8
23. The salient pole field structure has \_\_\_\_\_ diameter and \_\_\_\_\_ axial length [     ]  
A)large, large    B)large, short  
C)short, short    D)none
24. The harmonic which would be totally eliminated from the alternator e.m.f using a fractional pitch of 4/5 is [     ]  
A)3<sup>rd</sup>    B)7<sup>th</sup>  
C)5<sup>th</sup>    D)9<sup>th</sup>
25. For eliminating 7<sup>th</sup> harmonic from the e.m.f wave of an alternator, the fractional pitch must be [     ]  
A)2/3    B)5/6  
C)7/8    D) 6/7
26. If, in an alternator, chording angle for fundamental flux wave is  $\alpha$ , its value for 5<sup>th</sup> harmonic is [     ]  
A)5 $\alpha$     B) $\alpha/5$   
C)25  $\alpha$     D) $\alpha/25$
27. The magnitude of the three voltage drops in an alternator due to armature resistance, leakage reactance and armature reaction is solely determined by [     ]  
A)load current,  $I_a$     B)p.f of the load  
C)Whether it is a lagging or leading p.f load              D)field construction of the alternator
28. The effect of armature reaction for an alternator for zero power factor lagging [     ]  
A) cross magnetizing                                      B)wholly demagnetizing  
C)non- effective    (D)magnetizing
29. At leading p.f the armature flux in an alternator \_\_\_\_\_ the rotor flux. [     ]  
A)opposes    B)aids  
C)distorts    D)does not affect
30. The power factor of an alternator is determined by its [     ]  
A)speed    B)load  
C)excitation    D)prime mover
31. What parameter of load influences the armature reaction of an alternator? [     ]  
A)power    B)Voltage  
C)power factor of load                                      D)none
32. The effect of armature reaction for an alternator for power factor leading \_\_\_\_\_ [     ]  
A)magnetizing    B)wholly demagnetizing  
C)non-effective    D)distorting
33. When the load on an alternator is varied, its terminal voltage is also vary due to [     ]  
A)armature resistance                                      B)armature leakage reactance





**UNIT -II****REGULATION OF SYNCHRONOUS GENERATORS**

1. The regulation of an alternator is [     ]
- A)the reduction in terminal voltage when alternator is loaded
  - B)the variation of terminal voltage under the conditions of maximum and minimum excitation
  - C)the increase in terminal voltage when load is thrown off
  - D)the change in terminal voltage from lagging power factor to leading power factor.
2. In an alternator if the armature reaction produces demagnetisation of the main field, the power factor should be [     ]
- A)Zero, lagging load
  - B)Zero, leading load
  - C)Unity.
  - D) none
3. The Potier's triangle separates the [     ]
- A)iron losses and copper losses
  - B)field mmf and armature mmf
  - C)stator voltage and rotor voltage
  - D)armature leakage reactance and armature reaction mmf.
4. The Potier's triangle separates [     ]
- A)stator losses and rotor losses
  - B)fixed losses and variable losses
  - C)armature voltage and field voltage
  - D)armature leakage reactance and armature reaction mmf.
5. Zero power factor method of an alternator is used to find its [     ]
- A)field resistance
  - B)armature resistance
  - C)efficiency
  - D)voltage regulation.
6. The power factor of an alternator is obtained from its [     ]
- A)excitation
  - B)speed
  - C)load
  - D)none of the above.
7. Under no-load condition, power drawn by the prime mover of an alternator goes to [     ]
- A)produce induced emf in armature winding
  - B)meet no- load losses
  - C)produce power in the armature



