33051 – GENERATION, TRANSMISSION AND SWITCH GEAR

UNIT-I –GENERATION OF ELECTRICAL POWER

PART-A & PART-B QUESTIONS

1. What is base load and peak load? Give one example. **(OCT-17)**
2. Explain the function of surge tank. **(OCT-17)**
3. Write short notes on nacelle of a wind mill. **(OCT-17)**
4. What is meant by co-generation? Write its types. **(APR-17) (APR-16)**
5. What is the purpose of pumped storage plant?**(APR-17)(APR-16)**
6. Define plant capacity factor. **(APR-17)**
7. Mention any two advantages of inter connected system.**(APR-17)**
8. What are the essential features of switch gear?**(APR-17)**
9. What are the advantages of interconnected distribution system? **(OCT-16)**
10. What is a load curve? **(APR-16)**
11. Mention the objective of thermal power plant. Write its advantages & disadvantages.**(OCT-15)**
12. Which substance is used for nuclear fission? **(OCT-15)**
13. Mention the two major renewable energy sources. **(OCT-15)**
14. What is load duration curve? **(OCT-15)**
15. State the conventional & non conventional sources of power generation? Give some examples.
16. Write the principle of hydro electric power station with its advantages and disadvantages.
17. Explain the function of reservoir.
18. Explain the function of economiser.
19. Write the principle of nuclear power station with its advantages and disadvantages.
20. Explain the function of moderator.
21. What are the points to be considered for the selection of site for hydro, thermal and nuclear power plant?
22. Write the principle of diesel power station with its advantages and disadvantages.
23. Explain the function of lubricating system.
24. Write the principle of gas power station with its advantages and disadvantages.
25. Explain the function of regenerator.
26. Write the principle of solar power station with its advantages and disadvantages.
27. What is meant by solar module or PV module?
28. What is meant by hybrid solar power system? Give some examples.
29. Write the principle of wind power station with its advantages and disadvantages.
30. What is meant by yawing?
31. What is a grid or interconnected system? Write its advantages.
32. Define the terms: a)connected load b)maximum demand c) demand factor
33. Define the terms: a) average load b) load factor c) diversity factor
34. What is meant by tariff? Explain its types and write the factors influencing the rate (or) tariff design?

PART-C QUESTIONS

1. Explain the construction and working of nuclear power station with neat sketch. **(OCT-17)**
2. Explain about hybrid solar PV system with sketch. **(OCT-17)**
3. Explain the function of various parts of hydroelectric power plant with a neat diagram. **(APR-17)**
4. Compare steam, hydro and nuclear power plant with respect to site, initial and running cost, fuel transport, cleanliness, overall efficiency and space required. **(APR-16)**
5. Explain any two non conventional types of power generation. **(APR-16)**
6. Explain the construction and working of thermal power station with neat sketch.
7. Explain the construction and working of diesel power station with neat sketch.
8. Explain the construction and working of gas power station with neat sketch.
9. Explain the construction and working of pumped power station with neat sketch.
10. Explain the construction and working of wind power station with neat sketch.
11. Explain about tariff and its types.

UNIT-II – A.C AND H.V.D.C TRANSMISSION

PART-A & PART-B QUESTIONS

1. What is meant by primary and secondary transmission? **(OCT-17)**
2. What are the elements of a transmission line? **(OCT-17) (APR-16)**
3. Write the limitation of Kelvin's law. **(OCT-17)**
4. Define skin effect. **(OCT-17) (OCT-15)**
5. State Kelvin's law. **(APR-17)**
6. What is line supports? Write its properties & types. **(APR-16) (OCT-15)**
7. What is meant by sag in O.H lines? **(APR-16) (OCT-15)**
8. What is meant by transposition of transmission line? **(APR-17)**
9. What is meant by DC link? Write its types. **(APR-16)**
10. Define electric supply system.
11. What is meant by primary and secondary distribution?
12. Write the various system of power transmission.
13. Write the advantages and disadvantages of transmission.
14. Write the advantages of high transmission voltage.
15. What is meant by economical transmission voltage?
16. What are the equipments are used in transmission line?
17. Write the types and properties of conductors.
18. Expand ACSR and explain it.
19. Define span.
20. Mention the transmission line constants.
21. Define Ferranti effect.
22. What is meant by corona? Write its advantages.
23. Write the formula of corona loss.
24. What are the factors to be affecting corona?
25. What are the methods are used to reducing corona effect?
26. Write the classification of O.H transmission lines.
27. What is voltage regulation of a transmission line?
28. Write the advantages and disadvantages of HVDC transmission.

