

Enrollment No.....



**Faculty of Engineering**  
**End Sem (Odd) Examination Dec-2022**  
**CE3EC10 Pavement Design**

Programme: B.Tech.

Branch/Specialisation: CE

**Duration: 3 Hrs.****Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

- Q.1 i. The design method for flexible pavements is not based on which of the below options? **1**  
 (a) Subgrade support (b) Soil strength  
 (c) Soil classification (d) Aggregate strength
- ii. Which of the following is not a desirable property of subgrade soil? **1**  
 (a) Strength (b) Stability  
 (c) Compaction (d) Compressibility
- iii. The maximum size of coarse aggregates used in the concrete must not exceed \_\_\_\_\_ of the slab thickness. **1**  
 (a) Twice (b) Half (c) One fourth (d) Three fourth
- iv. Which of the below is not a tool used for finishing works? **1**  
 (a) Internal vibrator (b) Float  
 (c) Belt (d) Straight edge
- v. What type of reinforcement is generally provided in the expansion joints? **1**  
 (a) Tie bar (b) Dowel bar (c) Tri bar (d) No reinforcement
- vi. As per IRC recommendations according to whose analysis must the dowel bars be designed? **1**  
 (a) Westergaard (b) Burmister  
 (c) Bradbury (d) Teller
- vii. Which of the below is not a critical load position? **1**  
 (a) Interior (b) Corner (c) Edge (d) Center
- viii. The relation between k value for 30 cm plate with standard size plate- **1**  
 (a)  $k_{75} = 0.5 / k_{30}$  (b)  $k_{75} = 0.5 \times k_{30}$   
 (c)  $k_{30} = 0.5 / k_{75}$  (d)  $k_{30} = 0.5 \times k_{75}$

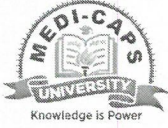
- ix. Which of the below is not a means of evaluating an existing pavement? **1**  
 (a) Visual survey (b) Experience  
 (c) Destructive testing (d) Performance model
- x. Which crack can occur both in the longitudinal and transverse direction in the rigid pavement? **1**  
 (a) Block crack (b) Shrinkage crack  
 (c) Warping crack (d) Joint crack

- Q.2 i. What do you understand by repetition of loads? **2**  
 ii. What is soil stabilisation? Explain WBM in detail. **8**  
 OR iii. What is bituminous carpet? Explain Prime, Seal and Tack coat. **8**
- Q.3 i. How compaction is done in rigid pavement? **4**  
 ii. Explain various requirements of pavement to be consider before design. **6**  
 OR iii. What is design mix? Explain in detail. **6**
- Q.4 i. What is expansion and contraction joint? Briefly explain with diagram. **4**  
 ii. What do you understand by joint filler? Explain use and materials used in it. **6**  
 OR iii. Explain types of temperature stresses in detail with diagrams. **6**
- Q.5 i. Enlist various factors affecting rigid pavement design. Explain any one in brief. **4**  
 ii. What is the function of dowel bar? Explain PCA chart method in detail. **6**  
 OR iii. Explain step by step procedure of construction of rigid pavement in detail. **6**
- Q.6 i. What is the use of falling head deflectometer? **2**  
 ii. Enlist various types of failures. Explain any two in details with diagram. **8**  
 OR iii. What are various methods of pavement evaluation? Explain any one in detail. **8**

P.T.O.

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# Scheme of Marking

	<p style="text-align: center;">Faculty of Engineering End Sem (Odd) Examination Dec-2022 CE3EC10 Pavement Design</p>	
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Note: The Paper Setter should provide the answer wise splitting of the marks in the scheme below.

Q.1	i)	d) Aggregate strength	1
	ii)	d) Compressibility	1
	iii)	c) One fourth	1
	iv)	a) Internal vibrator	1
	v)	b) Dowel bar	1
	vi)	c) Bradbury	1
	vii)	<del>a) Corner</del> <i>Center</i>	1
	viii)	<del>b) 58.25 cm</del> <i>0.5 k<sub>30</sub> = 0.4 k<sub>30</sub></i>	1
	ix)	d) Performance model	1
	x)	b) Shrinkage crack	1
Q.2	i.	Explanation only	2
	ii.	Soil stabilisation (2), WBM (6)	8
	iii.	Each of 2 marks each	8
Q.3	i.	Compaction methods each 2 marks	4
	ii.	Each requirements 1 mark	6
OR	iii.	Definition 2 marks, explanation 4 marks	6
Q.4	i.	2 marks each including diagram	4
	ii.	2 marks joint filler, explanation 4 marks	6
OR	iii.	Three types 2 marks each	6
Q.5	i.	4 factors affecting 2 marks, any 2 (1 mark each)	4
	ii.	Function 2 marks, PCA method 4 marks	6

OR	iii.	1 mark each of construction step	6
Q.6			
	i.	Any 2 uses	2
	ii.	Any 6 failure 2 marks, explanation 3 marks each	8
	iii.	Methods of evaluation 3 marks, explanation 5 marks	8

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