

17508

21718

3 Hours / 100 Marks

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.
 - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) Attempt any THREE of the following: **12**
 - (i) State any four differences between symmetrical and asymmetrical Fault. (any four points)
 - (ii) Draw neat circuit diagram of
 - 1) Bus bar reactor
 - 2) Feeder reactor
 - 3) Generator reactor
 - (iii) Draw neat circuit diagram of Balanced beam type relay.
 - (iv) State any four properties of good protective system.
- b) Attempt any ONE of the following: **6**
 - (i) Draw circuit diagram for men price protection scheme for Delta-Delta (D – D) connected 3 ϕ phase power transformer.

P.T.O.

- b) Two 11 kV, 3 phase, 5000 kVA generator having reactance of 20% operates in parallel. The generator supply power to transmission line through 3000 kVA transformer of ratio 22 kV/33kV having leakage reactance of 6%. Calculate Fault kVA on H.T. side of transformer.

2. Attempt any FOUR of the following: 16

- a) Draw symbol of
- (i) Isolator
 - (ii) circuit breaker
 - (iii) earthing switch
 - (iv) lightning arrester
- b) Compare Fuse and MCCB (any four points).
- c) Define the following terms:
- (i) Arc voltage
 - (ii) Recovery voltage
 - (iii) RRRV
 - (iv) Restriking voltage
- d) Explain with neat diagram rod gap type lightning arrester.
- e) Compare Resistance earthing and Reactance earthing. (any four points)
- f) Draw neat circuit diagram of solenoid type relay.

3. Attempt any FOUR of the following: 16

- a) Draw and explain neat circuit diagram of MCB.
- b) Draw and explain neat circuit diagram of Vacuum Circuit Breaker.
- c) Write function of Buchholtz relay and state application of it for transformer protection.
- d) Draw neat circuit diagram of Interturn protection for transformer.
- e) State various Abnormalities taking place in case of alternator.
- f) Write any four safety precautions while using CT and PT.

4. a) **Attempt any THREE of the following:** **12**
- (i) Explain with neat diagram Horn gap type lightning arrester.
 - (ii) Draw neat connection diagram of ELCB for residential installation.
 - (iii) State different faults that occurs in alternator.
 - (iv) Explain in brief the operation of microprocessor based overcurrent relay used for protection system.
- b) **Attempt any ONE of the following:** **6**
- (i) Explain with neat diagram fault bus protection for bus Bar protection?
 - (ii) State the different causes of Abnormalities and faults in Induction motor. Write the operation of single phase preventer.
5. **Attempt any FOUR of the following:** **16**
- a) Give any two advantages and two disadvantages of SF₆ CB.
 - b) Compare kitkat fuse and HRC fuse. (any four points)
 - c) Define relay time and pick up current.
 - d) Draw neat circuit diagram of attracted armature type realy.
 - e) Explain with neat diagram shaded pole type relay.
 - f) Explain in brief the necessity of insulation co-ordination.
6. **Attempt any FOUR of the following:** **16**
- a) Draw neat circuit diagram of Buchhloz relay.
 - b) Explain negative phase sequence and overheating protection.
 - c) Explain definite distance relay with neat diagram.
 - d) State the requirements of transmission line protection.
 - e) State the limitations under which differential protection scheme for transformer is used.
 - f) Explain how pilot wire protection is applied to transmission line.
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