

# **IMPORTANT QUESTIONS**

**SUBJECT NAME: EE3037 -Power System Transients**

**YEAR/ SEMESTER: VI / VII**

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## PART-A (2 Mark Questions)

1. What is called transient in power system? (Apr/May 2010)
2. Why is transient essential in planning? (Apr/May 2010)
3. What are the causes of transients in power system? (Nov/Dec 2008)
4. State the importance of transient study in planning. (Nov/Dec 2008),(Apr/May 20011) &(Apr/May 20014)
5. What are the sources of transients? (Apr/May 2008)
6. Name the effects to transients on power system. (Apr/May 2008)& (Apr/May 20011)
7. Draw a simple circuit which can produce transients.(Jun/July 2008)
8. What is the effect of transients on power system?(May/Jun2007)
9. Define the significance of power system transients.(May/Jun2006)
10. Define power system transients.
11. Mention the source of power system transients.
12. How are the transients produced in power systems?
13. What are the importance's of transients? (May/Jun2009)
14. List the different source of transients.(May/Jun2009)
15. Draw the double frequency transient circuits with an example.
16. Draw the equivalent circuit for interrupting the resistor current. (Apr/May 20011)

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## PART-B (13 Mark Questions)

17. With neat diagram, describe any two types of power system transients in detail. (Apr/May 2010)
18. What are the sources of transients? Also explain how transients affect the power systems. (Apr/May 2010)
19. Explain the various types of power system transients. (Nov/Dec 2008)
20. Explain the effects of power system transients. (Nov/Dec 2008) & (Apr/May 20011) & (May/Jun 2013)
21. Briefly explain the importance of study of transients in planning. (Apr/May 2008)
22. Explain in detail various types of power system transients. (Apr/May 2008) & (Apr/May 2011 & 2013)
23. What are the different types of power system transients? Explain in detail any two power system transients with diagrams? (May/Jun 2009) & (Apr 20014)
24. Explain any one of the source of transients.
25. Also discuss in detail the effect of transients on power systems. (May/Jun 2009)
26. (i) What is meant by circuit closing transients?  
(ii) Describe about double frequency transients and basic transform of RLC circuit. (Apr/May 2010)
27. Explain resistance switching. (Nov/Dec 2008)
28. Give an RL circuit with a sudden 50HZ sinusoidal voltage applied where  $R=200\Omega$ ,  $L=0.36H$  and  $V=220\text{volt}$ .
29. (a) The switch is closed at such a time as to permit maximum transient current. What is the instantaneous value of 'V' upon closing the switch?  
(b) What is the maximum value of current in part (a)?  
(c) Let the switch be closed so as to yield minimum transient current. What is instantaneous value of V and  $\alpha$  corresponding to this instant of closing the switch? (Apr/May 2007)
30. Draw an equivalent circuit for the resistance switching and explain the equivalent circuit for interrupting resistor current. Also explain RL circuit with a drive. (May/Jun 2009 & 2013)
31. Elaborate your comment on double frequency transients and impacts. (May/Jun 2013)
32. (i) Discuss about the effect of transient on power systems. (Apr 20014)  
(ii) Describe briefly about double frequency transients.

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## PART-A (2 Mark Questions)

1. Define Ferro-resonance. (Apr/May 2010)
2. What is current chopping? (Apr/May 2008)
3. Define current chopping. (Apr/May 2014)
4. What are the causes of switching surges? (Nov/Dec 2008)
5. What is restriking voltage? (Apr/May 2008)
6. Define switching transients.
7. Define load switching. (Apr/May 20011)
8. What is load switching in abnormal conditions? (Apr/May 2014)
9. Define capacitance switching.
10. What is meant by resistance switching?(Apr/May 2010) &(Apr/May 2014)
11. Define Ferro-resonance condition.
12. What is meant by abnormal switching transients?
13. Define the term current chopping? (May/Jun2009)
14. Define current suppression. (May/Jun2009)
15. Define: Transient recovery voltage. (May/Jun2013)
16. What is meant by multiple restriking transients? (May/Jun2013)
17. Briefly explain the Ferro-resonance phenomenon in abnormal switching transients. (May/Jun2013)
18. What is the need of resistance switching.(May/Jun2009)
19. What are the causes for the capacitor inrush currents? (May/Jun2013)

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## PART-B (13 Mark Questions)

