

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/
CO) Marks

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.

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|---|---|
| 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 |

***** End *****