

Total No. of Questions: 6

Total No. of Printed Pages:3

Enrollment No.....



Faculty of Engineering  
End Sem Examination Dec-2023  
CE3EC01

Advanced Construction Equipment & Materials  
Programme: B.Tech. Branch/Specialisation: CE

Duration: 3 Hrs.

Maximum Marks: 60

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

- Q.1 i. Those explosive whose reaction is faster than speed of sound is termed as- **1**  
(a) Low Explosive (b) High Explosive  
(c) Slow Explosive (d) All of these
- ii. ANFO stands for: **1**  
(a) Ammonium nitrate + Fluorine oxide  
(b) Aluminium nitrate + Fluorine oxide  
(c) Aluminium nitrate + Fuel oil  
(d) Ammonium nitrate + Fuel oil
- iii. For concrete pile, the falling height of drop hammer is- **1**  
(a) 10 ft (b) 8 ft  
(c) 7 ft (d) 15 ft
- iv. An average speed of crawler type dozer is lie between- **1**  
(a) 5-10 mph. (b) 10-15 mph  
(c) 10-20 mph. (d) None of these
- v. Which of the following material used as a fuel in Diesel Hammer? **1**  
(a) LPG (b) Kerosene  
(c) Gasoline (d) All of these
- vi. Which of the following type of soil is suitable for Wheel type Dozer? **1**  
(a) Wet soil (b) Saturated soil  
(c) Abrasive soil (d) None of these

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- vii. Which of the following method is also known as modular construction? **1**  
 (a) 3D volumetric construction  
 (b) Precast panel system  
 (c) Flat slab construction  
 (d) Precast cladding panels
- viii. In top-down method, first step is- **1**  
 (a) Side wall construction (b) Bottom slab construction  
 (c) Top slab construction. (d) None of these
- ix. In slab milling method, cutting tool is made up of – **1**  
 (a) Titanium carbide (b) Silicon carbide  
 (c) Aluminium oxide (d) All of these
- x. Which of the following material is cut by Abrasive water jet? **1**  
 (a) Tissue papers (b) Fibre glass  
 (c) Aluminium (d) All of these
- Q.2 i. Discuss working procedure of Slab milling method in detail with neat sketch diagram. **3**  
 ii. What is the Water jet cutting method? Explain different types of water jet cutting method with neat sketch diagram. **7**
- OR iii. What do you understand by the term composite? Explain different types of composites material in detail. Also explain its importance in construction industry. **7**
- Q.3 i. Explain different types of sensors. **3**  
 ii. Explain piezoelectric strain measurement and process of strain measurement. **7**
- OR iii. Explain retrofitting and the different materials with its properties used in retrofitting. **7**
- Q.4 i. Explain basic mechanics of breaking in detail. **3**  
 ii. A project in granite rock will have an average bench height of 20ft. An explosive having a S.G. of 1.2 has been proposed. Assume the diameter of explosive is 2.5 in. Use delay blast technique and assume S.G of granite is 2.75. Develop a blast design for the project. **7**

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- OR iii. Explain Diesel hammer and Single acting steam hammer in detail with neat sketch. **7**
- Q.5 i. Explain various classification of Dozer. **4**  
 ii. What is Power Shovel? Explain its operation, working and factors affecting output of Power Shovel with neat sketch. **6**
- OR iii. What is Scraper? Explain its different parts and working with neat sketch diagram. **6**
- Q.6 Attempt any two:  
 i. What is tunnels? Explain necessity of tunnels in detail. **5**  
 ii. Enlist various methods of tunnel construction. Explain any two tunnel construction method in detail. **5**  
 iii. Explain Precast cladding system and Precast flat panel construction method in detail. **5**

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## Marking Scheme

### CE3EC01 Advanced construction Equipment and Material

Q.1	i)	B	1
	ii)	D	1
	iii)	B	1
	iv)	A	1
	v)	C	1
	vi)	C	1
	vii)	A	1
	viii)	A	1
	ix)	A	1
	x)	D	1

Q.2	i.	For correct working procedure	2 mark
		Neat sketch diagram.	1 mark
	ii.	For correct definition of Water	3 marks
		For correct Explanation of different	3 marks
		1 marks for neat sketch diagram.	
OR	iii.	For correct definition	1 marks
		Explanation of different types	3 marks
		Importance in construction industry	3 marks

Q.3	i.	Each types of sensors give	1 mark
	ii.	For correct explanation give 3 marks and process of piezoelectric strain measurement give 4 marks	
OR	iii.	For correct Explanation of retrofitting give	3 marks
		Different materials with its properties	4 marks .

Q.4	i.	For correct Explanation	3 marks
	ii.	Burden distance = 6 ft	1 mark
		Stiffness ratio=3.3	1 mark
		Stemming depth=4 ft	1 mark
		Sub drilling depth=2 ft	1 mark
		Spacing=8 ft	1 mark
		Diagram give	2 Marks

OR	iii.	Explanation of Diesel hammer	3 Marks
		Single acting steam hammer in detail	3 Mark
		Neat sketch.	1 Mark

Q.5	i.	Each classification of Dozers give	(1 mark*2)
	ii.	For correct definition of Power Shovel give	2 marks
		Explanation of its operation, Working give	2 marks
		Factors affecting output of	2 marks
OR	iii.	For correct definition of Scraper give	2 marks
		correct Explanation of its different	3 marks
		For neat sketch diagram.	1 mark

Q.6	i.	Correct definition of tunnels give	2 marks
		Correct Explanation of necessity of tunnels give	3 marks
	ii.	For methods of tunnel construction give	3 marks
		For correct Explanation of any two tunnel	2 marks .
	iii.	For correct Explanation of Precast	2.5 marks
		Precast flat panel construction method give	2.5 marks

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