

Enrollment No.....



**Faculty of Engineering**  
**End Sem (Odd) Examination Dec-2018**  
**CE3CO05 Construction Material & Techniques**  
 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. As per IS 269-1975, the initial setting time of Portland cement is **1**  
 (a) 1/3 hour (b) 1/2 hour (c) 1 hour (d) 5 hours
- ii. The bulk density of aggregates does not depend upon: **1**  
 (a) Size and shape of aggregates.  
 (b) Specific gravity of aggregates.  
 (c) Grading of aggregates  
 (d) Size and shape of the container
- iii. Workability of concrete is inversely proportional to **1**  
 (a) Time of transit (b) Water-cement ratio  
 (c) The air in the mix (d) Size of Aggregate
- iv. Thermal expansion of concrete per °C varies from **1**  
 (a)  $8 \times 10^{-6}$  to  $12 \times 10^{-6}$  (b)  $9 \times 10^{-6}$  to  $12 \times 10^{-6}$   
 (c)  $9 \times 10^{-6}$  to  $11 \times 10^{-6}$  (d)  $9 \times 10^{-8}$  to  $12 \times 10^{-8}$
- v. According to IS:456 the modulus of elasticity of concrete  $E_c$  (N/mm<sup>2</sup>) and  $f_{ck}$  is the characteristic strength (N/mm<sup>2</sup>) as. **1**  
 (a)  $E_c = 5700\sqrt{f_{ck}}$  (b)  $E_c = 570\sqrt{f_{ck}}$   
 (c)  $E_c = 5700 f_{ck}$  (d) None of these
- vi. M10 grade of concrete approximates **1**  
 (a) 1 : 3 : 6 mix (b) 1 : 1 : 2 mix  
 (c) 1:1.5:3 mix (d) 1 : 2 : 4 mix
- vii. How many types of Brick masonry are possible **1**  
 (a) 6 (b) 2 (c) 5 (d) 4
- viii. In which bond brick is laid with its length in the direction of wall. **1**  
 (a) Header (b) Flemish (c) Stretcher (d) English
- ix. Which of the following is a part of construction Equipment's? **1**  
 (a) Boom (b) Loam (c) Clay (d) None of these

- x. Which of the following may affect the output of construction equipments? **1**  
 (a) Type of soil (b) Drainage conditions at site  
 (c) Condition of equipments (d) All of these

- Q.2 i. What is Portland Cement? Enlist various types of Portland cement. **2**
- ii. What are the properties of aggregate? How does it play an important role in quality and strength of concrete? **3**
- iii. Discuss the advantages and disadvantages of high strength concrete. **5**
- OR iv. Explain the various types of admixtures for concrete and its important functions. **5**

- Q.3 i. Explain micro-cracking of concrete. **3**
- ii. Define workability of concrete. Describe its measurements and factors affecting on it. **7**
- OR iii. Explain thermal properties of concrete in detail. **7**

- Q.4 i. Discuss on sound concrete and its IS code provision. **3**
- ii. Describe the use of pozzolanic material in concrete mixes. Comment on the changes occurred in concrete mix. **7**
- OR iii. What are the various methods of concrete mix design? Describe I.S. Code Method. **7**

- Q.5 i. Describe various defects in brick masonry and its remedial measures. **4**
- ii. Differentiate between stone and brick work. **6**
- OR iii. Enumerate various types of bonds in brick masonry with diagram. **6**

- Q.6 Attempt any two: **5**
- i. Explain various types of rollers and its use. **5**
- ii. Write down the classification of construction equipment. **5**
- iii. Discuss the necessity of construction equipment in construction industry. **5**

## Marking Scheme

### CE3CO05 Construction Material & Techniques

Q.1	i. As per IS 269-1975, the initial setting time of Portland cement is (b) 1/2 hour		<b>1</b>		
	ii. The bulk density of aggregates does not depend upon: (a) Size and shape of aggregates		<b>1</b>		
	iii. Workability of concrete is inversely proportional to (a) Time of transit		<b>1</b>		
	iv. Thermal expansion of concrete per °C varies from (b) $9 \times 10^{-6}$ to $12 \times 10^{-6}$		<b>1</b>		
	v. According to IS:456 the modulus of elasticity of concrete $E_c$ (N/mm <sup>2</sup> ) and $f_{ck}$ is the characteristic strength (N/mm <sup>2</sup> ) as. (a) $E_c = 5700\sqrt{f_{ck}}$		<b>1</b>		
	vi. M10 grade of concrete approximates (a) 1 : 3 : 6 mix		<b>1</b>		
	vii. How many types of Brick masonry are possible (a) 6		<b>1</b>		
	viii. In which bond brick is laid with its length in the direction of wall. (c) Stretcher		<b>1</b>		
	ix. Which of the following is a part of construction Equipment's? (a) Boom		<b>1</b>		
	x. Which of the following may affect the output of construction equipments? (d) All of these		<b>1</b>		
Q.2	i. Definition of Portland Cement	1 mark	<b>2</b>		
	Types of Portland cement.	1 mark			
	ii. Properties of aggregate	1 mark	<b>3</b>		
	For important role in quality and strength of concrete	2 marks			
	iii. Advantages of high strength concrete	2.5 marks	<b>5</b>		
	5 points 0.5 marks for each (0.5 mark * 5)				
	Disadvantages of high strength concrete.	2.5 marks			
	5 points 0.5 marks for each (0.5 mark * 5)				
OR	iv. Types of admixtures for concrete	2 marks	<b>5</b>		
	Its important functions	3 marks			
Q.3	i. Micro-cracking of concrete definition	1 mark	<b>3</b>		
	Explanation	2 marks			
	ii. Workability of concrete definition	2 marks		<b>7</b>	
	Its measurements	2.5 marks			
	Factors affecting on it.	2.5 marks			
OR	iii. Thermal properties of concrete			<b>7</b>	
	Names	2 marks			
	Explanation	5 marks			
Q.4	i. Definition of sound concrete	1 mark		<b>3</b>	
	Its IS code provision.	2 marks			
	ii. Use of pozzolanic material	3 marks		<b>7</b>	
	Changes occurred in concrete mix.	4 marks			
OR	iii. Concrete mix design			<b>7</b>	
	Names of various methods	2 marks			
	I.S. Code Method.	5 marks			
Q.5	i. Brick masonry			<b>4</b>	
	Name of various defects	3 marks			
	Its remedial measures	4 marks			
	ii. Difference between stone and brick work.			<b>6</b>	
	1 mark for each point			(1 mark * 6)	
OR	iii. Brick masonry			<b>6</b>	
	Names of various types of bonds	3 marks			
	Diagram of various types of bonds	3 marks			
Q.6	Attempt any two:				
	i. Names of various types of rollers	2 marks		<b>5</b>	
	Its use.	3 marks			
	ii. Classification of construction equipment.			<b>5</b>	
	0.5 mark for each classification			(0.5 mark * 10)	
	iii. Construction equipment necessity			<b>5</b>	
	0.5 mark for each point			(0.5 mark * 10)	
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