20. (i) Distinguish between normal and abnormal switching transients in load switching.  
(ii) What is called current suppression? Explain it. (Apr/May 2010)
21. Explain with appropriate wave form. (Nov/Dec 2008) & (Apr/May 20011)  
(i) Current suppression.  
(ii) Current chopping.  
(iii) Capacitance switching with one and multiple restrikes.  
(iv) Ferro- resonance.
22. Explain load switching with their equivalent circuits. (Nov/Dec 2008)
23. Explain load switching in both normal and abnormal conditions with neat sketches. (Apr/May 2008)
24. What is capacitance switching? Explain in briefly the effect of source regulation and capacitance switching with a restrike. (Apr/May 2008)
25. Explain the concept of capacitance switching include the effect of source regulation.  
Also discuss the effect of re-strike and multiple re-strike. Give an illustration for multiple re- strike transients. (May/Jun2009)& (May/Jun2013)
26. Write short notes on. (May/Jun2007)  
(i) Ferro resonance effect  
(ii) Surge on integrated systems.
27. Explain with appropriate wave form, the capacitance switching with one and multiple restrike.
28. Explain the switching in both normal and abnormal conditions with neat sketches.
29. Write a detailed note on:  
(a) Resistance switching.  
(b) Load switching with their equivalent circuits.
30. Draw and explain the waveforms for transient voltage across the load switch. (May/Jun2013)
31. Explain the characteristics of energy released by a transformer when the magnetizing current is chopped and derive the expression of current suppression. (May/Jun2013)
32. What is capacitance switching? Explain in briefly about capacitance switching with one and multiple restrikes. (Apr 2014)
33. (i) Explain current suppression with appropriate equivalent circuit. (Apr 2014)  
(ii) Illustrate the ferro resonance effect.

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## PART-A (2 Mark Questions)

1. What are the causes of over voltage? **(Apr/May 2010)**
2. Differentiate the lightning and over voltages?
3. List out the factors contributing to good line design.
4. Define over voltages protection factor. **(Apr/May 20011)**
5. Define lightning.
6. Draw the characteristics of lightning strokes?
7. List the characteristics of lightning strokes? **(Apr 20014)**
8. What is the necessity of insulation co-ordination?
9. Explain the significance of tower footing resistance.
10. What are the two types of over voltages?
11. What is the use of ground wire?
12. What do you mean by lightning? **(May/Jun2009)**
13. Give the factors contributing to good line design. **(May/Jun2009)**
14. Define over voltage in the context of integrated power system. **(May/Jun2009)**
15. State Mason's theory of lightning. **(Apr/May 20011)**
16. Explain in brief, about the charge formation in the clouds. **(May/Jun2013)**
17. How is the charge formed in the clouds? **(Apr 20014)**

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## PART-B (13 Mark Questions)

18. (i) With neat sketch, explain the characteristics of lightning strokes. (Apr/May 2010) & (Apr 2014)  
(ii) What are the different factors that contribute to good line design?
19. (i) Describe the interaction between lightning and power system. (May/Jun 2013) & (Apr 2014)  
(ii) Derive the mathematical model for lightning. (Apr/May 2010) (May/Jun 2013)
20. Explain with neat sketches the mechanism of lightning stroke. (May/Jun 2006, 2008, 2013)
21. Give the mathematical model for lightning discharge and explain them.
22. (i) Write and explain the various factors contributing to good line design.  
(ii) Explain the protection offered by ground wires.
23. (i) Derive the mathematical model for lightning. (Nov/Dec 2008) & (Apr 20014)  
(ii) What is contributing to good line design?
24. (i) With neat sketch explain the mechanism of lightning stroke.  
(ii) Explain counter-poise method of protection. (Nov/Dec 2008)
25. Explain in detail how the charges are formed in the clouds. (Apr/May 2008)
26. Explain with neat diagram the two different theories of charge generation and separation in the thunder cloud. (May/Jun 2006 & 2007)
27. Draw the circuit of long transmission line with lumped parameters. (May/Jun 2009)
28. Define over voltage in the context of integrated power system.
29. (i) What are the causes of over voltages?  
(ii) Explain the mechanism of charge formation in clouds and also discuss the mechanism of lightning strokes. (May/Jun 2009) & (Apr/May 20011)
30. (i) Give the protection offered by ground wires.  
(ii) Discuss the interaction between lightning and power system and explain the mathematical model for lightning. (May/Jun 2009)
31. Explain the counter-poise method of protection. (Apr/May 20011)
32. Discuss the physical phenomenon of lightning in detail with appropriate diagrams. (May/Jun 2013)
33. (i) With necessary diagrams, explain the two different theories of charge formation in the clouds.  
(ii) What are the factors contributing to good line design? (Apr 20014)

