KADI SARVA VISHWAVIDYALAYA

B.E. (Civil) Semester-IV Examination, Oct'2015

Subject Code: CV403 **Subject: Concrete Technology**
Date: 28/10/2015 **Time: 10:30 am to 1:30 pm** **Total Marks: 70**

Instructions:

(1) Answer each section in separate answer sheet
(2) All questions are Compulsory
(3) Indicate **clearly**, the options you attempt along with its respective questions number.
(4) Use the last page of main supplementary for **rough work**

Section-I

Q-1 **(All Compulsory)**

(A) Explain the raw materials used for the production of concrete? [5]

(B) Define workability. What are the effects of shape and texture of aggregate on the strength and workability of concrete? [5]

(C) Explain methods of transporting and placing of concrete. [5]

OR

(C) Write short note on segregations & their precautions. [5]

Q-2 **Answer the following Questions**

(A) What is soundness of cement? How it can be tested in the laboratory? [5]

(B) Describe effect of impurities in water on properties of concrete. [5]

OR

(A) Explain adverse effect of excessive use of admixtures. [5]

(B) Explain rebound hammer test. [5]

Q-3 **Answer the following Questions**

(A) Explain durability & permeability of concrete. [5]

(B) Define plasticizers and super plasticizers and write their types? [5]

OR

(A) Explain Compressive and tensile strength and their relationship in detail. [5]

(B) Explain. (i) What is the role of gypsum in the reaction of cement? (ii) Write the sizes of cubes used in compressive strength test of cement and concrete (iii) Distinguish between grade of cement and grade of concrete. [5]

Section-II

Q-4 **(All Compulsory)**

(A) Write short note on hot & cold weather concreting. [5]

(B) Write short note on Sulphate attack & Chloride attack on concrete. [5]

(C) Write short note on characteristics of high strength concrete. [5]

OR

(C) State the different types of special concrete & describe precast concrete in detail. [5]

Q-5 **Answer the following Questions**

(A) Explain alkali aggregate reaction. [5]

(B) State the different types of special concreting techniques & explain Ready Mixed Conc. in detail. [5]

OR

(A) State causes and precautions for distress in structures [5]

(B) Explain initial and final setting time of concrete in detail. [5]

Q-6 Answer the following Questions

(A) What are methods of concrete mixed design? Explain any one? [5]

(B) Mention Acceptance criteria for mix design & variations of test results [5]

OR

(A) Write short note on properties of repair materials & materials for repair. [5]

(B) Design the concrete mix by using IS method. Grade of Concrete: M25 [5]
Standard deviation: 5.3
Maximum size of aggregate: 20mm
Specific gravity of cement: 3.15
Specific gravity of fine aggregate: 2.60
Specific gravity of coarse aggregate: 2.70
Condition for exposure: Moderate
Notes: (i) Only 5% low results accepted.(ii) w/c ratio from 28 days compressive strength cement.(iii) No correction required for water content and sand content as per zone of sand and workability. (Use Table - 1 to 5)

Table – 1 Value of 't'	
Accepted Proportion of Low Results	Value of 't'
1 in 5	0.84
1 in 10	1.28
1 in 15	1.50
1 in 20	1.65
1 in 40	1.86
1 in 100	2.33

Table – 2Values of W/C ratio and compressive strength	
Compressive Strength in N/mm^2 at 28 days	W/C ratio
20	0.60
25	0.525
30	0.48
35	0.42
40	0.375
45	0.335

Table – 3 W/C ratios as per Durability Requirements	
Exposure Condition	Maximum W/C ratio
Mild	0.65
Moderate	0.55
Severe	0.45

Table – 4 Approximate Air Content	
Nominal Maximum size of Aggregate (mm)	Entrapped air as % of volume of concrete
10	3.0
20	2.0
40	1.0

Table – 5 Approximately sand and water content per m3 of concrete for grade up to M 35		
Nominal maximum size of aggregate (mm)	Water content per meter cube of concrete (kg)	Sand as % of total aggregate by absolute volume
10	208	40
20	186	35
40	165	30

