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## ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. /B.Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, NOV/DEC 2023

## CE5036 - CONSTRUCTION EQUIPMENT AND MACHINERY

Semester-V

(Regulation 2019)

students are permitted to use the equipment  
manual Appendix 9.1  
for Earth Work Related Equipment



Time:3hrs

Max.Marks: 100

CO1	Develop knowledge on planning of equipment and selection of equipment
CO2	Explain the knowledge on fundamentals of earth work operations, earth moving operations and types of earth work equipment
CO3	Develop the knowledge on special construction equipment
CO4	Apply the knowledge on asphalt and concrete plants
CO5	Apply the knowledge and select the proper materials handling equipment

**BL – Bloom's Taxonomy Levels**

(L1-Remembering, L2-Understanding, L3-Applying, L4-Analysing, L5-Evaluating, L6-Creating)

**PART- A(10x2=20Marks)**  
(Answer all Questions)

Q.No	Questions	Marks	CO	BL
1	What is equipment management?	2	CO1	BL2
2	How do you calculate the cost of fueling of construction equipment?	2	CO1	BL3
3	List some of the earth moving equipment used in the construction industry.	2	CO2	BL2
4	Define the term "cycle time".	2	CO2	BL1
5	Distinguish between hydraulic and mechanical dredger.	2	CO3	BL3
6	Draw the line sketch of mobile cranes and mark the different features.	2	CO3	BL2
7	How do you choose the crushers for different applications?	2	CO4	BL2
8	What are asphalt plants?	2	CO4	BL1
9	Write the safety parameter to be assured for operating aerial basket.	2	CO5	BL4
10	How do you calculate the weight of the forklift?	2	CO5	BL5

**PART- B(5x 13=65Marks)**  
(Restrict to a maximum of 2 subdivisions)

Q.No	Questions	Marks	CO	BL
11 (a)	A construction company buys a vibrator for Rs. 20,000. The vibrator has a lifetime of 4 years and a salvage value of Rs. 1500. What is the accumulated depreciation (D3) and book value (BV3) at the end of 3rd year by Sinking fund method, if annual interest rate is 9%?	13	CO1	BL3
<b>OR</b>				

11 (b)	A firm purchased a heat exchanger for Rs. 'V'. The salvage value of the heat exchanger after 9 years of service life is expected to be Rs. 'VS'. In which year, annual depreciation amount by sum-of-years-digits method will be equal to the annual depreciation by straight line method for the above available information?	13	CO1	BL3
12 (a)	Determine the output of a bulldozer having 300 H.P engine, fitted with S-type blade rated capacity of 6 cu.m. The dozer is employed for excavating hard clayey area with average haulage of 50 meters, on a ground with down slope of 10%. It has direct drive transmission, and its expected performance is 50 minutes per hour .	13	CO2	BL4
OR				
12 (b)	Estimate the hourly production in bulk (loose cubic metre) volume of a backhoe with bucket capacity 0.96 cu.m employed on excavation of a foundation four meters deep in hard digging soil. The excavated earth is to be loaded in waiting dump trucks, placed at a swing angle of 75 degrees. The expected performance efficiency is 83%.	13	CO2	BL4
13 (a)	Discuss the detailed procedure for tunneling work for a construction of metro rail track using tunnel boring machine with neat sketches.	13	CO3	BL2
OR				
13 (b)	Explain the different dewatering methods used in the construction site with neat and relevant sketches.	13	CO3	BL2
14 (a)	Write the step by step process involved in a aggregate production unit with any three equipment pictures and salient features.	13	CO4	BL3
OR				
14 (b)	Describe the importance of ready mix concrete units and its production diagram with neat sketches.	13	CO4	BL3
15 (a)	Discuss the different types of materials handling conveyors with their salient features and diagrams. .	13	CO5	BL1
OR				
15 (b)	Explain the following (i) Fork lift Trucks (7) (ii) aerial Basket (6)	13	CO5	BL1

**PART- C(1x 15=15Marks)**  
(Q.No.16 is compulsory)

Q.No	Questions	Marks	CO	BL
16.	How do you improve the efficiency of a ready mix concrete plant unit? Explain the various technical data required for calculating the efficiency of ready mix plant.	15	CO4	BL5

