

Total No. of Questions : 8]

SEAT No. :

PD4608

[Total No. of Pages : 2

[6404]-114

B.E. (Electrical Engineering)
SWITCHGEAR AND PROTECTION
(2019 Pattern) (Semester - VIII) (403148)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Figures to the right indicate full marks.
- 3) Neat diagrams must be drawn wherever necessary.
- 4) Assume suitable additional data, if necessary.
- 5) Use of non-programmable calculator is allowed.

Q1) a) Explain following ratings of circuit breaker. **[4]**

- i) Symmetrical Breaking Capacity
- ii) Rated Insulation Level

b) With neat diagram explain Vacuum circuit breaker. **[6]**

c) An 11 KV, 500 MVA, 3 sec circuit breaker suddenly closes on occurring of fault. **[8]**

Determine

- i) The symmetrical breaking current
- ii) The asymmetrical breaking current assuming 50% DC component
- iii) The peak making current
- iv) The short time current rating

OR

Q2) a) Explain following ratings of circuit breaker. **[4]**

- i) Making Capacity
- ii) Breaking Capacity

b) With neat diagram explain Air-Blast circuit breaker. **[6]**

c) A Vacuum circuit breaker is rated as 3 phase, 1600 A, 2000 MVA, 33 KV, 1 second. Determine **[8]**

- i) Breaking current
- ii) Making current
- iii) STC
- iv) Rated normal current

P.T.O.

- Q3)** a) Draw block diagram of Static Relay. [3]
b) Explain in short Phasor Measurement Unit (PMU). [6]
c) Compare Static Relay with Electromagnetic relay with respective, Construction, working Principle, advantage and limitations. [8]

OR

- Q4)** a) Discuss three merits of Static Relay. [3]
b) Explain anti-aliasing Filter. [6]
c) Explain with block diagram of Numerical relay. [8]

- Q5)** a) Explain current differential Relay. [4]
b) Explain Merz-price Protection of Transformers. [6]
c) Explain the magnetic inrush current phenomenon in transformer & how to overcome it. [8]

OR

- Q6)** a) Draw neat block diagram of Buchholz relay. [4]
b) State abnormal conditions occur in Induction motor. [6]
c) Explain protection against single phasing in 3 phase induction motor. [8]

- Q7)** a) Explain Mho Relay. [3]
b) Explain the effect of Arc resistance on. [6]
i) Distance relay
ii) MHO relay
c) Write a short note on Wide Area Measurement (WAM) System. [8]

OR

- Q8)** a) Draw flowchart of Numerical algorithm. [3]
b) Explain time graded system protection of three phase feeders using overcurrent relay. [6]
c) State four advantages and four disadvantages of PLCC. [8]

