



Enrollment No.....

Faculty of Engineering

End Sem (Odd) Examination Dec-2019

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.

- Q.1 i. Which of the following material is cut by Pure water jet? **1**
 (a) Stainless steel (b) Fibre glass
 (c) Aluminium (d) All of these
- ii. The cutting tool of slab milling is made up of – **1**
 (a) Titanium carbide (b) Silicon carbide
 (c) Aluminium oxide (d) All of these
- iii. In which of the following fibre glass is used – **1**
 (a) Aircrafts work (b) Automobile work
 (c) Storage container (d) All of these
- iv. Epoxy is an example of which type of polymer- **1**
 (a) Thermoplastic polymer (b) Thermoset polymer
 (c) Thermo-elastic polymer (d) None of these
- v. In which of the following country, the first explosive was developed **1**
 (a) India (b) USA (c) China (d) Japan
- vi. In blast design, sub drilling depth is denoted by- **1**
 (a) S (b) T (c) J (d) B
- vii. Which of the following is considered as Hauling equipment? **1**
 (a) Back Hoe (b) Power Shovel
 (c) Dozer (d) All of these
- viii. The falling height of Single acting steam hammer lie between **1**
 (a) 6 ft to 8 ft. (b) 1 ft. to 5 ft.
 (c) 10 ft. to 15 ft. (d) None of these
- ix. 3-D volumetric construction is also known as- **1**
 (a) Block construction (b) Modular construction
 (c) Cladding construction (d) None of these

P.T.O.

- x. ICF stands for **1**
 (a) Indian concrete foundation
 (b) Insulating concrete formwork
 (c) Indian concrete formwork
 (d) Insulating concrete foundation
- Q.2 i. Explain slab milling method with neat sketch diagram. **4**
 ii. Explain water jet cutting method in detail with neat sketch diagram. **6**
 OR iii. Explain different types of composite material in detail. **6**
- Q.3 i. What are smart materials? Discuss the applications of smart materials. **4**
 ii. Explain Piezoelectric and fibre optic sensors in detail. **6**
 OR iii. How shape memory alloy work? Explain the phenomenon of shape memory effect. **6**
- Q.4 i. Write short note on- **4**
 (a) Top stemming depth (b) Sub drilling depth
 ii. Define Explosive? Explain different types of explosive in detail. **6**
 OR iii. Enlist various types of pile driving equipment. Explain any two pile driving equipment in detail. **6**
- Q.5 Attempt any two: **5**
 i. Explain Trenching machine and its type in detail with neat sketch diagram. **5**
 ii. What is Power shovel? Explain its operation and factors affecting output of Power shovel. **5**
 iii. What is scraper? Explain classification of scraper and its different parts with neat sketch diagram. **5**
- Q.6 i. Write short note on Tendon. **3**
 ii. Enlist various modern construction methods. Explain any two methods in detail. **7**
 OR iii. What is tunnel. Explain various methods of tunnel construction in detail. **7**

Marking Scheme

CE3EC01 Advanced Construction Equipment & Materials

Q.1	i.	Which of the following material is cut by Pure water jet? (b) Fibre glass		1
	ii.	The cutting tool of slab milling is made up of – (a) Titanium carbide		1
	iii.	In which of the following fibre glass is used – (d) All of these		1
	iv.	Epoxy is an example of which type of polymer- (b) Thermoset polymer		1
	v.	In which of the following country, the first explosive was developed (c) China		1
	vi.	In blast design, sub drilling depth is denoted by- (c) J		1
	vii.	Which of the following is considered as Hauling equipment? (c) Dozer		1
	viii.	The falling height of Single acting steam hammer lie between (b) 1 ft. to 5 ft.		1
	ix.	3-D volumetric construction is also known as- (b) Modular construction		1
	x.	ICF stands for (b) Insulating concrete formwork		1
Q.2	i.	Explanation of slab milling method Diagram.	3 marks 1 mark	4
	ii.	Explanation of both water jet cutting method Diagram	4 marks 2 marks	6
OR	iii.	Classification of composite material Explanation of composite material	1 mark 5 marks	6
Q.3	i.	Definition of smart materials Applications of smart materials	1 mark 3 marks	4
	ii.	Explanation of Piezoelectric sensors Explanation of fibre optic sensors	3 marks 3 marks	6
OR	iii.	Working of shape memory alloy Phenomenon of shape memory effect	3 marks 3 marks	6

Q.4	i.	Write short note on- (a) Top stemming depth (b) Sub drilling depth	2 marks 2 marks	4
	ii.	Definition of Explosive Different types of explosive (1 mark * 5) 1 mark for each description of each types	1 mark 5 marks	6
OR	iii.	Types of pile driving equipment 0.5 mark for each name (0.5 mark *4) Any two pile driving equipment	2 marks 4 marks	6
Q.5		Attempt any two:		
	i.	Explanation of Trenching machine Types of Trenching machine Diagram	1 mark 2 marks 2 marks	5
	ii.	Definition of Power shovel Its operation Factors affecting output of Power shovel	1 mark 2 marks 2 marks	5
	iii.	Definition of scraper Classification of scraper Explanation of different parts Diagram	1 mark 1 mark 2 marks 1 mark	5
Q.6	i.	Proper explanation of Tendon.		3
	ii.	Modern construction methods At least 4 names 0.5 mark for each (0.5 mark * 4) Explanation of any two methods	2 marks 5 marks	7
OR	iii.	Definition of tunnel Correct Explanation of any two methods	1 mark 6 marks	7
