GUJARAT TECHNOLOGICAL UNIVERSITY

2nd Semester Civil Engineering – PDDC

Subject Code & Name : X20602 – Construction

Sr. No.	Course content
1.	**Pile Foundations :** Introduction, uses, selection of pile, types of piles, pile spacing, group of piles, efficiency of group of piles, pile cap and pile shoe, load tests on piles, pile driving, pulling of piles, loads on piles, causes of failures of piles, pile driving formulas.
2.	**Coffer Dams :** Definition, uses, selection of coffer dams, types of coffer dams, design features of coffer dams; leakage prevention, economic height.
3.	**Caissons :** Definition, uses, construction material, types of caissons, design features of caissons, loads on caisson, floating of caissons, cutting edges, sinking of caisson, tilting of caisson, caisson diseases.
4.	**Control of Ground Water in Excavations :** Methods, pumping, well points, bored wells, electro-osmosis, injections with cement, clays and chemical, freezing process vibroflotation.
5.	**Temporary Works :** False work for bridges, form work for R.C.C. Wall, slab, beam and column, design features for temporary works, centring for dams and arches of large Spans. Slip formwork, specialty form work.
6.	**Construction of Earthquake Resistant Buildings :** Planning of earthquake resistant Building, construction of walls –provision of corner reinforcement, construction of beams, columns. Base isolation,
7.	**Special Structures ,** Tall structures, spatial structures, pre-stressed structures
8.	**Demolition of structure,** methods, safety.
9.	**Construction Equipment and Plants :** Mechanical Equipment: Factors affecting Selection of construction equipment, economic life of equipment, factors considered for fixing it. a. Earth excavating and transporting equipment : Tractors, bulldozers, power shovels, draglines, scrapers, rippers, hoes, wheel type trenching machines, clamshells. b. Conveying equipment : Screw conveyors, bucket conveyors, belt conveyors, aerial tramways, cableways. c. Hoisting equipment : Pulley and sheave blocks, fork lift trucks, wheeler cranes, Derrick cranes, chain hoists, and gantry cranes. d. Drilling equipment : Drill bits, drifters, steam hammers, wagon drills, shot drills, diamond drills, rotary percussion drills, factors affecting types and methods of drilling.

References Books:

1. Building Construction by S.C. Rangwala
2. Building Construction by Gurcharan Singh
3. Heavy Construction by Vazirani & Chandola
4. Construction, Planning, Equipment and Methods by R. L. Peurifoy
5. Building Construction –Dr. Jha & S.K.Sinha

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GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–II • EXAMINATION – WINTER 2013

Subject Code: X20602 **Date: 23-12-2013**

Subject Name: Construction

Time: 02.30 pm - 05.00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Describe the situations under which pile foundations are preferred, draw the sketch of bearing pile and friction pile.	**07**
	(b)	What is the difference between pre cast concrete piles and cast in situ concrete piles, draw sketch of pre cast concrete piles any section.	**07**
Q.2	**(a)**	What are uses and necessity of cofferdams? Draw the sketch of earth and rock filled cofferdam.	**07**
	(b)	Explain by drawing sketch timber or steel sheeting cofferdam.	**07**
		OR	
	(b)	What is economic height of cofferdam? Explain by table form economic height Of cofferdam.	**07**
Q.3	**(a)**	Draw the sketch of open (well) caisson and describe construction procedure also.	**07**
	(b)	What are the circumstances when the pneumatic caissons are adopted	**07**
		OR	
Q.3	**(a)**	What are the requirements of good form works?	**07**
	(b)	Explain by drawing sketch form work for R.C.C. walls.	**07**
Q.4	**(a)**	Enlist the methods of controlling ground water during foundation excavations; draw the sketch of pumping from well points.	**07**
	(b)	Explain by drawing sketch horizontal well installation point and electro osmosis installations	**07**
		OR	
Q.4	**(a)**	Describe in detail general principles of earthquake resistant building.	**07**
	(b)	Draw the sketch pile load testing platform (jack loading)	**07**
Q.5	**(a)**	Give classification of demolition methods of existing old structures.	**07**
	(b)	Enlist the different types of equipments used for heavy construction works.	**07**
		OR	
Q.5	**(a)**	Explain by drawing sketch working of power shovel	**07**
	(b)	Explain working of tower crane and belt conveyers	**07**

