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Code No. : 16516 (C)

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD

B.E. (Mech. Engg.: CBCS) VI-Semester Main Examinations, January-2021

Automotive Chassis Components

(Elective-I)

Time: 2 hours

Max. Marks: 60

Note: Answer any **NINE** questions from **Part-A** and any **THREE** from **Part-B**

Part-A (9 × 2 = 18 Marks)

Q. No.	Stem of the question	M	L	CO	PO
1.	List out the types of cross sections used for conventional type of chassis frame	2	1	1	3
2.	What are the different materials used in making vehicle frame?	2	2	1	3
3.	Why the front axle is designed as I-section in the middle and the elliptical section at the ends?	2	1	2	3
4.	What is meant by steering error curve? What is its use in the design of steering linkages?	2	1	2	3
5.	What do you mean by front wheel drive?	2	1	3	1
6.	What are the functions of Propeller shaft?	2	1	3	1
7.	What do you mean by differential lock?	2	1	4	1
8.	What do you mean by three quarter floating rear axle?	2	1	4	1
9.	Explain the need of suspension system in the automobile?	2	2	5	1
10.	Compare the advantages of using coil spring over leaf spring	2	2	5	1
11.	Define the unitized frame body construction?	2	1	1	2
12.	Illustrate the Turning Radius?	2	2	2	1
Part-B (3 × 14 = 42 Marks)					
13. a)	Describe different types of chassis according to engine location with neat sketches	7	3	1	3
b)	Sketch and explain the salient features of a car frame.	7	3	1	3
14. a)	Explain castor, camber, and Toe-in Toe-out and king-pin inclination with neat Sketches.	7	3	2	3
b)	With neat diagram discuss about any one type of steering gear boxes.	7	3	2	3

15. a)	Explain the working principle of Hotchkiss Drive line mechanism with a neat sketch	7	3	3	3
b)	Explain the working of double reduction axle with a line diagram when both speed reductions are at the centre of the axle.	7	3	3	3
16. a)	Explain about the types of loads acting on rear axles	6	3	4	3
b)	Describe construction of different types of axle housings	8	2	4	3
17. a)	Explain the working of Independent front suspension system with a neat sketch	7	3	5	3
b)	Discus the constructional details of suspension springs	7	2	5	3
18. a)	Describe different methods of testing vehicle frames	7	3	1	5
b)	Describe the general arrangement of steering system with a simple diagram	7	2	2	3
19.	Answer any <i>two</i> of the following:				
a)	Explain about the effect of thrust and torque reactions in drive line of an automobile	7	3	3	1
b)	Explain the working principle of a Differential with a neat sketch	7	3	4	3
c)	Illustrate the pneumatic suspension system.	7	3	5	1

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	34.8
2	Knowledge on application and analysis (Level-3 & 4)	65.2
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	-