PART-C QUESTIONS

1. Draw & explain the layout of AC power supply schemes.**(OCT-17)**
2. Explain in briefly about the types of conductor in a transmission lines. **(APR-16)**
3. Derive the equation for sag calculation when the supports are at equal & unequal level. **(APR-17) (OCT-15)**
4. Draw the layout diagram and explain the principle of operation of HVDC transmission. **(OCT-17) (OCT-15)**
5. Explain the advantages of high transmission voltage.
6. State and explain Kelvin's law.
7. Explain in briefly about the types of line supports in a transmission lines.
8. Explain the effect of wind & ice loading in transmission lines.
9. Write short notes on i) Skin effect ii) Ferranti effect
10. What is corona? Explain the corona formation in transmission lines.
11. Explain the factors affecting the corona in transmission lines. State advantages and disadvantages of corona.
12. Explain how to find the regulation & efficiency of short transmission lines.

UNIT-III – LINE INSULATORS AND UNDERGROUND CABLES

PART-A & PART-B QUESTIONS

1. Mention the types of insulators. **(APR-17)**
2. State the reasons for failure of insulators. **(APR-16)**
3. What is string efficiency? **(OCT-17)**
4. Write the classification of cables. **(OCT-17) (APR-17)**
5. State the cables used for 3 phase service. **(OCT-17)**
6. State the methods of laying the cables. **(APR-16)**
7. What is meant by grading of cables? **(APR-17)**
8. What are the faults occur in the cable? **(OCT-17) (APR-16) (OCT-15)**
9. What is the purpose of insulator?
10. Write the requirements of insulators.
11. What are the materials used for manufacturing insulators?
12. What are the tests adopted in insulators?
13. State the methods for improving the string efficiency.
14. What is underground cable? Write its advantages & disadvantages
15. Mention the requirements of UG cables.
16. Give any three properties of insulating materials used in cables.
17. Mention the types of screened cables and pressure cables.
18. Write the types of oil filled cables.

PART-C QUESTIONS

1. Explain the different types of laying of cable. **(OCT-17)**
2. How to improve the string efficiency of the suspension insulators? **(APR-16) (OCT-17)**
3. Explain briefly the suspension type insulators.
4. Explain the various methods of testing of insulators.
5. Show that the voltage across the disc nearest to conductor is maximum for the suspension insulators.
6. Explain the construction of a three core UG cable.
7. Explain the construction of belted cables.
8. Explain the construction of screened cables.
9. Explain the construction of oil filled cables.
10. Explain capacitance grading and intersheath grading with respect to UG cables.

UNIT-IV- CIRCUIT BREAKERS AND OVER VOLTAGE PROTECTION

PART-A & PART-B QUESTIONS

1. Define RRRV. **(APR-17) (APR-16)**
2. Write the types of oil and air blast circuit breakers. **(OCT-17)**
3. Mention the advantages of SF_6 circuit breaker. **(APR-16)**
4. What is the function of fuses? Which materials are used in fuse element? **(APR-17)**
5. Write the classification of fuses. **(OCT-17)**
6. What is meant by lightning arresters? **(APR-17)**
7. What is the function of switch gear?
8. Write the essential features of switch gear.
9. What are the faults occur in a power system?
10. What is the function of circuit breaker?
11. Write the methods of arc extinction.
12. What is arc voltage?
13. What is recovery voltage and restriking voltage?
14. What is current chopping?
15. What is meant by resistance switching?
16. What is breaking and making capacity?
17. What is short time rating?
18. What is meant by auto reclosing?
19. Write the classification of circuit breakers.
20. What is the function and parts of MCB?
21. What is the function and types of ELCB?
22. Write the properties of fuse element.
23. What is meant by current rating of fuse element?
24. What is meant by fusing and cut-off current?
25. Compare fuses and circuit breakers.
26. What is meant by voltage surge?
27. Write the causes of overvoltage and explain it.
28. Write the types of lightning strokes.
29. Write the harmful effects of lightning.
30. Mention the types of lightning arresters.