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GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–II • EXAMINATION – SUMMER 2013

Subject Code: X20602 **Date: 10-06-2013**

Subject Name: Construction

Time: 02.30 pm - 05.00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Discuss the causes of failure of piles.	**07**
	(b)	Give classification of piles and differentiate between friction piles and end bearing piles.	**07**
Q.2	**(a)**	Discuss the factors affecting choice of piles	**07**
	(b)	Write short note on Non-load bearing piles.	**07**
		OR	
	(b)	Twenty eight piles are arranged in four rows and seven columns; calculate their group efficiency by Fed-rule.	**07**
Q.3	**(a)**	State the various types of coffer dams and explain any one of them.	**07**
	(b)	What are the factors affecting selection of coffer dam.	**07**
		OR	
Q.3	**(a)**	State the various methods of pumping and explain any one of them.	**07**
	(b)	Write short note on freezing process.	**07**
Q.4	**(a)**	Write short note on Pneumatic caisson.	**07**
	(b)	Define a caisson. Point out the difference between caisson and cofferdam.	**07**
		OR	
Q.4	**(a)**	Write short note on earthquake resistance housing.	**07**
Q.4	**(b)**	Explain the design features of temporary works	**07**
Q.5	**(a)**	What is pre stressed structure? Explain its importance.	**07**
	(b)	. Explain the necessity of demolition.	**07**
		OR	
Q.5	**(a)**	Explain cellular cofferdam with a neat sketch	**07**
	(b)	Write short note on load tests on piles	**07**

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GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC SEM-II Examination May 2012

Subject code: X20602

Subject Name: Construction

Date: 24/05/2012 **Time: 10.30 am – 01.00 pm**

Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	What are the advantages and disadvantages of cast in situ concrete piles?	**07**
	(b)	What are the causes of failure of piles?	**07**
Q.2	**(a)**	Describe the method of constructing a single well cofferdam with neat sketches.	**07**
	(b)	What is caisson sickness? What are the precautions to be taken to avoid it?	**07**
		OR	
	(b)	Classify different types of piles and write a short note on under reamed piles	**07**
Q.3	**(a)**	Describe the freezing process with neat sketches.	**07**
	(b)	What are the requirements of good formwork?	**07**
		OR	
Q.3	**(a)**	Explain the properties required for better earthquake resistant construction	**07**
	(b)	Explain repair, restoration and retrofitting.	**07**
Q.4	**(a)**	What is meant by demolition? What are the factors affecting the evaluation of demolition methods?	**07**
	(b)	What are the factors affecting the selection of a particular type of cofferdam.	**07**
		OR	
Q.4	**(a)**	Enlist types of caissons and explain Box caisson with neat sketch.	**07**
	(b)	Enlist different methods of Dewatering and Explain Electro osmosis process with neat sketch.	**07**
Q.5	**(a)**	Explain the factors affecting selection of Construction equipments.	**07**
	(b)	Write a short note on (1)Power shovel (2)Drifters	**07**
		OR	
Q.5	**(a)**	What is centering? Explain trestle centering With neat sketches.	**07**
	(b)	Enlist and explain general principles for earthquake resistant buildings.	**07**

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GUJARAT TECHNOLOGICAL UNIVERSITY
PDDC SEM-II Examination-Dec-2011

Subject code: X20602 **Date: 24/12/2011**
Subject Name: Construction
Time: 10.30 am -1.00 pm **Total marks: 70**

Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Write uses of pile foundation and differentiate between load bearing piles and non-load bearing piles.	**07**
	(b)	Enlist pile driving formulas and explain engineering news formula for pile driving.	**07**
Q.2	**(a)**	What is coffer dam? Write uses and types of coffer dams.	**07**
	(b)	What are the precautions should be taken to prevent leakage in coffer dams?	**07**
		OR	
	(b)	Explain in brief concrete coffer dams and suspended coffer dams.	**07**
Q.3	**(a)**	Define caisson. Write uses of caissons and classify the caissons.	**07**
	(b)	What is a box caisson? Which are the conditions favorable for the construction of box caisson? Explain the method of installing a box caisson.	**07**
		OR	
Q.3	**(a)**	What is a pneumatic caisson? Where it is adopted? Write its construction and sinking.	**07**
	(b)	What is meant by tilting of caisson? What are the causes of tilting? How can a tilted caisson be brought in correct position?	**07**
Q.4	**(a)**	Why formwork is necessary? Explain the requirements of formwork.	**07**
	(b)	What are slip forms? Explain their operation and advantages.	**07**
		OR	
Q.4	**(a)**	Describe the method of freezing process for dewatering the foundation trenches and state advantages and limitations of freezing process.	**07**
	(b)	Which are the guidelines for construction of earthquake resistant building?	**07**
Q.5	**(a)**	Write advantages and disadvantages of pre-stressed concrete.	**07**
	(b)	Enlist various methods of demolition of structure and explain any one in detail.	**07**
		OR	
Q.5	**(a)**	Discuss the factors affecting for selection of construction equipments?	**07**
	(b)	What is the use of belt conveyor? Explain essential parts of belt conveyor.	**07**

