

Code No: 07A40201

**R07****Set No. 2**

II B.Tech II Semester Examinations, APRIL 2011

POWER SYSTEMS - I

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) How can substations are Classified according to constructional features?  
(b) Describe following corresponding to gas insulated substation
  - i. Current transformer
  - ii. Earth switch

[6+10]
2. How utilization factor affect the economy of power system? Explain briefly. [16]
3. (a) Explain briefly the various systems of a.c distribution.  
(b) In a 400/231 volt, 3-phase 4-wire supply system the phase impedances including line impedances are
 

R-phase :  $10+j0$  ohms  
Y-phase -  $6+j1$  ohms  
B-phase -  $10+j10$  ohms  
N-phase -  $4+j2$  ohms

Calculate voltages across various load impedances with R-phase as reference. [8+8]
4. 3 - phase 500 H.P, 50 Hz, 11kV star connected induction motor has a full load efficiency of 85% at lagging p.f of 0.75 and is connected to a feeder. If it is desired to correct the p.f. of 0.9 lagging load, determine the
  - (a) The size of the capacitor bank in kVAR
  - (b) The capacitance of each unit if the capacitors are connected in delta as well as in star. [8+8]
5. (a) Explain Ring mains and list its advantages and disadvantages.  
(b) A three phase ring main PQRS fed at P of 11 kV, supplies balanced loads of 50 A at 0.8 p.f lagging at Q, 120 A at unity p.f at R and 70A at 0.866 lagging at S, the resistances being referred to the various sections are: Section PQ =  $(1+j0.6)$  ohm; section QR =  $(1.2+j0.9)$  ohm; Section RS =  $(0.8+j0.5)$  ohm; Section SP =  $(3+j2)$  ohm. Determine the currents in various sections and station bus-bar voltages at Q, R and S. [16]
6. (a) What are the various control rods used in a nuclear reactor?  
(b) Describe the function of each of them. [6+10]
7. Give the basis for expressing the cost of electrical energy as  $(a + b \text{ kW} + c \text{ kWh})$  and explain the factors on which a, b, and c depend. [16]

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8. (a) Explain the merits and demerits of pulverized fuel firing of boilers.  
(b) Mention the different sources of energy available in India. [8+8]

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FIRSTRANKER

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**R07****Set No. 4**

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B-phase -  $10+j10$  ohms  
N-phase -  $4+j2$  ohms  
Calculate voltages across various load impedances with R-phase as reference. [8+8]
2. Give the basis for expressing the cost of electrical energy as  $(a + b \text{ kW} + c \text{ kWh})$  and explain the factors on which a, b, and c depend. [16]
3. (a) How can substations be Classified according to constructional features?  
(b) Describe following corresponding to gas insulated substation  
i. Current transformer  
ii. Earth switch [6+10]
4. (a) Explain the merits and demerits of pulverized fuel firing of boilers.  
(b) Mention the different sources of energy available in India. [8+8]
5. (a) Explain Ring mains and list its advantages and disadvantages.  
(b) A three phase ring main PQRS fed at P of 11 kV, supplies balanced loads of 50 A at 0.8 p.f lagging at Q, 120 A at unity p.f at R and 70A at 0.866 lagging at S, the resistances being referred to the various sections are: Section PQ =  $(1+j0.6)$  ohm; section QR =  $(1.2+j0.9)$  ohm; Section RS =  $(0.8+j0.5)$  ohm; Section SP =  $(3+j2)$  ohm. Determine the currents in various sections and station bus-bar voltages at Q, R and S. [16]
6. How utilization factor affect the economy of power system? Explain briefly. [16]
7. (a) What are the various control rods used in a nuclear reactor?  
(b) Describe the function of each of them. [6+10]
8. 3 - phase 500 H.P, 50 Hz, 11kV star connected induction motor has a full load efficiency of 85% at lagging p.f of 0.75 and is connected to a feeder. If it is desired to correct the p.f. of 0.9 lagging load, determine the

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- (a) The size of the capacitor bank in kVAR
- (b) The capacitance of each unit if the capacitors are connected in delta as well as in star. [8+8]

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**POWER SYSTEMS - I**  
**Electrical And Electronics Engineering**

Time: 3 hours

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1. (a) Explain Ring mains and list its advantages and disadvantages.  
 (b) A three phase ring main PQRS fed at P of 11 kV, supplies balanced loads of 50 A at 0.8 p.f lagging at Q, 120 A at unity p.f at R and 70A at 0.866 lagging at S, the resistances being referred to the various sections are: Section PQ =  $(1+j0.6)$  ohm; section QR =  $(1.2+j0.9)$  ohm; Section RS =  $(0.8+j0.5)$  ohm; Section SP =  $(3+j2)$  ohm. Determine the currents in various sections and station bus-bar voltages at Q, R and S. [16]
2. Give the basis for expressing the cost of electrical energy as  $(a + b \text{ kW} + c \text{ kWh})$  and explain the factors on which a, b, and c depend. [16]
3. (a) Explain the merits and demerits of pulverized fuel firing of boilers.  
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 (a) The size of the capacitor bank in kVAR  
 (b) The capacitance of each unit if the capacitors are connected in delta as well as in star. [8+8]
5. (a) What are the various control rods used in a nuclear reactor?  
 (b) Describe the function of each of them. [6+10]
6. (a) Explain briefly the various systems of a.c distribution.  
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 B-phase -  $10+j10$  ohms  
 N-phase -  $4+j2$  ohms  
 Calculate voltages across various load impedances with R-phase as reference. [8+8]
7. (a) How can substations be Classified according to constructional features?  
 (b) Describe following corresponding to gas insulated substation  
 i. Current transformer

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ii. Earth switch

[6+10]

8. How utilization factor affect the economy of power system? Explain briefly. [16]

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POWER SYSTEMS - I

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1. (a) How can substations are Classified according to constructional features?  
(b) Describe following corresponding to gas insulated substation
  - i. Current transformer
  - ii. Earth switch[6+10]
2. Give the basis for expressing the cost of electrical energy as  $(a + b \text{ kW} + c \text{ kWh})$  and explain the factors on which a, b, and c depend. [16]
3. (a) Explain briefly the various systems of a.c distribution.  
(b) In a 400/231 volt, 3-phase 4-wire supply system the phase impedances including line impedances one
 

R-phase :  $10+j0$  ohms  
Y-phase -  $6+j1$  ohms  
B-phase -  $10+j10$  ohms  
N-phase -  $4+j2$  ohms

Calculate voltages across various load impedances with R-phase as reference. [8+8]
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7. (a) What are the various control rods used in a nuclear reactor?

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(b) Describe the function of each of them. [6+10]

8. How utilization factor affect the economy of power system? Explain briefly. [16]

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