***** All the Best*****

KADI SARVA VISHWAVIDHYALAYA

B.E. SEMESTER IV EXAMINATION (MAY2014)

Subject Code: CV403 **Subject Name: Concrete Technology**

Date: 14/05/2014 **Time: 10:30am to 1:30pm** **Total Marks: 70**

Instructions:

1. Answer each section in separate Answer sheet
2. Use of Scientific calculator is permitted.
3. All questions are compulsory.
4. Indicate clearly, the options you attempt along with its respective question number.
5. Use the last page of main supplementary of rough work.

Section – I

Q-1	(A)	Describe the wet process of manufacturing of cement with flowchart.	[05]
	(B)	How aggregate are classified based on their size? Explain the term "Grading of Aggregate".	[05]
	(C)	What are the major Bogue's compounds of cement? Discuss their role in the hydration of cement.	[05]
		OR	
	(C)	Enlist the different types of cement. Discuss the properties and applications for any one types of cement in concrete construction.	[05]
Q-2	(A)	Explain the action and application of water reducing admixtures.	[05]
	(B)	Explain the qualities of water required for production of concrete.	[05]
		OR	
Q-2	(A)	Write short note in "Use of plasticizers in concrete".	[05]
	(B)	State different types of chemical & mineral admixtures. Differentiate between them.	[05]
Q-3	(A)	Discuss gunniting technique and its applications.	[05]
	(B)	Write short note on segregation & bleeding.	[05]
		OR	
Q-3	(A)	Define shotcrete and explain dry mix process of it.	[05]
	(B)	Define Workability. Describe the factors affecting workability.	[05]

Section-II

Q-4 (A) Using IS method of mix design, find out proportions of concrete for following data: [10]

Grade of Concrete: M 30
Degree of Control: very Good
Maximum size of Aggregate: 20 mm
Specific gravity of Cement: 3.15
Specific gravity of FA: 2.62
Specific gravity of CA: 2.64
Condition of Exposure: Moderate
Workability: 0.90 CF
Note: 5% of the low results are acceptable and W/C ratio for 28 days Strength of concrete is 0.49. **(Refer Table 1 to 6)**

(B) Write short note on Transit mixer & Batch mixer. [05]

OR

(B) Differentiate between: [05]

1. Hand mixing & Machine mixing.
2. Hand compaction & Compaction by vibration.

Q-5 (A) Enlist the different Laboratory tests of aggregate. Explain any one of them in detail. [05]

(B) Write short note on durability & permeability of concrete. [05]

OR

Q-5 (A) Enlist the different Laboratory tests of cement. Explain any one of them in detail. [05]

(B) Explain the slump test. Compare it with compacting factor test. [05]

Q-6 (A) List the poor construction practices, causing cracks in concrete. [05]

(B) Define Admixtures and Additives. Enlist the different admixtures used in concrete construction. Explain the function and property of any one type of admixtures. [05]

OR

Q-6 (A) Discuss the various Causes of cracks in concrete. [05]

(B) List out the factors influencing the mix proportion of concrete. [05]

******All the Best******

Table – 1: Suggested value of standard deviation

Grade of Concrete	Standard Deviation for Different Degree of Control		
	Very good	Good	Fair
M 10	2.0	2.3	3.3
M 15	2.5	3.5	4.5
M 20	3.6	4.6	5.6
M 25	4.3	5.3	6.5
M 30	5.0	6.0	7.0

Table – 2 Value of 't'

Accepted Proportion of Low Results	Value of 't'
1 in 5	0.84
1 in 10	1.28
1 in 15	1.5
1 in 20	1.65
1 in 40	1.86
1 in 100	2.33

Table – 3 Values of W/C ratio and compressive strength

Compressive Strength in N/mm^2 at 28 days	W/C ratio
20	0.600
25	0.525
30	0.480
35	0.420
40	0.375
45	0.335

