

Total No. of Questions: 6

Total No. of Printed Pages:2

Enrollment No.....



Faculty of Engineering  
End Sem Examination May-2024  
AU3EL19 EV Charging Infrastructure

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.

- Q.1 i. When was the first electric car invented? **1**  
(a) 1830 (b) 1985  
(c) 1832 (d) 1945
- ii. Electric Vehicles are generally powered by \_\_\_\_\_. **1**  
(a) Aluminium batteries (b) Lead-acid batteries  
(c) Sodium batteries (d) Magnesium batteries
- iii. Which component in the DC generator produces a magnetic field? **1**  
(a) Stator (b) Commutator  
(c) Armature (d) Carbon brushes
- iv. Which component in alternator produces a magnetic field? **1**  
(a) Frame (b) Stator (c) Regulator (d) Rotor
- v. What are the key factors influencing the location of electric charging stations? **1**  
(a) Population density (b) Traffic Patterns  
(c) Accessibility (d) All of these
- vi. How does the design of electric charging networks vary for different scales of implementation? **1**  
(a) Local Neighbourhood Scale  
(b) City or Municipality Scale  
(c) Regional Scale  
(d) All of these
- vii. Public ownership of charging stations operated by? **1**  
(a) Government entities (b) Local leader  
(c) Private company (d) All of these

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- viii. What are the routine maintenance procedures for electric charging stations? **1**  
(a) Visual inspection (b) Functional testing  
(c) Electrical safety checks (d) All of these
- ix. Liquid-Cooled Cables are used in? **1**  
(a) Normal charging (b) Ultra-fast charging  
(c) Slow charging (d) All of these
- x. Grid integration play a role in. **1**  
(a) Normal charging  
(b) Ultra-fast charging  
(c) Automated charging processes  
(d) All of these
- Q.2 i. What is the importance of charging infrastructure for EV? **2**  
ii. Explain types of electric vehicle. **8**  
OR iii. What do you mean by hybrid vehicle? **8**
- Q.3 i. What are the benefits and challenges in wireless charging? **2**  
ii. Explain DC charging systems. **8**  
OR iii. Explain in detail AC charging systems. **8**
- Q.4 i. What are the emergency protocols in EV charging station? **2**  
ii. What are the urban charging station considerations? **8**  
OR iii. What are the rural charging station considerations? **8**
- Q.5 i. How will you ensure that EV charging station is providing good service to the customers? **2**  
ii. What are the routine maintenance procedures in EV charging station? **8**  
OR iii. What do you understand by public and private partnerships in EV charging infrastructure? **8**
- Q.6 i. What should be the future changes in charging infrastructure? **2**  
ii. What do you understand by ultra-fast charging? **8**  
OR iii. What are automated charging processes? Explain in detail. **8**

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## Marking Scheme

### EV Charging Infrastructure (T) - AU3EL10 (T)

Q.1	i)	When was the first electric car invented?	1
		c)1832	
	ii)	Electric Vehicles are generally powered by _____	1
		b) Lead-acid batteries	
	iii)	Which component in the DC generator produces a magnetic field?	1
		d) Carbon brushes	
	iv)	Which component in alternator produces a magnetic field?	1
		d) Rotor	
	v)	What are the key factors influencing the location of electric charging stations?	1
		d) All above.	
	vi)	How does the design of electric charging networks vary for different scales of implementation?	1
		d) All above.	
	vii)	Public ownership of charging stations operated by?	1
		a) Government entities.	
	viii)	What are the routine maintenance procedures for electric charging stations?	1
		d) All above.	
	ix)	Liquid-Cooled Cables are used in?	1
		b) Ultra-fast charging	
	x)	Grid integration play a role in.	1
		c) Automated charging processes	
Q.2	i.	What is the Importance of charging infrastructure for EV?	2
	ii.	Explain types of electric vehicle.	8
OR		Only Name	-2 mark
		Explanation	-6 mark
	iii.	What do you mean by hybrid vehicle?	8
		Definition	2-mark
		Explanation in detail	6-mark
Q.3	i.	What are the Benefits and challenges in wireless charging?	2
		Benefits	1-mark
		Challenges	1-mark
	ii.	Brife explain DC charging systems.	8
		Definition	2-mark
		Explanation in detail	6-mark
OR	iii.	Explain in detail AC charging systems.	8
		Definition	2-mark

		Explanation in detail	6-mark
Q.4	i.	What are the emergency protocols in EV charging station?	2
	ii.	What are the urban charging station considerations?	8
OR		Definition	2-mark
		Explanation in detail	6-mark
	iii.	What are the rural charging station considerations?	8
		Definition	2-mark
		Explanation in detail	6-mark
Q.5	i.	How will you ensure that EV charging station is providing good service to the customers.	2
	ii.	What are the routine maintenance procedures in EV charging station.	8
OR		Only Name	-2 mark
		Explanation	-6 mark
	iii.	What do you understand by Public and private partnerships in EV charging infrastructure.	8
		Definition	2-mark
		Explanation in detail	6-mark
Q.6	i.	What should be the changes future on charging infrastructure.	2
	ii.	What do you understand by ultra-fast charging?	8
OR		Definition	2-mark
		Explanation in detail	6-mark
	iii.	What are automated charging processes. Explain in detail?	8
		Definition	2-mark
		Explanation in detail	6-mark

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