



B.E DEGREE EXAMINATIONS: NOV/DEC 2022

(Regulation 2018)

Third Semester

AUTOMOBILE ENGINEERING

U18AUI3201: Automotive Chassis and Transmission

COURSE OUTCOMES

- CO1: Outline the construction details of various automotive Chassis Frame layouts.**
CO2: Explain the functions of steering system and components
CO3: Select the appropriate transmission system for various automobiles
CO4: Demonstrate the working principle of final drive system.
CO5: Choose suitable axles, wheels and tyres for a vehicle.
CO6: Distinguish various types of suspension system & brakes.

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

(Answer not more than 40 words)

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|--|-----|-------------------|
| 1. List out the loads acting on the chassis frame? | CO1 | [K ₂] |
| 2. Define Oversteer. | CO2 | [K ₂] |
| 3. Why does torque converter called a fluid coupling device? | CO3 | [K ₂] |
| 4. State the function of the propeller shaft | CO4 | [K ₂] |
| 5. What is Stub Axle? | CO4 | [K ₂] |
| 6. What is a tyre speed rating? | CO5 | [K ₁] |
| 7. How does a Torsion bar suspension works? | CO6 | [K ₂] |
| 8. Define braking efficiency | CO6 | [K ₂] |
| 9. How does castor angle affect steering? | CO2 | [K ₃] |
| 10. State the purpose of differential locks. | CO4 | [K ₂] |

Answer any FIVE Questions:-

PART B (5 x 16 = 80 Marks)

(Answer not more than 400 words)

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|---|----|-----|-------------------|
| 11. a) Show the following steering geometries schematically and explain | 12 | CO2 | [K ₃] |
| i). Camber, | | | |
| ii). King Pin Inclination, | | | |
| iii). Toe-in & Toe-out, | | | |

	iv).	Slip Angle.			
	b)	Define Ackermann's principle of steering with the help of its layout.	04	CO2	[K ₃]
12.	a)	Show the parts of a Hotchkiss Drive with a simple line diagram and explain the functioning of each part. Also, explain the working principle of the Hotchkiss Drive.	16	CO3	[K ₃]
13.	a)	Explain the various loads acting on the rear axle.	10	CO4	[K ₂]
	b)	Explain the tyre specification 205/65R15 95H.	06	CO5	[K ₂]
14.	a)	Draw the structure of a radial tyre and explain its construction	10	CO5	[K ₂]
	b)	Explain the functions and requirement of suspension system.	06	CO6	[K ₂]
15.	a)	Distinguish between disc brake and a drum brake for its merit and demerit.	08	CO6	[K ₂]
	b)	Explain the working of Pneumatic brake system with required diagram.	08	CO6	[K ₂]
16.	a)	How does a regenerative braking system work?	08	CO6	[K ₂]
	b)	What is Continuously Variable Transmission (CVT)? Draw the layout of CVT and explain its working mechanism.	08	CO3	[K ₂]
