

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– VI (NEW) EXAMINATION – WINTER 2021****Subject Code:3161920****Date:04/12/2021****Subject Name:Automobile Engineering****Time:10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) Draw vehicle layouts in Automobile of Front engine rear wheel drive.	03
	(b) Write down function of suspension system.	04
	(c) Explain with a neat sketch the working of a synchromesh type gear box used in automobiles.	07
Q.2	(a) Define the words Frame, Chassis and Body of vehicle.	03
	(b) Write notes on (i) Torsion bar, (ii) Helper spring.	04
	(c) What is need of using a differential? Explain with a neat sketch construction and working of differential.	07
	OR	
	(c) Describe the construction and explain working of Ackermann steering mechanism with a neat sketch.	07
Q.3	(a) What is the function of propeller shaft? Also draw its figure.	03
	(b) Discuss the resistances acting on Automobile vehicles.	04
	(c) Explain double wishbone suspension system.	07
	OR	
Q.3	(a) Define following terms w.r.t to steering geometry: 1. Castor angle 2. Camber angle 3. Toe-in	03
	(b) Explain battery charging system.	04
	(c) What is ABS? List different components of ABS and explain ABS with neat sketch.	07
Q.4	(a) Differentiate Hotchkiss Drive and Torque Tube Drive.	03
	(b) Discuss relative merits and demerits of the tube and tubeless tyres for automotive use.	04
	(c) Write the short notes on hybrid car.	07
	OR	
Q.4	(a) Give detailed classification of automobile brakes.	03
	(b) Explain construction and working of telescopic type shock absorber.	04
	(c) Explain semi centrifugal clutch working with neat sketch.	07
Q.5	(a) Mention various electrical and electronics components used in vehicle with its symbols.	03

- (b) Explain the tire construction with neat sketch. **04**
- (c) Explain vehicle structure analysis by Simple Structural Surface (SSS) method. **07**

OR

- Q.5**
- (a) Explain wheel alignment and wheel balancing. **03**
 - (b) Explain the working of power steering. **04**
 - (c) Draw a simplified wiring circuit for the lighting system of car and discuss the same. **07**

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2022****Subject Code:3161920****Date:10/06/2022****Subject Name:Automobile Engineering****Time:10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

MARKS

- | | | | |
|------------|-----|---|-----------|
| Q.1 | (a) | What is automotive system? Classified the vehicle with respect its body types. | 03 |
| | (b) | Explain function of frame | 04 |
| | (c) | List the different component which included in chassis. Classify the chassis and explain functions of chassis. | 07 |
| Q.2 | (a) | Analyze the selection of body member cross sections. | 03 |
| | (b) | Discuss three types of resistances acting on Automobile vehicles. | 04 |
| | (c) | Draw the Four-wheel drive vehicle layout. State three advantages and three disadvantages of it. | 07 |
| | | OR | |
| | (c) | Write a short note on vehicle aerodynamics. | 07 |
| Q.3 | (a) | List advantages and disadvantages of telescopic shock absorber. | 03 |
| | (b) | Compare Drum and Disc types of brakes. | 04 |
| | (c) | Describe the construction and explain working of Ackermann steering mechanism with a neat sketch | 07 |
| | | OR | |
| Q.3 | (a) | Compare Hotchkiss drive with Torque tube drive. | 03 |
| | (b) | What is the function of propeller shaft? Also draw its figure. | 04 |
| | (c) | Explain the necessity of a differential in an automobile. Discuss in detail the construction and operation of the differential. | 07 |
| Q.4 | (a) | State the necessity of transmission in an Automobile vehicle | 03 |
| | (b) | Describe the construction of Leaf spring suspension system with neat sketch. | 04 |
| | (c) | Explain with a neat sketch the working of a Synchromesh mesh type gear box used in automobiles. | 07 |
| | | OR | |
| Q.4 | (a) | How automatic transmission works? | 03 |
| | (b) | Explain the working of power steering | 04 |
| | (c) | Describe construction and explain working of centrifugal clutch with neat sketch. | 07 |
| Q.5 | (a) | Define Braking Distance, Braking Efficiency, Slip Ratio. | 03 |
| | (b) | List any four types of lights used in modern vehicle and state their purpose | 04 |
| | (c) | What is ABS? List different components of ABS and explain ABS with neat sketch. | 07 |

OR

- | | | | |
|------------|------------|--|-----------|
| Q.5 | (a) | Explain tire designation. | 03 |
| | (b) | List any four types of electronic components of vehicle and state their use. | 04 |
| | (c) | Draw lighting circuit with all nomenclature and explain its components. | 07 |
