Q.6		Attempt any two:						
	i.	Which vehicles are often preferred when working on soft or muddy soil? Explain it.	**5**	02	02	05	01
	ii.	Describe how the haul distance between excavation and dumping sites impacts the choice of equipment for an earth-moving operation.	**5**	02	02	05	01
	iii.	Explain the Manufacturer's Rated Capacity method to calculate the operating capacity of earth moving equipment.	**5**	02	02	05	01

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Total No. of Questions: 6 *Total No. of Printed Pages:4*

Enrollment No.....

Faculty of Engineering
End Sem Examination Dec 2024
AU3EL03 Earth Moving Equipments

Programme: B.Tech. Branch/Specialisation: AU

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.

			Marks	**BL**	**PO**	**CO**	**PSO**
Q.1	i.	What is the main purpose of a bulldozer in earth-moving operations? (a) To dig deep trenches (b) To remove large rocks (c) To push and spread soil or debris (d) To level surfaces precisely	**1**	01	01	01	01
	ii.	What is a backhoe primarily used for? (a) Lifting heavy objects (b) Digging and trenching (c) Leveling ground (d) Compacting soil	**1**	01	01	01	01
	iii.	Which type of vehicle is typically used in applications where high mobility on hard, flat surfaces is required? (a) Tracked vehicles (b) Off-road vehicles (c) Tyre vehicles (d) Crawler vehicles	**1**	01	01	02	01
	iv.	What is the primary function of track rollers in a tracked vehicle? (a) To support the weight of the vehicle (b) To provide suspension (c) To control vehicle steering (d) To increase ground clearance	**1**	01	01	02	01

v.	Which type of brake primarily uses friction to slow down the rotation of the wheels? (a) Disk brake (b) Engine brake (c) Hydraulic brake (d) Magnetic brake	**1**	01	01	03	01
vi.	In a hydraulic motor system, what is the function of the hydraulic pump? (a) To provide rotational force to the motor (b) To create pressure by moving hydraulic fluid (c) To reduce the speed of the hydraulic motor (d) To cool the hydraulic fluid	**1**	01	01	03	01
vii.	What is the most suitable machine for digging in hard, rocky soil? (a) Bulldozer (b) Scraper (c) Hydraulic excavator (d) Wheel loader	**1**	01	01	04	01
viii.	For short-distance material transport (less than 100 meters), which equipment is typically used? (a) Dump truck (b) Scraper (c) Motor grader (d) Dragline	**1**	01	01	04	01
ix.	In calculating the operating capacity of a loader, which of the following parameters is most critical? (a) Bucket size (b) Tyre pressure (c) Fuel tank capacity (d) Engine oil type	**1**	01	01	05	01
x.	When calculating the productivity of a bulldozer, which additional factor is often considered besides blade capacity and cycle time? (a) Ground conditions (b) Operator's experience (c) Engine oil capacity (d) Color of the machine	**1**	01	01	05	01

Q.2	i.	Describe one primary function of any two earth moving equipment.	**2**	01	01	01	01
	ii.	Why different types of earth-moving equipment are needed for various types of soil? Explain it.	**3**	02	01	01	01
	iii.	Which earth-moving equipment would be most suitable for sandy soil and why?	**5**	02	02	01	01
OR	iv.	List the different types of soil and explain it.	**5**	02	02	01	01
Q.3	i.	Write the advantages and disadvantages of type and traked vehicle.	**4**	02	01	02	01
	ii.	Explain the following- (a) Roller frames (b) Track rollers (c) Drive sprockets	**6**	02	02	01	01
OR	iii.	Explain the rubber spring suspension with diagram.	**6**	02	02	01	01
Q.4		Attempt any two:					
	i.	Explain the working of disk brake with diagram	**5**	02	01	03	01
	ii.	List the name of pump used in hydraulic brake and explain any one of the with diagram.	**5**	02	01	03	01
	iii.	Explain the working of hydraulic motors and cylinders with diagrams.	**5**	02	01	03	01
Q.5	i.	List three factors that influence the selection of earth-moving equipment for a construction project.	**3**	02	02	04	01
	ii.	Compare the effectiveness of tracked versus wheeled earth-moving equipment in sandy soil conditions.	**7**	02	02	04	01
OR	iii.	Which type of earth-moving equipment would be suitable to excavate and transport wet clay over a short distance, and why?	**7**	02	02	04	01

Marking Scheme
AU3EL03 (T) Earth Moving Equipments (T)

Q.1	i)	C) To push and spread soil or debris	**1**
	ii)	B) Digging and trenching	**1**
	iii)	C) Tyre vehicles	**1**
	iv)	A) To support the weight of the vehicle	**1**
	v)	A) Disk brake	**1**
	vi)	B) To create pressure by moving hydraulic fluid	**1**
	vii)	C) Hydraulic Excavator	**1**
	viii)	B) Scraper	**1**
	ix)	A) Bucket size	**1**
	x)	A) Ground conditions	**1**

Q.2	i.	Describe one primary function of any two-earth moving equipment.	**2**
		Two function 1 mark each	
	ii.	Why different types of earth-moving equipment are needed for various types of soil? Explain it.	**3**
		3 reasons 1 mark each	
	iii.	Which earth-moving equipment would be most suitable for sandy soil and why?	**5**
		Name of equipment 1 marks Why it is 4 marks	
OR	iv.	List the different types of soil and explain it.	**5**
		List 2 marks	
		Explanation 3 Marks	

Q.3	i.	Write the advantages and disadvantages of type and traked vehicle.	**4**
		2 Advantages 2 marks 2 Disadvantages 2 marks	
	ii.	Explain the following 2 marks each i) Roller frames ii) Track rollers iii) Drive sprockets	**6**
OR	iii.	Explain the rubber spring suspension with diagram.	**6**
		Diagram 2 marks Explanations 4 marks	
Q.4		Any Two	
	i.	Explain the working of disk brake with diagram	**5**
		Diagram 2 marks Working 3 marks	
	ii.	List the name of pump used in hydraulic brake and explain any one of the with diagram.	**5**
		List 2 marks Explanations 3 marks	
	iii.	Explain the working of hydraulic motors and cylinders with diagrams.	**5**
		Diagrams 2 marks Explanations 3 marks	
Q.5	i.	List three factors that influence the selection of earth-moving equipment for a construction project.	**3**
		Three factors 1 mark each	

ii. Compare the effectiveness of tracked versus wheeled earth-moving equipment in sandy soil conditions. **7**

Comparation 7 marks

OR iii. Which type of earth-moving equipment would be suitable to excavate and transport wet clay over a short distance, and why? **7**

Name and why it is 7 marks

Q.6 Attempt any two:

i. Which vehicles are often preferred when working on soft or muddy soil, explain. **5**

Explanation 5 marks

ii. Describe how the haul distance between excavation and dumping sites impacts the choice of equipment for an earth-moving operation. **5**

Explanation 5 marks

iii. Explain the Manufacturer's Rated Capacity method to calculate the operating capacity of earth moving equipment’s. **5**

Explanation 5 marks

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