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# UNIT-IV

## PART-A (2 Mark Questions)

1. Define lumped parameters. (Apr/May 2010)
2. Define standing waves. (Apr/May 2010)
3. What do you mean by travelling waves?
4. What are the damages caused by the traveling waves?
5. What is the application of Bewley's lattice diagram?
6. Define crest and front of travelling waves.
7. Define SWR.
8. What is SWR? (Apr 20014)
9. What is attenuation?
10. What is distortion?
11. Give the concept of traveling wave in brief. (May/Jun2009)
12. Define standing waves and natural frequencies. (Apr/May 20011)
13. What is meant by reflection and refraction of travelling waves? (Apr/May 20011)
14. Draw the lumped parameter equivalent circuit for lightning stroke to tower. (May/Jun2013)
15. Define standing wave voltage ratio. (May/Jun2013)
16. Distinguish between reflection and refraction of travelling waves with expressions. (May/Jun2013)
17. Draw the lattice diagram for a single transmission line terminated in an impedance  $Z$ .
18. Write the expression for series and shunt lumped parameters in distributed lines. (Apr 20014)

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### PART-B (13 Mark Questions)

19. Draw the step response of travelling waves. Explain it by using Bewelly's lattice diagram. (Apr/May 2010)
20. Write elaborately on reflection and refraction of travelling waves. (Apr/May 2010)
21. Explain the transient's response of system with series and shunt lumped parameters. And distributed lines.(Nov/Dec 2008)&(Apr/May 2008)
22. Explain the travelling wave's concept with step response.(Apr/May 20011)& (Apr 20014)
23. Explain the behavior of travelling waves at open circuited line (line terminations). (May/Jun2013)
24. With neat sketch explain the Beweley's lattice diagram with an example.(Nov/Dec 2008)& (Apr/May2011)& (May/Jun2013)
25. Derive the reflection and refraction coefficient of a travelling wave. (Nov/Dec 2008)
26. Write short notes on. (Apr/May 2008)
  - (i) Standing waves
  - (ii) Natural frequency.
27. Explain in detail with a neat diagram the transient response of system with series and shunt lumped parameters and distributed lines. (May/Jun2009)
28. Explain the concept of travelling waves in detail. (May/Jun2009)
29. Derive the wave equation and express the various parameters. (May/Jun2013)
30. Explain the steps involved in Bewley's Lattice diagram construction with an example.(Apr 20014)
31. (i) Explain the various types of travelling wave's concept with step response. (Apr 20014)  
(ii) Compare travelling waves and standing waves.

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## PART-A (2 Mark Questions)

1. Distinguish between line dropping and load rejection. (Apr/May 2010)& (Nov/Dec 2008)
2. What are called switching surge? (Apr/May 2010)
3. How does a surge occur during switching? (Nov/Dec 2008)
4. What is meant by EMTP? (May/Jun2013)
5. How EMTP is used for the computation of transient? (Apr 20014)
6. Define reflection coefficient.
7. What is meant by kilometric fault? (Apr/May 2008)& (Apr/May 20011)
8. Define kilometric fault. (Apr 20014)
9. What are the effects of load rejection in power systems?
10. What are the effects of transients when switch is closed?
11. Draw the equivalent circuit of transmission line using lumped parameters.
12. What are the applications of EMTP? (May/Jun2009)
13. What is meant by distribution of voltage in a power system? (Apr/May 20011)
14. Write about its importance in transient analysis. (May/Jun2013)

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## PART-B (13 Mark Questions)

15. Describe how the voltage is distributed in a power system. Derive the voltage transients on closing lines. **(Apr/May 2010)**
16. Write in detail about EMTP for transient computation. **(Apr/May 2010)**
17. Explain in detail about the switching surges on an integrated power system. **(Nov/Dec 2008) & (Apr/May 2011)**
18. Explain the network modeling for EMTP calculation.
19. Explain and analyse the cause of over voltages induced by various faults occurring in a power system.
20. Explain the cause of transients on closing and reclosing of transmission lines.
21. Derive the expression for response and recovery voltage of a shorted line.
22. Explain the computational procedure for EMTP calculation with a neat flowchart.
23. (i) Explain short line and kilometric fault.  
(ii) What is the line dropping and load rejection? **(Apr 20014)**
24. What is short line kilometric fault and also explain the voltage transients on closing and reclosing lines. **(Apr/May 2008)**
25. Explain in detail the short line fault and kilometric fault and discuss about the voltage transients on closing reclosing lines. **(Apr/May 2009)**
26. Explain the concept of EMTP for transient computation and discuss the over voltage induced by fault and switching surges on integrated system. **(May/Jun 2009)**
27. Explain over voltage induced by faults.
28. Explain the voltage transients on closing and reclosing lines with expressions. **(May/Jun 2013)**
29. (i) What is the line dropping and load rejection? **(Apr 20014)**  
(ii) Explain the causes of transients on closing and reclosing of transmission lines.
30. Discuss the following in detail.  
(i) Over voltage induced by faults  
(ii) Line dropping and load rejection. **(May/Jun 2013)**
31. What is meant by switching surges? Explain in detail about the switching surges on an integrated power system. **(Apr 20014)**

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