B.E. Elec. Sem - II
Nov-Dec-2012 2008 pattern

Total No. of Questions : 12]

SEAT No. :

P944

[Total No. of Pages : 3

[4264] - 512
B.E. (Electrical)
SWITCHGEAR & PROTECTION
(2008 Pattern) (Sem. - II)

Time : 3 Hours]

[Max. Marks :100

Instructions to the candidates:
1) *Answer 3 questions from Section - I and 3 questions from Section - II.*
2) *Answers to the two sections should be written in separate books.*
3) *Neat diagrams must be drawn wherever necessary.*
4) *Figures to the right indicate full marks.*
5) *Use of logarithmic tables slide rule, Mollier charts, electronic pocket calculator is allowed.*
6) *Assume suitable data, if necessary.*

SECTION - I

Q1) a) Explain are interruption theories in case of circuit breakers. [8]

b) A 3 phase 50 Hz alternator has inductance of 3 mH per phase & capacitance of 0.025 µF per phase. The circuit breaker opens when rms current is 8000 A. Determine - [8]

i) Frequency of oscillations

ii) Peak restriking voltage

iii) Av. rate of restriking voltage

iv) Max. value of RRRV

OR

Q2) Describe in detail the concept of [16]

a) Current chopping

b) Resistance switching
associated with high voltage circuit breakers.

Q3) a) Explain the construction & working of puffer Type SF_6 circuit breaker.[8]

b) Explain various ratings of high voltage CB's. [8]

OR

P.T.O.

Q4) a) Explain the construction & working of vacuum circuit breaker. [8]

b) Write short note on Auto reclosing. [8]

Q5) a) What do you mean by zones of protection? Explain primary & back-up protection. [10]

b) Explain following terms w. r. t. relay [8]
   i) Plug setting
   ii) Plug setting multiplier
   iii) Time setting
   iv) Operating time of relay.

OR

Q6) a) What do you mean by Protective Relaying? Explain the concept with basic block diagram. Why it is essential. What are different types of faults & its effects. [10]

b) Explain the basic requirements of good protective relaying. [8]

SECTION - II

Q7) a) Explain the least square method for estimation of phasor. [8]

b) With neat block diagram explain numerical relay. State its advantages over static relays. [10]

OR

Q8) a) With neat block diagram explain static relay state its advantages & disadvantages over electromagnetic relays. [10]

b) Write short notes on -
   i) Sampling theorem
   ii) Anti -aliasing filter [8]

Q9) a) Explain the difficulties faced by Merz price current differential protection used for protection of power transformer. [8]

b) A 11 kv, 70 MVA, alternator is provided with differential protection. The percentage of winding protected against phase to ground fault is 75%. The relay is set to operate when there is 20% out of balance current. Determine the value of the resistance to be placed in the neutral to ground connection. [8]

OR

[4264]-512   2

Q10) a) With respect to alternator explain following protection schemes- **[12]**

      i) Unbalanced loading

      ii) Loss of excitation.

      iii) Loss of prime - mover

    b) Explain high impedance bus bar differential protection scheme. **[4]**

Q11) a) Explain the effect of are resistance and power swing on the performance of distance relay. **[10]**

    b) Write a short note on Wide Area Measurement (WAM) system. **[6]**

<div align="center">OR</div>

Q12) a) Explain time graded system & current graded system protection of three phase fuder using over current relays. **[6]**

    b) Explain concept of distance relaying applied to protection of transmisson lies. Compare impedance relay, reactance relay & Mho relay with reference to applications & characteristics. **[10]**

<div align="center">⌘⌘⌘</div>

[4264]-512   3