- C) Potier method  
D) none
16. The voltage regulation of an alternator having 0.75 leading p.f. load, no-load induced e.m.f. of 2400V and rated terminal voltage of 3000V is ..... percent. [     ]
- A) 20  
B) - 20  
C) 150  
D) - 26.7
17. When speed of an alternator is changed from 3600 r.p.m. to 1800 r.p.m., the generated e.m.f./phases will become [     ]
- A) one-half  
B) twice  
C) four times  
D) one-fourth.
18. The magnitude of the three voltage drops in an alternator due to armature resistance, leakage reactance and armature reaction is solely determined by [     ]
- A) load current,  $I_a$   
B) p.f. of the load  
C) whether it is a lagging or leading p.f. load  
D) field construction of the alternator.
19. The short circuit characteristic of an alternator is: [     ]
- A) always linear  
B) always non-linear  
C) either (a) and (b)  
D) none
20. . With a leading p.f. of load, the effect of armature reaction on the main-field flux of an alternator is [     ]
- A) distortional  
B) magnetising  
C) demagnetising  
D) nominal.
21. Regulation of an alternator supplying resistive or inductive load is: [     ]
- A) always positive  
B) always negative  
C) either of the above or zero  
D) none
22. Regulation of an alternator supplying capacitive load is: [     ]
- A) always positive  
B) always negative  
C) either of the above or zero  
D) none
23. Synchronous reactance of an alternator is due to: [     ]
- (A) leakage flux only  
(B) reactance because of armature reaction in the machine  
(C) synchronous machine reactance  
(D) both, leakage flux as well as armature reaction



34. Short circuit ratio of an alternator is given by [     ]

- A) If for rated short circuit current / If for rated short circuit voltage
- B) If for rated short circuit Voltage / If for rated short circuit current
- C) If for rated open circuit Voltage / If for rated short circuit current
- D) If for rated short circuit current / If for rated open circuit voltage

35. Low value of SCR in an alternator indicates [     ]

- A) High stability limit
- B) Low stability limit
- B) Both
- D) None of these

36. If the value of SCR in an alternator is low then the air gap and voltage drop across synchronous reactance will be [     ]

- A) Low, high
- B) High, low
- C) Low, low
- D) High, high

37. The direct method for finding the voltage regulation of an alternator is/are [     ]

- A) E.M.F method
- B) M.M.F. method
- C) Z.P.F method
- D) None of these

38. For high capacity alternators, which method is not suitable for finding percentage regulation? [     ]

- A) Direct loading method
- B) Synchronous impedance method
- C) Ampere-turns method
- D) Potier triangle method

39. On unity power factor, the terminal voltage of an alternator is [     ]

- A) Always less than induced emf
- B) Always greater than induced emf
- C) Same as induced emf
- D) None of these

40. For synchronization of single phase alternators which method gives the more accurate result? [     ]

- A) Lamps dark method
- B) Lamps bright method
- C) Both (a) and (b)
- D) None of these



- A) it will keep supplying almost the same load      B)kVAR supplied by it would decrease  
 C) its p.f will increase      D)kVA supplied by it would decrease
7. Keeping its excitation constant, if steam supply of an alternator running in parallel with another identical alternator is increased, then [      ]  
 A)it would over-run the other alternator  
 B)its rotor will fall back in phase with respect to the other machine  
 C)It will supply greater portion of the load  
 D)its power factor would be decreased
8. The load sharing between two steam driven alternators operating in parallel may be adjusted by varying the [      ]  
 A)field strengths of the alternators      B)power factors of the alternators  
 C)steam supply to their prime movers      D)speed of the alternators
9. Squirrel-cage bars placed in the rotor pole faces of an alternator help reduce hunting [      ]  
 A)above synchronous speed only      B)below synchronous speed only  
 C)above and below synchronous speeds both      D)none of the above
10. For a machine on infinite bus active power can be varied by [      ]  
 A)changing field excitation      B)changing of prime cover speed  
 C)By changing frequency      D)none of the above
11. When two alternators are running in parallel, their RKVA load share is changed by changing their ..... while their kW load share is changed by changing their ..... [      ]  
 A)excitation, driving torque      B)driving torque, excitation  
 C)excitation, excitation      D)driving torque, driving torque.
12. Two-alternators are running in parallel. If the driving force of both the alternators is changed, this will result in change is [      ]  
 A)frequency      B)back emf  
 C)generated voltage      D)all of the above.
13. A three phase alternator has a phase sequence of RYB for its three output voltages. In case the field current is reversed, the phase sequence will become [      ]  
 A)RBY      B)RYB



C)YRB

D)none of the above.