Table – 4 W/C ratios as per Durability Requirements

Exposure Condition	Maximum W/C ratio
Mild	0.65
Moderate	0.55
Severe	0.45

Table – 5 Approximately sand and water content per m3 of concrete for grade up to M 35

Nominal maximum size of aggregate mm	Water content per meter cube of concrete in kg	Sand as % of total aggregate by absolute volume
10	208	40
20	186	35
40	165	30

Table – 6 Approximate Air Content

Nominal Maximum size of Aggregate mm	Entrapped air as % of volume of concrete
10	3.0
20	2.0
40	1.0

KADI SARVA VISHWAVIDYALAYA

B.E. CIVIL SEMESTER-IV EXAMINATION NOVEMBER-2014

Subject Code : **CV 403** Subject Name: **Concrete Technology**

Date : **7 / 11 /2014** TIME : **10:30am To 1:30pm** Total marks: **70**

Instruction:

1. Answer each section in separate Answer Sheet.
2. Use of scientific calculator is permitted.
3. All questions are compulsory.
4. Indicate **clearly** the options you attempted along with its respective question number
5. Use the last page of supplementary for rough work.

SECTION-I

Q.1	(A)	Write explanatory note on shape and size of aggregates.	[5]
	(B)	Explain in detail Dry Process of cement manufacturing Process with the flow chart.	[5]
	(C)	What is meant by workability? State the factors affecting the workability and describe any one in detail	[5]
		OR	
	(C)	Enlist the tests on workability & describe any one in detail.	[5]
Q.2	(A)	State the different Laboratory tests of cement. Explain any one of them in detail.	[5]
	(B)	How will you check the concrete on field? How is the field testing important?	[5]
		OR	
	(A)	Enlist the different Laboratory tests of Aggregate. Explain any one of them in detail.	[5]
	(B)	Write Short note on Ordinary Portland Cement (OPC).	[5]
Q.3	(A)	Write short note on durability & permeability of concrete.	[5]
	(B)	State different types of chemical & mineral admixtures & differentiate between them.	[5]
		OR	
	(A)	Write short note on hot & cold weather concreting.	[5]
	(B)	Describe briefly the chemical composition, major compounds formed and hydration of cement.	[5]

SECTION-II

Q.4	(A)	Give the steps involved in the manufacture of concrete and describe compaction in detail.	[5]
	(B)	Enlist types of cement and Write Short note on Rapid hardening cement	[5]
	(C)	Explain the qualities of water required for production of concrete.	[5]
		OR	
	(C)	Discuss the suitability of sea water for construction.	[5]
Q.5	(A)	Describe in detail the segregation and bleeding.	[5]
	(B)	Explain water ponding method of curing.	[5]

OR

(A) Write Short note on Shotcrete. [5]

(B) Causes of cracks in concrete. [5]

Q.6 Design a concrete mix M 20 grade concrete by IS method using following data: [10]

Degree of control : Very good
Maximum size of aggregate : 20mm
Water required for $1m^3$ concrete: 186 lit.
% fine aggregate in total aggregate : 30%
w/c ratio for durability requirement : 0.45
Air content : 1.0%
Specific gravity of cement : 3.15
Specific gravity of Fine aggregate : 2.90
Specific gravity of Coarse aggregate : 2.70
Condition of exposure : Mild

OR

Q.6 (A) Discuss the factors which influence the choice of mix design. [5]

(B) Explain how water cement ratio affects strength of concrete? [5]

-----ALL THE BEST-----

Table – 1: Suggested Values of Standard Deviation

Grade Of Concrete	Standard Deviation for Different Degree of Control		
	Very Good	Good	Fair
M 10	2.0	2.3	3.3
M 15	2.5	3.5	4.5
M 20	3.6	4.6	5.6
M 25	4.3	5.3	6.5
M 30	5.0	6.0	7.0

Table - 2: Values of 't'

