

Roll No																			
---------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



**PRESIDENCY UNIVERSITY  
BENGALURU**

**SET B**

**SCHOOL OF ENGINEERING  
END TERM EXAMINATION - JAN 2024**

**Semester :** Semester VII - 2020

**Course Code :** EEE3049

**Course Name :** Automotive Safety Systems

**Program :** B.Tech.

**Date :** 0J-JAN-2024

**Time :** 9:30AM - 12:30 PM

**Max Marks :** 100

**Weightage :** 50%

---

**Instructions:**

- (i) Read all questions carefully and answer accordingly.*
  - (ii) Question paper consists of 3 parts.*
  - (iii) Scientific and non-programmable calculator are permitted.*
  - (iv) Do not write any information on the question paper other than Roll Number.*
- 

**PART A**

**ANSWER ALL THE QUESTIONS**

**5 X 2M = 10M**

1. Mahendra XUV car has following specifications:

Length: 4695 mm

Width: 1890 mm

Height: 1755 mm

Wheelbase: 2750 mm

Ground clearance: 205 mm

Fuel tank capacity: 60 Litres

Kerb weight: 2040 kg

The car collided with another object when travelling with a speed of 50m/sec and came to rest in 120 Sec. Compute the energy associated with it.

(CO1) [Knowledge]

2. All the Vehicles manufactured in the country have to comply with relevant **Indian Standards (IS)** and Automotive Industry standards (AIS), suggest advanced active safety systems equipped in modern cars.

(CO2) [Knowledge]

3. What controls the central locking system in a car?

(CO3) [Knowledge]

4. Whats the purpose of the tyre pressure monitoring system?

(CO3) [Knowledge]

5. List the reasons for having proper Steering and mirror adjustment.

(CO4) [Knowledge]

## PART B

### ANSWER ALL THE QUESTIONS

5 X 10M = 50M

6. Volkswagen virtus has a kerb weight of 1275 kg has accelerated from 0kmph to 20kmph in 10 sec and the Car B with same kerb weight has accelerated from 20kmph to 40kmph in 8 sec. The change in speed in both cases are 20kmph only. Assume both the cars collided with a stationary object, analyse the impact and comment on energy associated in both the cars. Mention the reasons for the same.  
(CO1) [Comprehension]
7. Automobile Industries in India have taken all possible measures to equip safety features in car models like Altroz, Punch, Tiago, Tigor, and Tigor EV, accredited with GNCAP ratings of 4 and 5 stars too. As an engineer, Identify the active safety systems in above mentioned cars and describe the features in detail.  
(CO2) [Comprehension]
8. It is mandatory for all automobile manufactures in India to equip safety features in car models like Altroz, Punch, Tiago, Tigor, and Tigor EV, accredited with GNCAP ratings of 4 and 5 stars too. As an engineers, Identify the passive safety systems in above mentioned cars and describe the features in detail  
(CO2) [Comprehension]
9. List the types of collision avoidance assist systems.  
(CO3) [Comprehension]
10. What's the function of Automatic Climate Control and list the main 4 pros and cons of it.  
(CO4) [Comprehension]

## PART C

### ANSWER ALL THE QUESTIONS

2 X 20M = 40M

11. Electric vehicles (EVs) are becoming increasingly popular in India, and the government has introduced safety regulations specifically for EVs, mention two regulations of EVs.  
(CO3) [Application]
12. The new safety norms in India have introduced several mandatory safety features in cars to ensure the safety of passengers and pedestrians, mention 2 safety norms.  
(CO4) [Application]