14. Two alternators are running in parallel. The excitation of one of the alternator is increased. The result will be [     ]

A)machine with excess excitation will burn

B)both machines will start vibrating

C)power output will decrease

D)wattless component will change.

15. Two alternators A and B are sharing an inductive load equally. If the excitation of alternator A is increased [     ]

A)alternator B will deliver more current and alternator A will deliver less current

B)alternator B will deliver less current and alternator A will deliver more current

C)both will continue to share load equally

D)both will deliver more current.

16. Desirable feature for the parallel operation of two alternators is [     ]

A)both should have same resistance

B)both should have same reactance

C)both should have less of resistance as compared to synchronous reactance

D)both should have more of resistance as compared to synchronous reactance.

17. If two machines are running in synchronism and the voltage of one machine is suddenly increased [     ]

A)the machines will burn

B)both machines will stop

C)synchronising torque will be produced to restore further synchronism.

D) none

18. Two alternators A and B are sharing a resistive load (p.f. = 1 ) equally. Now if the excitation of alternator A is increased [     ]

A)alternator A will become lagging and alternator B will become leading

B)alternator A will become leading and alternator B will become lagging

C)both alternators will continue to operate on unity power factor

D)both alternators will operate on lagging power factor

19. When two alternators are running in exactly synchronism, the synchronising power will be [     ]

A)zero

B)sum of the output of two

C)unity D)0.707.

20. Two alternators are connected in parallel. Their kVA and kW load share can be changed by changing respectively their [ ]

A)driving torque and excitation B)excitation and driving torque

C)excitations only D)driving torques only.

21. In case of alternators, the dark and bright lamp method is used for [ ]

A)phase sequence B)load balancing

C)synchronizing D)load transfer.

22. For parallel operation, alternators must have [ ]

A)same speed B)same kVA rating

C)same voltage rating D)none of the above

23. The speed regulation of a synchronous motor is always

A) 1% B) 0.5%

C) positive D) zero

24. Two identical alternators are running in parallel and carry equal loads. If excitation of one alternator is increased without changing its steam supply, then [ ]

A) it will keep supplying almost the same load B) kVAR supplied by it would decrease

C) its p.f. will increase D) kVA supplied by it would decrease

25. Keeping its excitation constant, if steam supply of an alternator running in parallel with another identical alternator is increased, then [ ]

A) it would over-run the other alternator

B) its rotor will fall back in phase with respect to the other machine

C) it will supply greater portion of the load

D) its power factor would be decreased.

26. For eliminating 7th harmonic from the e.m.f. wave of an alternator, the fractional-pitch must be [ ]

A) 2/3 B) 5/6

C) 7/8 D) 6/7.

27. The load sharing between two steam-driven alternators operating in parallel may be adjusted by varying the [     ]
- A) field strengths of the alternators                      B) power factors of the alternators  
C) steam supply to their prime movers                      D) speed of the alternators.
28. Squirrel-cage bars placed in the rotor pole faces of an alternator help reduce hunting [     ]
- A) above synchronous speed only                      B) below synchronous speed only  
C) above and below synchronous speeds both                      D) none of the above.
29. At leading p.f., the armature flux in an alternator ..... the rotor flux. [     ]
- A) opposes                      B) aids  
C) distorts                      D) does not affect.
30. For a machine on infinite bus active power can be varied by [     ]
- A) changing field excitation                      B) changing of prime cover speed  
C) both (a) and (b) above                      D) none of the above .
31. In an alternator, voltage drops occurs in [     ]
- A) armature resistance only                      B) armature resistance and leakage reactance  
C) armature resistance, leakage reactance and armature reaction                      D) none.
32. For proper parallel operation, a.c. polyphase alternators must have the same [     ]
- A) speed                      B) voltage rating  
C) kVA rating                      D) excitation.
33. Under no-load condition, power drawn by the prime mover of an alternator goes to [     ]
- (A) produce induced e.m.f. in armature winding                      (B) meet no-load losses  
(C) produce power in the armature                      (D) meet Cu losses both in armature and rotor windings.
34. Of the following conditions, the one which does not have to be met by alternators working in parallel is [     ]
- A) terminal voltage of each machine must be the same  
B) the machines must have the same phase rotation  
C) the machines must operate at the same frequency  
D) the machines must have equal ratings.



