

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2023****Subject Code:2160601****Date:04-07-2023****Subject Name:Advanced Construction and Equipments****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.

		MARKS
Q.1	(a) Define Pile. State various necessity of pile foundation.	03
	(b) Differentiate between Caisson and Cofferdam.	04
	(c) Classify the piles based on materials and composition. Explain precast concrete piles with its procedure, advantages and disadvantages.	07
Q.2	(a) Define coffer dam. State the necessity of coffer dams.	03
	(b) Write short note on Monoliths.	04
	(c) Explain under reamed piles with the help of neat sketch and its construction procedure.	07
OR		
	(c) Explain pneumatic caisson with the help of neat sketch, construction procedure, advantages and disadvantages.	07
Q.3	(a) Define form work. Discuss the requirements of good formwork.	03
	(b) Prepare the list of various methods of controlling ground water during construction and suggest their suitability for different soil conditions in tabular form.	04
	(c) Demonstrate the formwork for R.C.C. beam and slab floor with neat sketch showing all components.	07
OR		
Q.3	(a) Explain cement grouting to control ground water in excavations.	03
	(b) State the various uses and advantages of diaphragm walls.	04
	(c) Explain safety measures to be taken before and during demolition of structures.	07
Q.4	(a) Discuss the significance of construction machineries.	03
	(b) Describe the factors affecting selection of construction equipments.	04
	(c) Determine the probable cost of owning and operating at 3m ³ capacity, diesel engine power shovel given the following details:	07
	Engine = 160 HP	
	Crank case capacity = 30 litres	
	Useful life = 6 years	
	Time between oil change = 120 hours	
	Shipping weight = 104 tonnes	
	Factory price of equipment = ₹ 7,00,000	
	Operating factor = 0.6	
	Freight charge = ₹ 30/tonne	
	Unloading and assemble charge = ₹ 700	
	Hours used/year = 5500 hours	
OR		

- Q.4** (a) Define: Depreciation cost, Downtime cost, Operating cost **03**
 (b) Differentiate between standard equipment and special equipment. **04**
 (c) Compare crawler mounted dozer and wheel mounted dozer. **07**
- Q.5** (a) Estimate the number of dumper required for transportation of 1500 cum of material per day for average lead of 4 km. Following data may be used of the estimation.
 Theoretical capacity of dumper = 18 cum
 Actual capacity of dumper = 15 cum
 Cycle time = 30 minute **03**
- (b) Discuss the advantages and disadvantages of trucks. **04**
 (c) Enlist the excavating equipments used in construction. Explain dragline with the help of neat sketch, applications, advantages and disadvantages. **07**
- OR**
- Q.5** (a) List various hoisting equipments. Explain tower crane. **03**
 (b) Explain various explosives used for blasting. **04**
 (c) Explain centrifugal pump with neat sketch. **07**
