

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 cross wall construction.	04
	(c) Explain accelerated hardening in detail.	07

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

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|------------|---|-----------|
| 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 |