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GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC 2ND Semester Examination – July- 2011

Subject code: X20602

Subject Name: Construction

Date:15/07/2011 **Time: 10:30 am – 01:00 pm**

Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Differentiate between cased cast in-situ piles and uncased cast in-situ piles with examples.	**07**
	(b)	Explain in brief various formulae for determining load carrying capacity of piles.	**07**
Q.2	**(a)**	What are the cellular coffer dams? Write their suitability. Describe circular diaphragm type with sketches.	**07**
	(b)	What are the measures employed to prevent leakage in a cofferdams?	**07**
		OR	
	(b)	What is economic height of cofferdams? Explain through examples.	**07**
Q.3	**(a)**	What is a pneumatic caisson? Where is it adopted? Write its construction and sinking.	**07**
	(b)	Describe the methods employed for the floating of caissons.	**07**
		OR	
Q.3	**(a)**	What are monoliths? What are its advantages and disadvantages?	**07**
	(b)	Write the objectives of providing cutting edges in caissons. Describe various types of cutting edges through sketches.	**07**
Q.4	**(a)**	What are the requirements of a good formwork? What steps should be taken to achieve economy?	**07**
	(b)	What are slip forms? Explain their operation and mention their uses.	**07**
		OR	
Q.4	**(a)**	Describe the grouting method for elimination of ground water flow.	**07**
	(b)	Explain the general principles and bye-laws for earthquake resistant buildings with sketches.	**07**
Q.5	**(a)**	Draw a neat sketch of a dragline and explain its uses and working.	**07**
	(b)	Explain in detail ‘power shovel’ and ‘back hoe’.	**07**
		OR	
Q.5	**(a)**	Explain various cranes in construction industry with their specific roles.	**07**
	(b)	Write advantages and disadvantages of pre-stressed concrete?	**07**

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GUJARAT TECHNOLOGICAL UNIVERSITY

P.D.D.C. Sem- II Remedial Examination Nov / Dec. 2010

Subject code: X20602 **Subject Name: Construction**

Date: 30 / 11/ 2010 **Time: 10.30 am – 01.00 pm**

Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Explain by drawing sketch of end bearing pile , friction pile, and anchor pile.	**07**
	(b)	Give engineering news formula for pile driving.	**07**
Q.2	**(a)**	Explain by drawing sketch "pneumatic caisson."	**07**
	(b)	Describe with sketch construction procedure of pedestal pile	**07**
		OR	
	(b)	Explain by drawing sketch pre cast concrete piles	**07**
Q.3	**(a)**	Describe guidelines for construction of earthquake resistant building.	**07**
	(b)	Draw sketch of dragline excavator and explain its working.	**07**
		OR	
Q.3	**(a)**	What is purpose of construction of cofferdam? Explain rock filled cofferdam.	**07**
	(b)	Explain timber form work draw sketch.	**07**
Q.4	**(a)**	How sub soil water is affecting on foundation? Explain one method of removing sub soil water.	**07**
	(b)	Explain by drawing sketch cellular cofferdam.	**07**
		OR	
Q.4	**(a)**	What is the use of pile shoe, and pile cap? .draw sketch of pile shoe and pile cap.	**07**
	(b)	Explain the factors affecting selection of equipments	**07**
Q.5	**(a)**	What precautions to be taken while demolishing old structure ?	**07**
	(b)	Explain by drawing sketch " derrick crane "	**07**
		OR	
Q.5	**(a)**	Distinguish "sheep foot roller" and "plain roller", also explain sheep foot roller	**07**
	(b)	Draw the neat sketch of form work for column.	**07**

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