PART-C QUESTIONS

1. Explain the construction and working of vacuum circuit breaker. **(APR-16) (OCT-15) (OCT-17)**
2. Explain the construction and working of oil minimum circuit breaker. **(APR-17)**
3. Explain the construction and working of HRC cartridge fuse with tripping device. **(APR-17)**
4. Explain the types of HV fuses. **(APR-16) (OCT-17)**
5. Explain the construction and working of expulsion type lightning arrester. **(OCT-15)**
6. Explain the working principle of circuit breaker.
7. Explain the arc phenomenon in circuit breaker.
8. Explain the construction and working of bulk oil circuit breaker.
9. Explain the construction and working of axial blast air circuit breaker.
10. Explain the construction and working of cross blast air circuit breaker.
11. Explain the construction and working of miniature circuit breaker.
12. Explain the construction and working of earth leakage circuit breaker.
13. Explain the construction and working of SF_6 circuit breaker.
14. Explain the schematic diagram of HVDC circuit breaker producing current zero.
15. Explain the construction and working of semi enclosed rewirable fuse.
16. Explain the construction and working of HRC cartridge fuse.
17. Explain the construction and working of gapless lightning arrester.
18. Write notes on protection against lightning.

UNIT-V – PROTECTIVE RELAYS AND GROUNDING

PART-A & PART-B QUESTIONS

1. Explain the types of protection. **(OCT-15)**
2. Expand IDMT**(APR-17)**
3. What is an instantaneous relay? **(APR-16)**
4. Write the types of differential relays. Write its applications. **(APR-17)**
5. Explain the function of static relays. Mention its types. **(OCT-17) (APR-17) (OCT-15)**
6. What are the basic elements of a static relay? **(APR-16)**
7. What is meant by grounding/ earthing? Write its types. **(OCT-17)**
8. What is meant by equipment grounding and system grounding? **(APR-16)**
9. What are the advantages of neutral grounding? **(APR-16)**
10. Write the necessity of neutral grounding. **(OCT-16)**
11. What is meant by resistance grounding? **(APR-17)**
12. Write the necessity of protective relays.
13. List the fundamental requirements of relays.
14. Write the types of relay.
15. What is meant by neutral grounding? Write the types of neutral grounding.
16. What is meant by reactance grounding?
17. Write the usage of grounding transformer/ earthing transformer.

PART-C QUESTIONS

1. Briefly explain the function of protective relay.
2. Explain the operation of instantaneous relay.
3. Explain the operation of inverse time relay.
4. Explain with neat sketch the construction and working principle of induction type non-directional over current relay.
5. Explain the construction & working principle of induction type reverse power relay. **(APR-16) (OCT-15)**
6. Explain with neat sketch the construction and working principle of induction type directional over current relay.
7. Explain with neat sketch the construction and working principle of distance relay or induction type impedance relay.
8. Explain with neat sketch the construction and working principle of differential relay. **(OCT-15) (OCT-17)**
9. Explain with neat sketch the construction and working principle of negative sequence relay.
10. Explain with neat sketch the construction and working principle of earth leakage relay.
11. Explain with neat sketch the construction and working principle of static relay.
12. Explain with sketch equipment grounding.
13. Explain with sketch solid grounding.
14. Explain with sketch resistance grounding. **(OCT-17)**
15. Explain with sketch reactance grounding. **(APR-16)**
16. Explain with sketch resonant grounding. **(APR-16)**
17. Explain with neat sketch the construction and working principle of grounding transformer. **(APR-16)**