Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2021

Subject Code:3170622 Date:29/12/2021

Subject Name:Precast Construction

Time:10:30 AM TO 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.**
4. **Simple and non-programmable scientific calculators are allowed.**
5. **IS: 456 , IS 10297, IS 15916,IS 15917 is allowed in the exam.**

			MARKS
Q.1	**(a)**	What is difference between precast and cast-in-situ construction?	**03**
	(b)	What are the characteristics of materials used for construction of PFS ?	**04**
	(c)	Explain floor unit in detail.	**07**
Q.2	**(a)**	Enlist the element of precast skeletal structure.	**03**
	(b)	Which characteristics should be considered while selecting the materials for prefabrication?	**04**
	(c)	Write short note on precast frame analysis.	**07**
		OR	
	(c)	Explain characteristics of concrete used in precast construction.	**07**
Q.3	**(a)**	Which precaution may provide to adequate structural integrity?	**03**
	(b)	Write short note on modular co-ordination.	**04**
	(c)	Design double t type rcc precast slab panel having span 8 m , panel width 2.0 m live load 3.5 kN/m^2, Floor finish 1 kN/m^2. Use M30 concrete and Fe 500 steel. (Design for flexure only along longitudinal direction).	**07**
		OR	
Q.3	**(a)**	Enlist the different types of joint as per location in precast construction.	**03**
	(b)	Step wise design procedure of structural ties in precast	**04**
	(c)	Design a hollow core slab of 5 m span with panel width 1 m is supported on a ledger beam of span 6.5m. The super imposed dead load is 4. kN/m^2. Live load is 3 kN/m^2. The materials used are M30 & Fe 415.(only provide flexure design, need not required to provide any check)	**07**
Q.4	**(a)**	Write brief description of different types of precast beam.	**03**
	(b)	How to determine moment of resistance of T beam?	**04**
	(c)	What is the necessity of providing shear walls in the precast structures? Also discuss the different types of shear walls.	**07**
		OR	
Q.4	**(a)**	Explain equivalent design loads.	**03**
	(b)	Draw the plant process of precast unit.	**04**
	(c)	Explain the steps adopted for installation of precast columns.	**07**
Q.5	**(a)**	When a progressive collapse does occur? Why is it very critical to avoid progressive collapse of structures?	**03**
	(b)	What are the mould tolerances for precast elements? Why they are so stringent?	**04**
	(c)	Write three stages of design of column and explain any one in detail.	**07**
		OR	
Q.5	**(a)**	What is the classification of precast concrete walls?	**03**
	(b)	Explain Advantage and disadvantage of croos wall construction.	**04**
	(c)	Explain accelerated hardening in detail.	**07**

Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – SUMMER 2022

Subject Code:3170622 Date:10/06/2022

Subject Name:Precast Construction

Time:02:30 PM TO 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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	State advantages and disadvantages of precast concrete.	**03**
	(b)	Give difference between precast and cast-in-situ construction.	**04**
	(c)	Explain characteristics of concrete used in precast construction.	**07**
Q.2	**(a)**	Explain various application of precast construction technique.	**03**
	(b)	Discuss the need of modular coordination and standardization of prefabricated structures in detail.	**04**
	(c)	Enlist the different types of joint as per location in precast construction.	**07**
		OR	
	(c)	Write short note on precast frame analysis.	**07**
Q.3	**(a)**	Write about various factors that affecting on choice of production setup.	**03**
	(b)	Write short note on various loads and load path on precast concrete system..	**04**
	(c)	Write the design steps for design shear wall.	**07**
		OR	
Q.3	**(a)**	Explain the manufacturing process of wall panels.	**03**
	(b)	Explain automation in manufacturing of precast elements.	**04**
	(c)	Explain in detail about IS codal provisions for prefabricated structures.	**07**
Q.4	**(a)**	Explain the types of precast concrete beams.	**03**
	(b)	Discuss about behavior of columns in prefabricated structures.	**04**
	(c)	Differentiate between Composite & Non composite reinforced concrete beams.	**07**
		OR	
Q.4	**(a)**	Give the classification of precast concrete walls.	**03**
	(b)	Explain the expansion joints in precast construction with neat sketch.	**04**
	(c)	Explain the necessity of shear walls in the precast structure. Also discuss the various types of shear walls.	**07**
Q.5	**(a)**	Draw the plant process of precast unit.	**03**
	(b)	Explain the techniques used for erection of different members in Precast construction.	**04**
	(c)	Explain the design requirements of precast truss.	**07**
		OR	
Q.5	**(a)**	When a progressive collapse does occur? Why is it very critical to avoid progressive collapse of structures?	**03**
	(b)	Explain the working procedure of vacuum lifting pads for prefabricated elements.	**04**
	(c)	Explain accelerated hardening in detail.	**07**

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