2. A pony motor is basically a [ ]  
A)small induction motor B)D.C. series motor  
C)D.C. shunt motor D)double winding A.C./D.C. motor
3. A synchronous motor can be started by [ ]  
A)pony motor B)D.C. compound motor  
c) providing damper winding D)any of the above
4. Under which of the following conditions hunting of synchronous motor is likely to occur ? [ ]  
A)Periodic variation of load B)Over-excitation  
c) Over-loading for long periods D)Small and constant load
5. The power developed by a synchronous motor will be maximum when the load angle is [ ]  
A)zero B)45°  
c) 90° D)120°
6. A synchronous motor can be used as a synchronous capacitor when it is [ ]  
A)under-loaded B)over-loaded  
C)under-excited D)over-excited
7. Mostly, synchronous motors are of [ ]  
A)alternator type machines B)induction type machines  
C)salient pole type machines D)smooth cylindrical type machines
8. Synchronous motor always runs at [ ]  
A) the synchronous speed B) less than synchronous speed  
C) more than synchronous speed D) none of the above
9. An over-excited synchronous motor takes [ ]  
A)leading current B)lagging current  
C)both A)and (b) D) none of the above
10. If load (or torque) angle of a 4-pole synchronous motor is 6° electrical, its value in mechanical degrees is [ ]  
A)2 B)3  
C)4 D)6
11. For V-curves for a synchronous motor the graph is drawn between [ ]  
A)field current and armature current B)terminal voltage and load factor  
C)power factor and field current D) armature current and power factor
12. The back e.m.f. of a synchronous motor depends on [ ]  
A)speed B)load  
C)load angle D)all of the above
13. A synchronous motor can operate at [ ]  
A)lagging power factor only B) leading power factor only  
C)unity power factor only D)lagging, leading and unity power factors
14. The oscillations in a synchronous motor can be damped out by [ ]  
A) maintaining constant excitation  
B) running the motor on leading power factors  
C)providing damper bars in the rotor pole faces  
D)oscillations cannot be damped



- D)none of the above
28. The speed of a synchronous motor [     ]  
A)increases as the load increases                      B)decreases as the load decreases  
C)always remains constant                                D)none of the above
29. Due to which of the following reasons a synchronous motor fails to pull into synchronism after applying D.C. field current ? [     ]  
A) High field current                                      B) Low short circuit ratio  
C)High core losses                                         D)Low field current
30. In a synchronous motor, the maximum power developed depends on all of the following except [     ]  
A)rotor excitation                                         B)maximum value of coupling angle  
C)direction of rotation                                    D)supply voltage
31. In a synchronous motor, damper windings are provided on [     ]  
A)stator frame    B)rotor shaft  
C)pole faces     D)none of the above
32. The induced e.m.f. in a synchronous motor working on leading power factor will be [     ]  
A)more than the supply voltage                        B)less than the supply voltage  
C)equal to the supply voltage                         D)none of the above
33. The net armature voltage of a synchronous motor is equal to the [     ]  
A)vector sum of  $E_b$  and  $V$                               B)arithmetic sum of  $E_b$  and  $V$   
C)arithmetic difference of  $E_b$  and  $V$                 D)vector difference of  $E_b$  and  $V$
34. The ratio of starting torque to running torque in a synchronous motor is [     ]  
A)zero     B)one  
C)two    D)infinity
35. The magnitude of field flux in a 3-phase synchronous motor [     ]  
A) remains constant at all loads                      B) varies with speed  
C)varies with the load                                    D)varies with power factor
36. Hunting in a synchronous motor cannot be due to [     ]  
A)windage friction                                        B)variable load  
C)variable frequency                                    D)variable supply voltage
37. In a 3-phase, 4-pole, 50 Hz synchronous motor, the frequency, pole number and load torque all are halved. The motor speed will be [     ]  
A) 3000 r.p.m.    B) 1500 r.p.m.  
C)750 r.p.m.     D)none of the above
38. In a synchronous motor, the damping winding is generally used to [     ]  
A)prevent hunting and provide the starting torque    B)reduce the eddy currents  
C)provide starting torque only                         D)reduce noise level
39. If the field of a synchronous motor is under excited, the power factor will be [     ]  
A) zero    B) unity  
C) lagging     D) leading
40. For power factor correction, synchronous motors operate at [     ]

