

Unit 1

1. What is linear visco-elasticity and its significance in bituminous pavement.
2. Explain- Characterization of materials in bituminous pavement.
3. Write a short note on the layers of a bituminous pavement?
4. What is small amplitude oscillatory shear?
5. What is large amplitude oscillatory shear?
6. Explain Time temperature superposition principle.
7. Explain Master curve models
8. What are the causes of distress in pavement?
9. What are the causes of failure of a bituminous pavement?
10. What is a linear viscoelastic material?

Unit 2

1. What is the process of making asphalt?
2. What are the properties of asphalt?
3. Write a short note on Chemical composition of bitumen.
4. What are the components of bitumen? Explain in detail
5. Write a short note on Influence of temperature on the linear viscoelastic response of bitumen.
6. Explain in detail- Functions of viscoelastic materials
7. What are the uses of bitumen?
8. Explain in detail- Scales of characterization of bitumen
9. What are the different methods in determining the consistency characteristics of bitumen binders?
10. What are the characteristics of bitumen?

Unit 3

1. Write a short note on Dynamic Shear Rheometer.
2. What is refinery processing of bitumen?
3. What is grading system of bitumen?
4. Explain in detail- Viscosity Grading of bitumen.
5. Write a short note on Performance Grading of bitumen.
6. Explain in detail- Modifiers for Bitumen.
7. What is rutting of bituminous mixtures?
8. What are the causes of rutting in roads?
9. Write a short note on Bitumen Grading.
10. Explain in detail- Grades of bitumen.

Unit 4

1. What is performance characterization of modified bitumen?
2. What is stiffness modulus of bitumen?
3. Write a short note on dynamic modulus and resilient modulus of bituminous mixtures
4. Write a short note on dynamic modulus of bituminous mixtures

5. Write a short note on resilient modulus of bituminous mixtures.
6. What are the experimental protocols of resilient modulus of bituminous mixtures
7. What is resilient modulus explain clearly how the resilient modulus of the bituminous mixture is measured?
8. What is the difference between resilient modulus and dynamic modulus?
9. What is the difference between resilient modulus and dynamic modulus of bitumen?
10. What are the different methods in determining the consistency characteristics of bitumen binders?

Unit 5

1. What is fatigue in bitumen? Explain in detail
2. Explain in detail- curve fitting using Matlab
3. What is MSCR analysis using Matlab
4. Write a short note on Simulation of rutting of bituminous mixtures in the laboratory
5. Write a short note on Simulation of fatigue damage of bituminous mixtures in the laboratory.
6. What is Simulation of rutting of bituminous mixtures
7. What is fatigue failure of bitumen?
8. Explain in detail- Failure patterns of bitumen Pavement.
9. Write a short note on the causes of Failure of bitumen Pavement.
10. What is curve fitting by using MATLAB.