

Total No. of Questions: 6

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Enrollment No.....



Faculty of Engineering  
End Sem (Odd) Examination Dec-2022  
AU3CO11 Automotive Chassis Systems

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. A vehicle with all systems mounted without seats and interior is called- 1  
(a) Body (b) Frame  
(c) Chassis (d) Automobile
- ii. Identify the different types of joints used in chassis. 1  
(a) Welding, Riveting, Bolt (b) Adhesive  
(c) Butt joint (d) Lap joint
- iii. What term describes the ability of a vehicle to travel a curved path? 1  
(a) Cornering (b) Road holding  
(c) Road Isolation (d) None of these
- iv. What is a condition called when the vehicle will try to move away from its normal direction and to keep it on the right path there is need to steer a little? 1  
(a) Understeer (b) Oversteer  
(c) Reversibility (d) Irreversibility
- v. The main function of the tread pattern on tyre is that- 1  
(a) The tread grooves pass air between the tyre and road surface, thereby preventing tyre from overheating  
(b) The crests between the tread grooves absorb road noise  
(c) In wet conditions, the tread grooves expel water that is drawn between the tyre and road surface  
(d) The tread pattern protects the tyre's inner carcass from small stones and pieces of glass

P.T.O.

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vi.	In radial tyres-	1
	(a) One ply layer runs diagonally one way and another layer runs diagonally the other way	
	(b) All plies run parallel to one another and vertical to tyre bead	
	(c) Inner tubes are always used	
	(d) None of these	
vii.	The device that permits variation in the distance between the spring eyes of a leaf spring as the spring flexes is called-	1
	(a) Spring shackle (b) Spring leaf	
	(c) Spring U-bolt (d) Spring hanger	
viii.	Telescopic shock absorber consists of-	1
	(a) One chamber (b) Two chambers	
	(c) Three chambers (d) Four chambers	
ix.	Generally which type of brakes are used on the front wheels?	1
	(a) Drum brake (b) Disc brake	
	(c) Shoe brake (d) Double shoe brake	
x.	Pneumatic brakes are same as electrical brakes.	1
	(a) Yes both are concerned with electricity	
	(b) No, one deals with pressure and other with electricity	
	(c) Yes both deals with pressure	
	(d) None of these	
Q.2	i. Define chassis. Mention various functions of chassis frame.	2
	ii. Give comparison of conventional frame and frameless construction.	3
	iii. Explain types of chassis with suitable sketch.	5
OR	iv. Explain various types of frame sections used for chassis frame.	5
Q.3	i. What is the effect of king pin inclination?	2
	ii. Enlist all the types of steering gears and explain recirculating ball type steering gear in detail.	8
OR	iii. Explain power assisted steering.	8
Q.4	i. What are the different kind of loads (forces) acting on the axle and their effects?	3

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	ii.	Write the differences between full floating, semi-floating and quarter floating axle.	7
OR	iii.	Explain tubeless tyres with neat sketch in detail.	7
Q.5	i.	Explain purpose and types of suspension system.	4
	ii.	Explain in detail telescopic type shock absorber.	6
OR	iii.	What is an independent suspension? Explain the Mac Pherson strut type of independent suspension in detail.	6
Q.6		Attempt any two:	
	i.	Explain bleeding of brake with neat sketch.	5
	ii.	Explain the concept of leading shoe and trailing shoe.	5
	iii.	Write a short note on vacuum assisted brakes.	5

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**Marking Scheme**  
**AU3CO11 Automotive Chassis Systems**

Q.1	i)	A vehicle with all systems mounted without seats and interior is called (c) Chassis	<b>1</b>
	ii)	Identify the different types of joints used in chassis. (a) Welding, Riveting, Bolt	<b>1</b>
	iii)	What term describes the ability of a vehicle to travel a curved path? (a) Cornering	<b>1</b>
	iv)	What is a condition called when the vehicle will try to move away from its normal direction and to keep it on the right path there is need to steer a little? (a) Understeer	<b>1</b>
	v)	The main function of the tread pattern on tyre is that (c) In wet conditions, the tread grooves expel water that is drawn between the tyre and road surface	<b>1</b>
	vi)	In radial tyres (b) All plies run parallel to one another and vertical to tyre bead	<b>1</b>
	vii)	The device that permits variation in the distance between the spring eyes of a leaf spring as the spring flexes is called (a) Spring shackle	<b>1</b>
	viii)	Telescopic shock observer consists of (b) two chambers	<b>1</b>
	ix)	Generally which type of brakes are used on the front wheels. (b) Disc brake	<b>1</b>
	x)	Pneumatic brakes are same as electrical brakes. (b) No, one deals with pressure and other with electricity	<b>1</b>
Q.2	i.	Define Chassis. Mention various functions of chassis frame. 0.5 mark for each point (0.5 mark * 2)	<b>2</b>
	ii.	Give comparison of conventional frame and frameless construction 1 mark for each point (1 mark * 3)	<b>3</b>
	iii.	Explain types of chassis with suitable sketch. 2 marks for diagram 3 marks for types of chassis	<b>5</b>
OR	iv.	Explain various types of frame sections used for chassis frame. 1 mark for each type of frame	<b>5</b>

Q.3	i.	What is the effect of king pin inclination Minimum 2 points, 1 mark each	<b>2</b>
	ii.	Enlist all the types of steering gears and explain recirculating ball type steering gear in detail 3 marks for diagram 2 marks for types of steering gear 3 marks for theory	<b>8</b>
OR	iii.	Explain power assisted steering 3 marks for diagram 5 marks for description	<b>8</b>
Q.4	i.	What are the different kind of loads (forces) acting on the axle and their effects 3 marks for three different kinds of load	<b>3</b>
	ii.	Difference between full floating, semi-floating and quarter floating axle 5 points for 7 marks	<b>7</b>
OR	iii.	Explain tubeless tyres with neat sketch in detail 2 marks for diagram 2 marks for construction 3 marks for working	<b>7</b>
Q.5	i.	Explain purpose and types of suspension system. 2 marks for function 2 marks for types	<b>4</b>
	ii.	Explain in detail Telescopic type shock absorber. 2 marks for diagram 4 marks for construction and working	<b>6</b>
OR	iii.	What is an independent suspension? Explain the Mac Pherson strut type of independent suspension in detail. 1 mark for explanation of independent suspension 2 marks for diagram 4 marks for construction and working	<b>6</b>
Q.6		Attempt any two:	
	i.	Explain Bleeding of Brake with neat sketch. 2 marks for diagram 3 marks for working	<b>5</b>
	ii.	Explain the concept of leading shoe and trailing shoe 2 marks for diagram 3 marks for explanation	<b>5</b>

	iii.	Write a short note on vacuum assisted brakes. 2 marks for diagram 3 marks for construction and working	<b>5</b>
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