

Code No: RR320205

RR

Set No. 2

III B.Tech II Semester Examinations, December 2010

POWER SYSTEMS - III

Electrical And Electronics Engineering

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions

All Questions carry equal marks

1. (a) A 500 kV, 2 microseconds rectangular wave travels on a line having a surge impedance of 350 Ohm and approaches a termination with a capacitance C equal to 300 pF. Determine the magnitudes of the reflected and transmitted waves. [4+4]
- (b) From fundamentals obtain the expressions for reflection and transmission co-efficient on a line terminated with load impedance equal to the surge impedance of the line. [4+4]
2. (a) How do earthing screen and ground wires provide protection against direct lightning strokes?
- (b) Explain why the surge diverters are located very close to the equipments to be protected and mention the application of surge absorbers. [8+8]
3. (a) Explain the merits and demerits of static relays.
- (b) Discuss how an amplitude comparator can be converted into a phase comparator and vice versa. [8+8]
4. Write short notes on:
 - (a) Reactance relay
 - (b) Mho relay
 - (c) Directional Impedance relay. [4+6+6]
5. (a) What are the different types of circuit breakers when the arc-quenching medium is the criterion? Mention the voltage for which a particular range of circuit breaker is recommended. [4+4]
- (b) Discuss the recovery rate theory and energy balance theory of arc interruption in a circuit breaker. [4+4]
6. (a) What is the meaning of restricted earth fault protection? A 10,000 KVA, 11/6.6 kV transformer has 11 kV star connected side. The neutral point is earthed through an impedance. Calculate impedance magnitude to provide protection to 90% winding from phase to earth fault.
- (b) A star-delta, 11 kV/6.6 kV transformer is protected by means of Differential Protection system. The 6.6 kV delta connected side has CT of ratio 600/5. Calculate CT ratio of HT side. [8+8]

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7. (a) Discuss the effect of power surges on the performance of different types of distance relays.
(b) Discuss in detail the applications of over current relays. [8+8]
8. Write short notes on the following. [4x4=16]
- (a) Making capacity
 - (b) Short time current rating
 - (c) Rated voltage, current and frequency
 - (d) Rated operating duty

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Set No. 4

III B.Tech II Semester Examinations, December 2010

POWER SYSTEMS - III

Electrical And Electronics Engineering

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Discuss the effect of power surges on the performance of different types of distance relays.
(b) Discuss in detail the applications of over current relays. [8+8]
2. Write short notes on:
 - (a) Reactance relay
 - (b) Mho relay
 - (c) Directional Impedance relay. [4+6+6]
3. (a) Explain the merits and demerits of static relays.
(b) Discuss how an amplitude comparator can be converted into a phase comparator and vice versa. [8+8]
4. Write short notes on the following. [4x4=16]
 - (a) Making capacity
 - (b) Short time current rating
 - (c) Rated voltage, current and frequency
 - (d) Rated operating duty
5. (a) How do earthing screen and ground wires provide protection against direct lightning strokes?
(b) Explain why the surge diverters are located very close to the equipments to be protected and mention the application of surge absorbers. [8+8]
6. (a) What are the different types of circuit breakers when the arc-quenching medium is the criterion? Mention the voltage for which a particular range of circuit breaker is recommended. [4+4]
(b) Discuss the recovery rate theory and energy balance theory of arc interruption in a circuit breaker. [4+4]
7. (a) A 500 kV, 2 microseconds rectangular wave travels on a line having a surge impedance of 350 Ohm and approaches a termination with a capacitance C equal to 300 pF. Determine the magnitudes of the reflected and transmitted waves. [4+4]

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- (b) From fundamentals obtain the expressions for reflection and transmission co-efficient on a line terminated with load impedance equal to the surge impedance of the line. [4+4]
8. (a) What is the meaning of restricted earth fault protection? A 10,000 KVA, 11/6.6 kV transformer has 11 kV star connected side. The neutral point is earthed through an impedance. Calculate impedance magnitude to provide protection to 90% winding from phase to earth fault.
- (b) A star-delta, 11 kV/6.6 kV transformer is protected by means of Differential Protection system. The 6.6 kV delta connected side has CT of ratio 600/5. Calculate CT ratio of HT side. [8+8]

