Total No. of Questions: 6 *Total No. of Printed Pages:2*

Enrollment No.....

Faculty of Engineering

End Sem (Even) Examination May-2019

AU3CO14 Vehicle Body Engineering

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.

Q.1 i. The following vehicle is an example of station wagon: **1**
(a) Maruti Alto (b) Tata Indica
(c) Honda Mobilio (d) Hyundai Creta

ii. The panel below bottom of doors and supports the door are: **1**
(a) Sills (b) Pillers (c) Firewall (d) Cant Panel

iii. Following bus has capacity of max 35 passengers plus driver: **1**
(a) Micro Bus (b) Midi Bus (c) Mini Bus (d) Standard Bus

iv. The minimum width of a seat cushion measured from the vertical plane passing through the centre of that seating position is: **1**
(a) Seat Pitch (b) Seat Spacing
(c) Seat Base Height (d) Seat Width

v. Galvanizing is the process of coating steel with: **1**
(a) Aluminium (b) Nickel
(c) Magnesium (d) Zinc

vi. Following reacts to form the films and binds the pigments together to the surface of body: **1**
(a) Additives (b) Binders
(c) Thinners (d) None of these

vii. Angular oscillation of the vehicle about the longitudinal axis is called: **1**
(a) Yawing (b) Pitching (c) Rolling (d) None of these

viii. The pressure difference from top to bottom of the vehicle causes: **1**
(a) Profile Drag (b) Lift Drag
(c) Surface Drag (d) Interference Drag

ix. 'Head restraints' are an **1**
(a) Automotive style feature (b) Automotive safety feature
(c) Automotive performance feature (d) None of these

P.T.O.

x. Why 'Crumple Zones' are used in vehicles? **1**
(a) To improve the aerodynamics of a car
(b) To increase the engine performance
(c) To absorb the impact and safeguard the occupants in case of collision
(d) None of these

Q.2 i. List the importance of vehicle body engineering. **2**
ii. Define drip Moulding, Fenders and Cant panel of car. **3**
iii. Explain classification of passenger car with sketches. **5**
OR iv. Explain in detail various loads acting on vehicle body. **5**

Q.3 i. Define Single Deck and Articulated Bus. **2**
ii. Explain classification of bus bodies with sketches. **8**
OR iii. What are the parameters to be considered while designing driver's seat of a bus? **8**

Q.4 i. List the uses of FRP in vehicle body. **3**
ii. Explain the properties and usage of various body materials. **7**
OR iii. Explain painting process carried out for a car with sketch. **7**

Q.5 i. Define aerodynamics and drag force. **4**
ii. Explain various types of drag force and its contribution towards overall drag force on a vehicle. **6**
OR iii. Explain the constructional and operational details of wind tunnel. **6**

Q.6 Attempt any two:
i. Explain various trim items used in a car. **5**
ii. Briefly explain major and minor body repairs of a car. **5**
iii. Draw and explain typical window winding mechanism. **5**

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Marking Scheme
AU3CO14 Vehicle Body Engineering

Q.1	i.	The following vehicle is an example of station wagon: (c) Honda Mobilio		**1**
	ii.	The panel below bottom of doors and supports the door are: (a) Sills		**1**
	iii.	Following bus has capacity of max 35 passengers plus driver: (b) Midi Bus		**1**
	iv.	The minimum width of a seat cushion measured from the vertical plane passing through the centre of that seating position is: (d) Seat Width		**1**
	v.	Galvanizing is the process of coating steel with: (d) Zinc		**1**
	vi.	Following reacts to form the films and binds the pigments together to the surface of body: (b) Binders		**1**
	vii.	Angular oscillation of the vehicle about the longitudinal axis is called: (c) Rolling		**1**
	viii.	The pressure difference from top to bottom of the vehicle causes: (b) Lift Drag		**1**
	ix.	'Head restraints' are an (b) Automotive safety feature		**1**
	x.	Why 'Crumple Zones' are used in vehicles? (c) To absorb the impact and safeguard the occupants in case of collision		**1**
Q.2	i.	Any four importance of vehicle body engineering.		**2**
	ii.	Drip Moulding	1 mark	**3**
		Fenders	1 mark	
		Cant panel of car.	1 mark	
	iii.	Classification of passenger car	3 marks	**5**
		Sketches.	2 marks	
OR	iv.	Various loads acting on vehicle body.		**5**
Q.3	i.	Single Deck bus	1 mark	**2**
		Articulated Bus.	1 mark	
	ii.	Classification of bus bodies with explanation	4 marks	**8**
		Sketches	4 marks	
OR	iii.	Parameters to be considered while designing driver's seat of a bus		**8**
Q.4	i.	Uses of FRP in vehicle body.		**3**
	ii.	Properties of various body materials	3.5 marks	**7**
		Usage of various body materials	3.5 marks	
OR	iii.	Explanation of painting process	5 marks	**7**
		Sketch.	2 marks	
Q.5	i.	Aerodynamics	2 marks	**4**
		Drag force	2 marks	
	ii.	Types of drag force	5 marks	**6**
		Contribution towards overall drag force	1 mark	
OR	iii.	Wind tunnel		**6**
		Constructional	3 marks	
		Operational	3 marks	
Q.6		Attempt any two:		
	i.	Various trim items used in a car.		**5**
	ii.	Major and minor body repairs of a car.		**5**
	iii.	Typical window winding mechanism.		**5**
		Explanation	3 marks	
		Sketch	2 marks	

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