Machine Viva and Lab Questions

List of Questions

1. Which condition cannot be checked using the 3-lamp method?

2. How can we know that the phase sequence is the same?

3. Why is the OCC characteristic has curve?

4. Why is rated voltage used in the locked rotor test?

5. What are the shortcomings of the 3-lamp method?

6. Why is the capacitor curve upward in the synchronous generator's load characteristics?

7. In the determination of equivalent circuit parameters, what do Rc and Xm represent?

8. Why does the OCC (open circuit characteristic) curve become saturated during the Xs determination?

9. What type of load does a synchronous motor take?

10. What should be done to operate a synchronous motor as a capacitive load?

11. What is the significance of -Q in power systems?

12. In the no-load test, which value is rated and why is it used?

13. Same question for the locked rotor test.

14. What does Rc represent in the equivalent circuit?

15. What does Xm represent in the equivalent circuit?

16. Why does the terminal voltage of a synchronous motor increase when operating with a capacitor load?

17. In the 3-lamp method, which of the four criteria cannot be fully fulfilled and why?
    answer : This method connects three lamps across different phases between the incoming generator and the existing system. The brightness of the lamps indicates the phase difference: all dark means perfect phase match, one bright means a 120-degree phase difference, and two bright means a 240-degree phase difference. However, it doesn't provide precise information about the exact degree of phase difference within those ranges.

18. Which parameters cannot be detected using the 3-lamp method?

19. How to increase active power in this context?

20. How to increase reactive power?

21. How much current flows in an induction motor during no-load? (30–60% of rated)

22. Which part of the torque-speed characteristics can be obtained from experiments?

23. Why does the core saturate during the open-circuit test but remain linear during the short-circuit test?

24. Does reactance decrease with increased field current?

25. How to increase active and reactive power sharing of a generator on an infinite bus?

26. How do you know when the phase angles are equal in the 3-lamp method?

27. When does the synchronous machine operate at power factor 1?

28. What cannot be measured using the 3-lamp method?

29. How do you change power sharing in the 3-lamp method?

30. In a DC test, which value is rated and why do we use it?

31. In the no-load test, which value is rated and why?

32. From which test do we get core losses? Which losses are summed in that test?

33. Why is the open circuit curve not straight and the short circuit curve linear in reactance finding?

34. In an induction motor, how does torque change with load and why?

35. What happens to reactive power if active power increases?

36. What happens to speed when load changes?

37. Why does current increase or decrease when load is increased?

38. Why do we use the linear part of the torque-speed curve for data?

39. Does active and reactive power increase or decrease with load?

40. Why isn't the core loss component present in the equivalent circuit of an induction motor?

41. What happens to active and reactive power when load increases? Why?

42. What is the meaning of -Q and +Q?

43. How do we apply load to a synchronous motor or increase its load?

44. In paralleling two alternators, which parameter cannot be perfectly achieved?

45. How do you ensure both phase sequences are aligned?

46. Why does load current increase with motor load?

47. Why is reactive power in induction motor initially negative and then positive? What does this imply?