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III B.Tech II Semester Examinations, December 2010

POWER SYSTEMS - III

Electrical And Electronics Engineering

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions

All Questions carry equal marks

1. (a) How do earthing screen and ground wires provide protection against direct lightning strokes?
(b) Explain why the surge diverters are located very close to the equipments to be protected and mention the application of surge absorbers. [8+8]
2. (a) Discuss the effect of power surges on the performance of different types of distance relays.
(b) Discuss in detail the applications of over current relays. [8+8]
3. Write short notes on:
(a) Reactance relay
(b) Mho relay
(c) Directional Impedance relay. [4+6+6]
4. (a) A 500 kV, 2 microseconds rectangular wave travels on a line having a surge impedance of 350 Ohm and approaches a termination with a capacitance C equal to 300 pF. Determine the magnitudes of the reflected and transmitted waves. [4+4]
(b) From fundamentals obtain the expressions for reflection and transmission co-efficient on a line terminated with load impedance equal to the surge impedance of the line. [4+4]
5. (a) Explain the merits and demerits of static relays.
(b) Discuss how an amplitude comparator can be converted into a phase comparator and vice versa. [8+8]
6. (a) What are the different types of circuit breakers when the arc-quenching medium is the criterion? Mention the voltage for which a particular range of circuit breaker is recommended. [4+4]
(b) Discuss the recovery rate theory and energy balance theory of arc interruption in a circuit breaker. [4+4]
7. (a) What is the meaning of restricted earth fault protection? A 10,000 KVA, 11/6.6 kV transformer has 11 kV star connected side. The neutral point is earthed through an impedance. Calculate impedance magnitude to provide protection to 90% winding from phase to earth fault.

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- (b) A star-delta, 11 kV/6.6 kV transformer is protected by means of Differential Protection system. The 6.6 kV delta connected side has CT of ratio 600/5. Calculate CT ratio of HT side. [8+8]

8. Write short notes on the following. [4x4=16]

- (a) Making capacity
- (b) Short time current rating
- (c) Rated voltage, current and frequency
- (d) Rated operating duty

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Set No. 3

III B.Tech II Semester Examinations, December 2010

POWER SYSTEMS - III

Electrical And Electronics Engineering

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions

All Questions carry equal marks

1. (a) What are the different types of circuit breakers when the arc-quenching medium is the criterion? Mention the voltage for which a particular range of circuit breaker is recommended. [4+4]
 (b) Discuss the recovery rate theory and energy balance theory of arc interruption in a circuit breaker. [4+4]
2. (a) Explain the merits and demerits of static relays.
 (b) Discuss how an amplitude comparator can be converted into a phase comparator and vice versa. [8+8]
3. Write short notes on the following. [4x4=16]
 (a) Making capacity
 (b) Short time current rating
 (c) Rated voltage, current and frequency
 (d) Rated operating duty
4. (a) Discuss the effect of power surges on the performance of different types of distance relays.
 (b) Discuss in detail the applications of over current relays. [8+8]
5. (a) A 500 kV, 2 microseconds rectangular wave travels on a line having a surge impedance of 350 Ohm and approaches a termination with a capacitance C equal to 300 pF. Determine the magnitudes of the reflected and transmitted waves. [4+4]
 (b) From fundamentals obtain the expressions for reflection and transmission co-efficient on a line terminated with load impedance equal to the surge impedance of the line. [4+4]
6. (a) How do earthing screen and ground wires provide protection against direct lightning strokes?
 (b) Explain why the surge diverters are located very close to the equipments to be protected and mention the application of surge absorbers. [8+8]
7. (a) What is the meaning of restricted earth fault protection? A 10,000 KVA, 11/6.6 kV transformer has 11 kV star connected side. The neutral point is earthed through an impedance. Calculate impedance magnitude to provide protection to 90% winding from phase to earth fault.

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- (b) A star-delta, 11 kV/6.6 kV transformer is protected by means of Differential Protection system. The 6.6 kV delta connected side has CT of ratio 600/5. Calculate CT ratio of HT side. [8+8]

8. Write short notes on:

- (a) Reactance relay
- (b) Mho relay
- (c) Directional Impedance relay. [4+6+6]

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