

**BALLARI INSTITUTE OF TECHNOLOGY & MANAGEMENT**

(Autonomous Institute under Visvesvaraya Technological University, Belagavi)

USN 

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Course Code 

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Seventh Semester B.E. Degree Examinations, February 2025

**PAVEMENT MATERIALS AND CONSTRUCTION**

Duration: 3 hrs

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.  
2. Missing data, if any, may be suitably assumed

<u>Q. No</u>	<u>Question</u>	<u>Marks</u>	<u>(RBTL:CO:PI)</u>																		
<u>Module-1</u>																					
1.	a. Explain the properties of road aggregates.	10	(2 :1 : 1.3.1)																		
	b. List the different types of tests to be conducted on road aggregates. Explain Impact test on aggregate with specifications.	10	(2 :1 : 1.3.1)																		
(OR)																					
2.	a. Explain preparation of cutback and different uses of emulsion and cutback.	10	(2 :1 : 1.3.1)																		
	b. With neat sketch explain softening point test for bitumen.	10	(2 :1 : 1.3.1)																		
<u>Module-2</u>																					
3.	a. Explain mechanical properties of Bituminous mixes. Discuss the stability and flow of Bituminous concrete.	10	(2:2 : 1.3.1)																		
	b. Explain the procedure for proportioning of aggregate by Rothfutch's method.	10	(2 :2 : 1.3.1)																		
(OR)																					
4.	a. Explain the procedure of Marshal stability test to determine flow and stability of bituminous mix.	10	(2 :2: 1.3.1)																		
	b. From following data of measurements of materials, design Marshal bituminous mix.	10	(3 :2: 1.4.1)																		
Volume of sample = 475 cm <sup>3</sup> ; Mass of sample =1110 gm																					
<table><tr><td>Item</td><td>CA1</td><td>CA2</td><td>FA</td><td>Filler</td><td>Bitumen</td></tr><tr><td>Mass(gm)</td><td>825</td><td>1200</td><td>325</td><td>150</td><td>100</td></tr><tr><td>Specific Gravity, G</td><td>2.63</td><td>2.57</td><td>2.46</td><td>2.43</td><td>1.05</td></tr></table>				Item	CA1	CA2	FA	Filler	Bitumen	Mass(gm)	825	1200	325	150	100	Specific Gravity, G	2.63	2.57	2.46	2.43	1.05
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Mass(gm)	825	1200	325	150	100																
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Determine (i) Gm and Gt (ii) Vb and Vv (iii) VMA and VFB																					
<u>Module-3</u>																					
5.	a. Explain requirements of Dry Lean Concrete (DLC).	10	(2 :3: 1.3.1)																		
	b. Explain requirements of Pavement Quality Concrete (PQC).	10	(2 :3 : 1.3.1)																		
(OR)																					
6.	a. Explain benefits of using Reclaimed Asphaltic Pavement (RAP) and Recycled Concrete Aggregate (RCA) in sustainable pavement construction.	10	(2 :3 : 1.3.1)																		

Note: (RBTL - Revised Bloom's Taxonomy Level: CO - Course Outcome: PI- Performance Indicator)

- b. Mention uses of fly ash and blast furnace slag in sustainable pavement construction. **10** (2 :3: 1.3.1)

#### **Module-4**

7. a. With a neat sketch explain operation of dragline and bring out advantages and limitations of dragline. **10** (2 :4: 1.3.1)
- b. Bring out comparison between backhoe and clamshell. **10** (2 :4: 1.3.1)

**(OR)**

8. a. List the different types of compacting equipment used for pavement construction? Write a note on rollers in road construction. **10** (2 :4: 1.3.1)
- b. With a neat sketch explain power shovel operation and applications. **10** (2 :4: 1.3.1)

#### **Module-5**

9. a. Explain detailed specifications and construction procedure of Water Bound Macadam (WBM). **10** (2 :5: 1.3.1)
- b. Explain detailed specifications construction procedure of Wet Mix Macadam (WMM). **10** (2 :5: 1.3.1)

**(OR)**

10. a. Write a note on quality control check for cement concrete pavement. **10** (2 :5: 1.3.1)
- b. With neat sketch explain different joints in cement concrete pavement. **10** (2 :5: 1.3.1)

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