Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Engineering

End Sem (Even) Examination May-2022

CE3ET05 Concrete Technology

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. Segregation in concrete results in- **1**

(a) Honey combing (b) Porous layers

(c) Surface scaling (d) All of these

ii. A compaction factor of 0.85 for a sample indicates- **1**

(a) Very good workability (b) Good workability

(c) A mix of medium workability (d) A mix of low workability

iii. The tensile strength of concrete expressed as the ratio of the compressive strength is- **1**

(a) 1/5 (b) 1/10 (c) 1/15 (d) 1/20

iv. The cube strength exceeds the cylinder strength by- **1**

(a) 5 to 10% (b) 10 to 15 % (c) 15 to 20% (d) 20 to 25%

v. Most of the methods of concrete mix design follow: **1**

(a) Water cement ratio as a criterion for strength

(b) Principle that more cement always gives more strength

(c) Assumption that concrete is always properly cured

(d) Principle that there is no air entrainment in the mix

vi. The concrete mix which does not give smooth finish easily is said to possess- **1**

(a) Hardness (b) Roughness

(c) Bleeding (d) Segregation

vii. Light weight concrete is used for- **1**

(a) Reducing thickness of structures (b) Heat resistance

(c) Non-load bearing walls (d) Air-conditioned buildings

P.T.O.

viii. If concrete is to be transported by pumping, the slump should be- **1**
(a) More than 1 cm (b) More than 2.5 cm
(c) Between 2.5 & 5 cm (d) Between 5 & 7.5 cm

ix. In pulse technique for testing of concrete, poor quality of concrete is indicated if the pulse velocity is- **1**
(a) More than 5000 m/sec.
(b) Less than 3000 m/sec.
(c) More than 4000 m/sec.
(d) Less than 6000 m/sec.

x. Which of the following is not a method of Non-destructive testing of concrete? **1**
(a) Core cutter method (b) Pull out test
(c) Rebound hammer test (d) None of these

Q.2 i. Differentiate between segregation & bleeding. **2**
ii. Describe an Empirical tests for measuring workability of concrete with neat sketches. **3**
iii. Explain parameters defining workability & rheology of concrete with the help of a flow chart. **5**
OR iv. Discuss the various factors affecting workability of concrete. **5**

Q.3 i. Describe any one method to determine the tensile strength of concrete with neat sketch. **4**
ii. Discuss the various factors influencing the strength of concrete. **6**
OR iii. Explain various types of shrinkage along with the various factors affecting shrinkage. **6**

Q.4 i. Enlist the various provisions of IS code for sound concrete. **2**
ii. Describe the various factors influencing the choice of mix proportion. **8**
OR iii. Discuss the step-by-step procedure of BIS method of concrete mix design. **8**

Q.5 i. Write short note on polymer modified concrete. **4**
ii. Discuss the properties of the following: **6**
(a) Light weight concrete (b) Ready mix concrete

OR iii. State the precautions to be taken in concreting operations in hot & cold weather conditions. **6**

Q.6 Attempt any two:
i. Explain the procedure of conducting a rebound hammer test for measuring the surface hardness with reference to following points: **5**
(a) Rebound number and its significance
(b) Sketch of equipment
(c) Limitations of test
ii. Explain with sketch the Pulse velocity method used in testing the concrete. **5**
iii. Explain the importance Non-destructive testing of concrete with the names of methods deployed in it, along with their working principles. **5**

******

Marking Scheme
CE3ET05 Concrete Technology

Q.1	i.	Segregation in concrete results in- (d) All of these		**1**
	ii.	A compaction factor of 0.85 for a sample indicates- (d) A mix of low workability		**1**
	iii.	The tensile strength of concrete expressed as the ratio of the compressive strength is- (b) 1/10		**1**
	iv.	The cube strength exceeds the cylinder strength by- (d) 20 to 25%		**1**
	v.	Most of the methods of concrete mix design follow: (a) Water cement ratio as a criterion for strength		**1**
	vi.	The concrete mix which does not give smooth finish easily is said to possess- (a) Hardness		**1**
	vii.	Light weight concrete is used for- (c) Non-load bearing walls		**1**
	viii.	If concrete is to be transported by pumping, the slump should be- (d) Between 5 & 7.5 cm		**1**
	ix.	In pulse technique for testing of concrete, poor quality of concrete is indicated if the pulse velocity is- (b) Less than 3000 m/sec.		**1**
	x.	Which of the following is not a method of Non-destructive testing of concrete? (d) None of these		**1**
Q.2	i.	Difference	2 Marks	**2**
	ii.	Description Sketch	2 Marks 1 Mark	**3**
	iii.	Description Flow chart.	3 Marks 2 Marks	**5**
OR	iv.	Description	5 Marks	**5**
Q.3	i.	Description Sketch	3 Marks 1 Mark	**4**
	ii.	Description	6 Marks	**6**
OR	iii.	Description	6 Marks	**6**
Q.4	i.	IS code for sound concrete 0.5 Mark for each point	 (0.5 Marks*4)	**2**
	ii.	Description	8 Marks	**8**
OR	iii.	Description	8 Marks	**8**
Q.5	i.	Description	4 Marks	**4**
	ii.	(a) Light weight concrete Description (b) Ready mix concrete Description	 3 Marks 3 Marks	**6**
OR	iii.	Hot weather conditions (Description) Cold weather conditions (Description)	3 Marks 3 Marks	**6**
Q.6		Attempt any two:		
	i.	(a) Rebound number and its significance (b) Sketch of equipment (c) Limitations of test	2 Marks 2 Marks 1 Mark	**5**
	ii.	Sketch Working	2 Marks 3 Marks	**5**
	iii.	Importance Methods Working principles	2 Marks 1 Mark 2 Marks	**5**

******