Register Number:……..

KUMARAGURU
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GENERAL INSTRUCTIONS TO THE CANDIDATES

1. Candidates are instructed to answer the questions as per Bloom's Taxonomy knowledge level (K_1 to K_6)
2. Candidates are strictly instructed not to write anything in the question paper other than their roll number.
3. Candidates should search their pockets, desks and benches and handover to the Hall Superintendent/ Invigilator if any paper, book or note which they may find therein as soon as they enter the examination hall.
4. Candidates are not permitted to bring electronic watches with memory, laptop computers, personal systems, walkie-talkie sets, paging devices, mobile phones, cameras, recording systems or any other gadget / device /object that would be of unfair assistance to him / her.
5. Corrective measures as per KCT examination policies will be imposed for malpractice in the hall like copying from any papers, books or notes and attempting to elicit the answer from neighbours.

B.E DEGREE EXAMINATIONS: DEC 2015

(Regulation 2014)

Third Semester

AUTOMOBILE ENGINEERING

U14AUT301: Automotive Chassis

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Match list I with list II correctly and select your answer using the codes given below: CO1 [K_2]

List I	List II
A. Radius rod	i. Allows spring length to change
B. Shock absorber	ii. Decrease rolling
C. Stabilizer	iii. Torsion bar
D. Shackle	iv. Dissipate energy

	A	B	C	D
a)	3	4	2	1
b)	1	2	4	3

c) 2 4 3 1

d) 1 2 3 4

2. Which one of the following is correctly matched? CO2 [K_3]

a) Rim defect – Tread cracking b) Ply rating – Aspect ratio

c) Tyre size – 8.25 x 20 x WPR d) Wheel – Radial ply

3. Which one of the following is correctly matched? CO2 [K_2]

a) Universal joint – Constant velocity joint b) Slip joint - Constant velocity joint

c) Differential – Steering geometry d) Final drive – Turning device

4. Consider the following statements: CO2 [K_2]

The main objective(s) of suspension is (are)

I. To provide comfortable riding by minimizing road shocks.

II. To provide directional stability of vehicle when going straight ahead.

III. To enhance the life of vehicle's components.

Of the statements:

a) I and II are correct b) I alone is correct

c) II and III are correct d) I and III are correct

5. A typical front engine, front wheel drive vehicle has --- universal joints. CO1 [K_1]

a) Two b) One

c) Three d) Four

6. When a vehicle is cornering, the crown wheel is rotating at 450 rpm and the inner wheel is turning at 425 rpm. The speed of the outer wheel is CO3 [K_3]

a) 450 rpm b) 425 rpm

c) 475 rpm d) 467.5 rpm

7. Consider the following statements: CO3 [K_2]
Assertion (A): Vehicle directional stability is not good.
Reason (R): Caster angle is not properly adjusted.
Select the answer correctly:

a) (A) is true, but (R) is false b) (A) is true and (R) is also true

c) (A) is false, but (R) is true d) Both (A) and (R) are false

8. Multi axle vehicles are preferred to CO3 [K_3]

i) Increase the pay load ii) Meet the load per axle regulation

iii) Increase the GVW iv) Reduce the cost/ tone of weight moved

a) i), ii) and iii) are correct b) i), ii) and iv) are correct

c) i), iii) and iv) are correct d) ii), iii) and iv) are correct

9. Identify the correct sequence of brake system technology development. CO2 [K_4]

a) Pneumatic, hydraulic, ABS, EBS b) Pneumatic, ABS, hydraulic, EBS

c) Hydraulic, ABS, pneumatic, EBS d) Hydraulic, pneumatic, ABS, EBS

10. Assertion (A) : Zinc liners between the leaves are sometimes used in suspension. CO2 [K_2]
Reason (R) : Zinc liners prevent squealing.
Select the correct answer:

a) (A) is true, but (R) is false b) Both (A) and (R) are true

c) (A) is false, but (R) is true d) Both (A) and (R) are false

PART B (10 x 2 = 20 Marks)

(Answer not more than 40 words)

11. Enlist the various loads acting on the chassis frame. CO1 [K_1]

12. What is meant by center point steering? CO2 [K_2]

13. Differentiate between Hotchkiss and torque tube drives. CO2 [K_2]

14. Why special types of joints are needed for front wheel drive? Give typical name of special joints used. CO3 [K_4]

15. Mention the advantages of using full- floating axles. CO2 [K_2]

16. Why radial tyres are preferred over cross-ply tyres? CO2 [K_4]

17. What do you mean by telescopic shock absorbers? CO1 [K_2]

18. List out the functions of suspension system in a vehicle. CO1 [K_1]

19. Distinguish between leading and trailing shoes. CO2 [K_2]

20. State the needs for power and power-assisted braking systems. CO1 [K_2]

Answer any FIVE Questions:-
PART C (5 x 14 = 70 Marks)
(Answer not more than 300 words)

Q.No. 21 is Compulsory

21. Evaluate the differences between the Ackerman's steering system and Davi's steering system. CO2 [K_5]

22.	i) Describe the front engine-rear wheel drive layout with its merits and limitations.	(7)	CO1	[K_2]
	ii) Summarize the need and working of differential lock.	(7)	CO1	[K_2]
23.	Illustrate the constructional and working of semi-floating and three-quarter floating axles.		CO1	[K_4]
24.	Explain the working of hydro-elastic suspension springing system.		CO1	[K_3]
25.	Discuss the salient features of anti-lock braking system.		CO1	[K_3]
26.	Describe the different types of tyres and their constructional details.		CO2	[K_2]

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