Total No. of Questions: 6 *Total No. of Printed Pages:2*

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) $k_{30} = 0.5 \times k_{75}$

P.T.O.

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**

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Scheme of Marking

MEDI-CAPS UNIVERSITY Knowledge is Power	Faculty of Engineering End Sem (Odd) Examination Dec-2022 CE3EC10 Pavement Design Programme: B.Tech. | | Branch/Specialisation:

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)	d) ~~Corner~~ Center	1
	viii)	b) ~~58.25 cm~~ $0.5K_{30} \simeq 0.4K_{30}$	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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