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CBCS SCHEME

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BCV613D

Sixth Semester B.E./B.Tech. Degree Examination, June / July 2026
Design and Construction of Highway Pavements

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2 M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	With a neat diagram explain the different components of pavements and their functions.	10	L1	CO1
	b.	What are the desirable properties of pavement subgrade materials? Explain them.	10	L1	CO1
		OR			
Q.2	a.	What is Optimum Moisture Content? Explain the process of heavy compaction test of soil.	10	L2	CO2
	b.	What is free swell index and relative density of soil? Explain liquid limit, plastic limit and shrinkage limit of soil.	10	L2	CO2
		Module – 2			
Q.3	a.	What are initial and final setting time of cement? Write characteristic evaluation of cement.	10	L2	CO2
	b.	What is Bituminous paving mix? Write the desirable properties of Bituminous paving mix.	10	L1	CO2
		OR			
Q.4	a.	Write the desirable properties of stone aggregates.	06	L1	CO2
	b.	Explain Flakiness and Elongation test of aggregate.	08	L2	CO3
	c.	What is workability of concretes? Explain.	06	L2	CO3
		Module – 3			
Q.5	a.	Explain the factors affecting design of flexible pavement.	08	L1	CO4
	b.	The specific gravities and weight proportions for aggregate and bitumen are given below for the preparation of Marshall mix design. The volume and weight of one Marshall specimen was found to be 475 cc and 1100 gm. Assuming absorption of bitumen in aggregate is zero, find : i) Percentage air voids. ii) Percentage bitumen content in the mix iii) Voids in mineral aggregate (VMA) iv) Voids filled with bitumen (VFB)	12	L3	CO4
		OR			
Q.6	a.	With neat diagram describe different types of joints present in Rigid pavement.	08	L2	CO4
	b.	Explain Dry Lean Concrete (DLC) mix design.	06	L2	CO4
	c.	Write a short note on IIT Pave software.	06	L1	CO4

Item	A_1	A_2	A_3	A_4	B
Wt (gm)	825	1200	325	150	100
Sp. Gravity	2.63	2.51	2.46	2.43	1.05

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		Module – 4			
Q.7	**a.**	Explain different types of Earthmoving and Excavation equipments.	**10**	**L1**	**CO5**
	b.	Write short notes on : i) Asphalt hot mix plant ii) Concrete batching plant	**10**	**L1**	**CO5**
		OR			
Q.8	**a.**	Write the factors affecting output of plants and equipments.	**08**	**L1**	**CO5**
	b.	What are the initiatives to be taken to improve the quality of plants and equipments?	**06**	**L2**	**CO5**
	c.	Write a note on highway construction planning.	**06**	**L1**	**CO5**
		Module – 5			
Q.9	**a.**	What is wet mix macadam? Explain the construction practice of wet mix macadam.	**10**	**L2**	**CO5**
	b.	Write the advantages and applications of Hot mix asphalt.	**10**	**L1**	**CO5**
		OR			
Q.10	**a.**	Explain the different types of Distress in flexible pavement.	**10**	**L1**	**CO5**
	b.	Describe step by step procedure of conducting Benkleman beam deflection studies for structural evaluation of flexible pavement and subsequent determination of overlay thickness.	**10**	**L2**	**CO5**

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