Code No: RR410207 **RR** **Set No. 2**

IV B.Tech I Semester Examinations,NOVEMBER 2010
ELECTRICAL DISTRIBUTION SYSTEMS
Electrical And Electronics Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. A single phase a.c. radial distributor one km long has resistance and reactance per conductor of 0.1ohm and 0.15ohms respectively. At the far end, the voltage $V_B = 200V$ and the current 100A at a p.f. of 0.8 lagging. At the mid point M of the distributor, a current of 100A is tapped at a p.f. of 0.6 lagging with reference to the voltage V_m at the mid point. Calculate
   (a) voltage at the mid point [6]
   (b) sending end voltage V_A [6]
   (c) phase angle between $V_A and \ V_B$ [4]

2. (a) Explain how a load duration curve is plotted. What is its use? [10]
   (b) A distribution substation supplies the following loads: 15,000 kW, 8,500 kW, 6,000 kW and 450 kW. The station has a maximum demand of 22,000 kW. The annual load factor of the station is 48%. Calculate
      i. The energy supplied annually
      ii. The diversity factor and
      iii. The demand factor [6]

3. (a) Explain the computerized method to determine the economic power factor.[6]
   (b) A feeder supplies an Industrial consumer with a cumulative load of
      i. Induction Motors totaling 200HP which runs at an average efficiency of 89% and a lagging average p.f. of 0.85.
      ii. Synchronous motors totaling 100HP with an average efficiency of 85% and
      iii. a heating load of 100KW. The Industrial consumer plans to use the synchronous motors to correct its overall power factor. Determine the required p.f. of the synchronous motors to correct the overall p.f. at peak load to
         A. unity
         B. 0.95 lag. [10]

4. Write notes on need for maintaining good voltage profile in power systems and need to improve power factor? [16]

5. Explain the various factors affecting the distribution system planning. [16]

6. Give a detailed analysis of square shaped and hexagonal shaped distribution substation areas. [16]

7. (a) Explain the principle of operation of circuit ReClosure.
   (b) Explain the coordination procedure between two fuses. [7+9]

8. Give the various loading and voltage level factors that influence the design and operation of primary feeders. [16]

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Code No: RR410207 **RR** **Set No. 4**

IV B.Tech I Semester Examinations,NOVEMBER 2010
ELECTRICAL DISTRIBUTION SYSTEMS
Electrical And Electronics Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain the computerized method to determine the economic power factor.[6]
   (b) A feeder supplies an Industrial consumer with a cumulative load of
      i. Induction Motors totaling 200HP which runs at an average efficiency of 89% and a lagging average p.f. of 0.85.
      ii. Synchronous motors totaling 100HP with an average efficiency of 85% and
      iii. a heating load of 100KW. The Industrial consumer plans to use the synchronous motors to correct its overall power factor. Determine the required p.f. of the synchronous motors to correct the overall p.f. at peak load to
         A. unity
         B. 0.95 lag. [10]
2. Give a detailed analysis of square shaped and hexagonal shaped distribution substation areas. [16]
3. A single phase a.c. radial distributor one km long has resistance and reactance per conductor of 0.1ohm and 0.15ohms respectively. At the far end, the voltage $V_B = 200V$ and the current 100A at a p.f. of 0.8 lagging. At the mid point M of the distributor, a current of 100A is tapped at a p.f. of 0.6 lagging with reference to the voltage V_m at the mid point. Calculate
   (a) voltage at the mid point [6]
   (b) sending end voltage V_A [6]
   (c) phase angle between $V_A and\ V_B$ [4]
4. Write notes on need for maintaining good voltage profile in power systems and need to improve power factor? [16]
5. (a) Explain the principle of operation of circuit ReClosure.
   (b) Explain the coordination procedure between two fuses. [7+9]
6. Explain the various factors affecting the distribution system planning. [16]
7. Give the various loading and voltage level factors that influence the design and operation of primary feeders. [16]
8. (a) Explain how a load duration curve is plotted. What is its use? [10]

(b) A distribution substation supplies the following loads: 15,000 kW, 8,500 kW, 6,000 kW and 450 kW. The station has a maximum demand of 22,000 kW. The annual load factor of the station is 48%. Calculate

i. The energy supplied annually

ii. The diversity factor and

iii. The demand factor [6]