- A) no-load and greatly over-excited fields    B) no-load and under-excited fields  
C) normal load with minimum excitation    D) normal load with zero excitation

**UNIT-V**

**SINGLE PHASE AND SPECIAL MOTORS**

1. In a split phase motor, the running winding should have [    ]

A) high resistance and low inductance

B) low resistance and high inductance



C)high resistance as well as high inductance

D)low resistance as well as low inductance

2. In a capacitor start and run motors the function of the running capacitor in series with the auxiliary winding is to [ ]

A)improve power factor

B)increase overload capacity

C)reduce fluctuations in torque

D)to improve torque

3. In a capacitor start motor, the phase displacement between starting and running winding can be nearly [ ]

A) 10°

B)30°

C)60°

D)90°

4. Which of the following motor will give relatively high starting torque ? [ ]

A)Capacitor start motor

B)Capacitor run motor

C)Split phase motor

D)Shaded pole motor

5. In a shaded pole single-phase motor, the revolving field is produced by the use of [ ]

A)inductor

B)capacitor

C)resistor

D)shading coils

6. A centrifugal switch is used to dis- connect 'starting winding when motor has [ ]

A) run for about 1 minute

B) run for about 5 minutes

C)picked up about 50 to 70 per cent of rated speed

D)picked up about 10 to 25 per cent of rated speed

7. If a particular application needs high speed and high starting torque, then which of the following motor will be preferred ? [ ]

A) Universal motor

B) Shaded pole type motor

C)Capacitor start motor

D)Capacitor start and run motor

8. The value of starting capacitor of a fractional horse power motor will be [ ]

A)100 uF

B) 200 uF





- C)Hysteresis motor  
D)Shaded pole motor
26. As hysteresis motors are free from mechanical and magnetic vibrations therefore these are considered as suitable for [     ]
- A)fans  
B)blowers  
C)sound equipment  
D)mixer grinders
27. The electric motor used in portable drills is [     ]
- A)capacitor run motor  
B)hysteresis motor  
C)universal motor  
D)repulsion motor
28. Torque developed by a single phase induction motor at starting is [     ]
- A) pulsating  
B) uniform  
C)none of the above  
D)nil
29. The shaded pole motor is used for [     ]
- A)high starting torque  
B)low starting torque  
C)medium starting torque  
D)very high starting torque
30. The speed/load characteristics of a universal motor is same as that of [     ]
- A) A.C. motor  
B) D.C. shunt motor  
C)D.C. series motor  
D)none of the above
31. Which of the following motors is used for unity power factor ? [     ]
- A) Hysteresis motor  
B) Schrage motor  
C)Universal motor  
D)Reluctance motor
32. The motor used for the compressors is [     ]
- A)d.c. series motor  
B)shaded pole motor  
C)capacitor-start capacitor-run motor  
D)reluctance motor
33. Centrifugal switch disconnects the auxiliary winding of the motor at about \_\_\_\_ percent of synchronous speed [     ]
- A)30 to 40  
B)70 to 80  
C)80 to 90  
D)100

