

**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE****Regular End Semester Examination – Summer 2022****Course: B. Tech.****Branch: Civil Engineering****Semester: VIII****Subject Code & Name: BTCESS802D****Mechanical Characteristics of Bituminous Materials****Max Marks: 60****Date: 07/07/2022****Duration: 3.45 Hr.****Instructions to the Students:**

1. All the questions are compulsory.
2. Draw a diagrams/tables/flowcharts wherever necessary.

(Level/ Marks  
CO)

**Q. 1 Solve Any Two of the following.**

- A) Why material characterization is important? 6  
B) Explain linear viscoelastic response? 6  
C) What is mechanical Characterization of Bituminous materials? 6

**Q.2 Solve Any Two of the following.**

- A) Explain the stress-strain plot for a linear elastic solid. 6  
B) Write the difference between the stress-controlled test and strain-controlled test with examples. 6  
C) Draw a cross section of bituminous and concrete pavement and enlist the different layers present in them. 6

**Q. 3 Solve Any Two of the following.**

- A) State and explain the Boltzmann's Superposition Principle. 6  
B) Write a note on Maxwell Model for Relaxation Time. 6  
C) What are the different applications of oscillatory shear testing in Bitumen? 6

**Q.4 Solve Any Two of the following.**

- A) State the Time Temperature Superposition Principle and explain it in short. 6  
B) Define Asphalt and Bitumen as per ASTM. Give the classification of bitumen based on solubility. 6  
C) Explain the refinery processing of bitumen. 6

**Q. 5 Solve Any Two of the following.**

- A) Explain the molecular structure of bitumen. 6  
B) What is aging? Write a short note on short-term and long-term aging. 6  
C) What is Rheometer? Enlist the components of it with their functions. 6

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