U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

July 2023 Semester End Main Examinations

Programme: B.E. **Semester: VI**
Branch: Civil Engineering **Duration: 3 hrs.**
Course Code: 20CV6PEPMC **Max Marks: 100**
Course: Pavement Materials and Construction **Date: 17.07.2023**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

		UNIT - I	CO	PO	Marks
1	a)	Recommend necessary tests and corresponding properties and explain the specifications to suit aggregate as a pavement material.	*CO1*	*PO1*	**10**
	b)	Write short notes on i) Maximum aggregate Size ii)Design Gradation	*CO1*	*PO1*	**10**
		UNIT - II			
2	a)	Outline the desirable properties of Bituminous materials considering flexible pavement construction. Explain test procedure of any one of the tests to determine grade of the bitumen.	*CO1*	*PO1*	**08**
	b)	List different tests and its uses to be conducted on Bituminous Emulsions.	*CO1*	*PO1*	**05**
	c)	Explain the mechanism of stripping of aggregates. Suggest measures to improve or mitigate the same during the pavement construction.	*CO1*	*PO1*	**07**
		UNIT - III			
3	a)	The specific gravities and weight proportions of aggregate and bitumen are given below. The volume and weight of one Marshall specimen was found to be 475 cc and 1100 gm. Assuming the absorption of bitumen in aggregate is zero, Determine Gt, Gm,Vv,Vb,VMAand VFB	*CO2*	*PO1 PO2 PO3*	**10**
	b)	Write short notes on i) Rothfutch design method ii) Superpave mix.	*CO3*	*PO1 PO2 PO3*	**10**

Item	A1	A2	A3	A4	B
Weight(gm)	820	1200	325	150	100
Sp.Gravity	2.6	2.5	2.45	2.44	1.06

			OR			
	4	a)	Classify and describe the different types of compaction equipment used for various soil types, and analyze the working principles of each type?	*CO2*	*PO1 PO2 PO3*	**10**
		b)	How does the process of earthwork grading and construction of embankments for roads contribute to the overall road construction project, and what are the key factors to consider for successful implementation?	*CO2*	*PO1 PO2 PO3*	**10**
			UNIT - IV			
	5	a)	What are the essential steps involved in the preparation of subgrade during road construction, and how can quality control tests ensure the proper formation and stability of the subgrade?	*CO2*	*PO1 PO2 PO3*	**10**
		b)	Write short notes on i) Bituminous Mixers and Pavers ii) Excavation equipment	*CO2*	*PO1 PO2 PO3*	**10**
			UNIT - V			
	6	a)	What are the key considerations in implementing a white topping technique for road resurfacing, and how does it contribute to the durability and sustainability of the road infrastructure?	*CO2*	*PO2*	**10**
		b)	What are the critical factors to consider when specifying materials for the WMM, and how do these material specifications contribute quality control checks?	*CO2*	*PO2*	**10**
			OR			
	7	a)	What are the factors for the material specification and the construction method for rigid pavements?	*CO2*	*PO1 PO2 PO3*	**10**
		b)	How does the construction of different types of joints in rigid pavements ensure the longevity of the road infrastructure?	*CO3*	*PO2*	**10**

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