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Code No: RR410207 **RR** **Set No. 1**

IV B.Tech I Semester Examinations,NOVEMBER 2010
ELECTRICAL DISTRIBUTION SYSTEMS
Electrical And Electronics Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. A single phase a.c. radial distributor one km long has resistance and reactance per conductor of 0.1ohm and 0.15ohms respectively. At the far end, the voltage $V_B = 200V$ and the current 100A at a p.f. of 0.8 lagging. At the mid point M of the distributor, a current of 100A is tapped at a p.f. of 0.6 lagging with reference to the voltage V_m at the mid point. Calculate
   (a) voltage at the mid point [6]
   (b) sending end voltage V_A [6]
   (c) phase angle between $V_A and\ V_B$ [4]
2. Give a detailed analysis of square shaped and hexagonal shaped distribution substation areas. [16]
3. (a) Explain how a load duration curve is plotted. What is its use? [10]
   (b) A distribution substation supplies the following loads: 15,000 kW, 8,500 kW, 6,000 kW and 450 kW. The station has a maximum demand of 22,000 kW. The annual load factor of the station is 48%. Calculate
      i. The energy supplied annually
      ii. The diversity factor and
      iii. The demand factor [6]
4. Give the various loading and voltage level factors that influence the design and operation of primary feeders. [16]
5. (a) Explain the principle of operation of circuit ReClosure.
   (b) Explain the coordination procedure between two fuses. [7+9]
6. Write notes on need for maintaining good voltage profile in power systems and need to improve power factor? [16]
7. (a) Explain the computerized method to determine the economic power factor.[6]
   (b) A feeder supplies an Industrial consumer with a cumulative load of
      i. Induction Motors totaling 200HP which runs at an average efficiency of 89% and a lagging average p.f. of 0.85.
      ii. Synchronous motors totaling 100HP with an average efficiency of 85% and

iii. a heating load of 100KW. The Industrial consumer plans to use the synchronous motors to correct its overall power factor. Determine the required p.f. of the synchronous motors to correct the overall p.f. at peak load to

A. unity

B. 0.95 lag. [10]

8. Explain the various factors affecting the distribution system planning. [16]

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Code No: RR410207 **RR** **Set No. 3**

IV B.Tech I Semester Examinations,NOVEMBER 2010
ELECTRICAL DISTRIBUTION SYSTEMS
Electrical And Electronics Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Give a detailed analysis of square shaped and hexagonal shaped distribution substation areas. [16]

2. (a) Explain how a load duration curve is plotted. What is its use? [10]
   (b) A distribution substation supplies the following loads: 15,000 kW, 8,500 kW, 6,000 kW and 450 kW. The station has a maximum demand of 22,000 kW. The annual load factor of the station is 48%. Calculate
      i. The energy supplied annually
      ii. The diversity factor and
      iii. The demand factor [6]

3. A single phase a.c. radial distributor one km long has resistance and reactance per conductor of 0.1ohm and 0.15ohms respectively. At the far end, the voltage $V_B = 200V$ and the current 100A at a p.f. of 0.8 lagging. At the mid point M of the distributor, a current of 100A is tapped at a p.f. of 0.6 lagging with reference to the voltage V_m at the mid point. Calculate
   (a) voltage at the mid point [6]
   (b) sending end voltage V_A [6]
   (c) phase angle between $V_A and\ V_B$ [4]

4. Write notes on need for maintaining good voltage profile in power systems and need to improve power factor? [16]

5. Explain the various factors affecting the distribution system planning. [16]

6. Give the various loading and voltage level factors that influence the design and operation of primary feeders. [16]

7. (a) Explain the principle of operation of circuit ReClosure.
   (b) Explain the coordination procedure between two fuses. [7+9]

8. (a) Explain the computerized method to determine the economic power factor.[6]
   (b) A feeder supplies an Industrial consumer with a cumulative load of
      i. Induction Motors totaling 200HP which runs at an average efficiency of 89% and a lagging average p.f. of 0.85.
      ii. Synchronous motors totaling 100HP with an average efficiency of 85% and

iii. a heating load of 100KW. The Industrial consumer plans to use the synchronous motors to correct its overall power factor. Determine the required p.f. of the synchronous motors to correct the overall p.f. at peak load to

A. unity

B. 0.95 lag. [10]

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