Accepted Proportion of Low Results	Value of 't'
1 in 5	0.84
1 in 10	1.28
1 in 15	1.50
1 in 20	1.65
1 in 40	1.86
1 in 100	2.33

Table - 3: Values of W/C and Compressive Strength

Compressive Strength in N/mm^2 at 28 days	W/C
20	0.6
25	0.525
30	0.48
35	0.42
40	0. 375
45	0.335

Table - 4: W/C as per Durability Requirements

Exposure Condition	Maximum Water Cement Ratio
Mild	0.65
Moderate	0.55
severe	0.45

Table – 5: Approximate sand and water concrete per meter of concrete for grade up to M 35

Nominal maximum size of aggregate - mm	Water content per cubic meter of concrete in kg	Sand as percentage of total aggregate by absolute volume
10	208	40
20	186	35
40	165	30

Table – 6: Approximate Air Content

Nominal maximum size of aggregate - mm	Entrapped air as percentage of volume of concrete
10	3.0
20	2.0
40	1.0

KADI SARVA VISHWAVIDYALAYA

B.E. (Civil) Semester-IV Examination, May'2015

Subject Code: CV403 **Subject: Concrete Technology**
Date: 05/05/2015 **Time: 10:30 am to 1:30 pm** **Total Marks: 70**

Instructions:

(1) Answer each section in separate answer sheet
(2) All questions are Compulsory
(3) Indicate **clearly**, the options you attempt along with its respective questions number.
(4) Use the last page of main supplementary for **rough work**

Section-I

Q-1 **(All Compulsory)**

(A) Draw flow chart and explain manufacturing of cement by wet process. [5]

(B) Define workability. State the factors affecting the workability and describe any one in detail [5]

(C) State various types of cements & state the testing of cements as per IS & describe Std. consistency of cement in detail. [5]

OR

(C) State the tests on workability & describe any one in detail. [5]

Q-2 **Answer the following Questions**

(A) Describe aggregate impact value test. [5]

(B) What are the major Bogue's compounds of cement? Discuss their role in hydration of cement. Give the classification of aggregate based on shape. [5]

OR

(A) Explain relation between: [5]
(i) Compressive strength of concrete and Water cement ratio.
(ii) Compressive strength of concrete and Gel space ratio.

(B) Write note on NDT [5]

Q-3 **Answer the following Questions**

(A) Explain compression tests in detail. [5]

(B) Define creep. Explain factors affecting on creep. [5]

OR

(A) Write short note on durability & permeability of conc. [5]

(B) Give difference between Rapid hardening cement and Quick setting cement. [5]

Section-II

Q-4 **(All Compulsory)**

(A) Explain alkali aggregate reaction [5]

(B) Write short note on acid attack on concrete. [5]

(C) Write short note on Fiber reinforced concrete. [5]

OR

(C) State the different types of special concrete & describe light wt. conc. in detail. [5]

Q-5 **Answer the following Questions**

(A) Explain vacuum concreting technique. [5]

(B) Write short note on ready mixed concrete. [5]

OR

(A) What is effect of freezing and thawing on concrete? [5]

(B) Explain heat of hydration and it's importance in setting. [5]

Q-6 **Answer the following Questions**

(A) Define design mix concrete. Describe step by step procedure of IS method of mix design. [5]

(B) What are the factors affecting on choice of mix design? [5]

OR

(A) Explain with sketch crack repair by injection grouting. [5]

(B) Design the concrete mix by using IS method. Grade of Concrete: M20 [5]
Standard deviation: 5.3
Maximum size of aggregate: 20mm
Specific gravity of cement: 3.15
Specific gravity of fine aggregate: 2.65
Specific gravity of coarse aggregate: 2.75
Condition for exposure: Mild
Notes: (i) Only 5% low results accepted.(ii) w/c ratio from 28 days compressive strength cement.(iii) No correction required for water content and sand content as per zone of sand and workability. (Use Table - 1 to 5)

Table – 1 Value of 't'

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***** All the Best*****