Q. Code: 578343

Reg. No. | | | | | | | | | | | | | |

B.E / B.TECH. DEGREE EXAMINATIONS, MAY 2024

Sixth Semester

OE18106 – FUNDAMAMENTALS OF AUTOMOTIVE SAFETY AND MAINTENANCE

(Common to ALL Branches except Automobile Engineering)

(Regulations 2018 / 2018A)

TIME: 3 HOUR **MAX. MARKS**: 100

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO1	Students will be able to outline the basics of safety requirements and classification of various vehicle safety system.	**3**
CO2	Students will be able to discuss the working of different active safety equipment employed in a vehicle.	**3**
CO3	Students will be able to discuss the working of different passive safety equipment employed in a vehicle.	**3**
CO4	Students will be able to explain the importance of maintenance and general service of automotive engine components.	**3**
CO5	Students will be able to discuss the maintenance of automotive braking system and fault diagnosis of automotive electrical components using scan tool.	**3**

PART-A (10 x 2 = 20 Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	What are key implementation steps for automotive safety standard ISO 26262 in manufacturing processes?	**1**	**3**
2.	Identify the significance of crumple zone?	**1**	**2**
3.	List out the various active safety systems.	**2**	**2**
4.	Compare sensotronic braking system over brake by wire technology.	**2**	**3**
5.	How can LIDAR technology be utilized to enhance autonomous vehicle navigation and obstacle detection?	**3**	**2**
6.	How does the integration of collapsible steering systems improve automotive safety and reduce injury risks during collisions?	**3**	**3**
7.	Identify any four essential tools that are needed for carrying out the vehicle maintenance work.	**4**	**3**
8.	What fundamental information does a Diagnostic Trouble Code (DTC) provide about vehicle malfunctions in automotive diagnostics?	**4**	**2**
9.	Compare disc brake over drum brake on its maintenance part.	**5**	**3**
10.	Decode the DTC Code P 3002.	**5**	**3**

PART - B (5 x 14 = 70 Marks)

		Marks	CO	RBT LEVEL
11. (a)	List of the various active safety systems used in recent days automobiles and explain briefly about the same.	**(14)**	**1**	**2**

(OR)

(b)	Discuss the speed and acceleration characteristics of passenger compartment on impact.	**(14)**	**1**	**2**

12. (a)	With neat sketch explain the construction and working of the active safety system which detects if a loss of traction occurs among the car's wheels and automatically applies brakes to that traction lost wheel.	**(14)**	**2**	**3**

(OR)

(b)	Suggest a suitable braking system which can prevent possible collision, or reduce speed of the moving vehicle, prior to a collision with another vehicle, pedestrian or an obstacle of some sort.	**(14)**	**2**	**3**

13. (a)	Suggest the various active passive systems that could be mandated for the recent days automobiles and explain about the supplementary restraint system in detail with neat sketch.	**(14)**	**3**	**3**

(OR)

(b)	Suggest and explain in detail on how a car bumper can be designed considering the safety of the pedestrians.	**(14)**	**3**	**3**

14. (a)	Discuss in detail about the various points to be taken care in establishing an automotive service station or workshop with the help of a layout.	**(14)**	**4**	**3**

(OR)

(b)	Suggest the various maintenance you would prefer for your car’s engine before planning a long road trip of around 2,000 km.	**(14)**	**4**	**3**

15. (a)	How will you maintain the automotive battery and charging system for its reliable usage?	**(14)**	**5**	**2**

(OR)

(b)	What do you understood about OBDII? What are the significance of using OBDII and advantages of the same?	**(14)**	**5**	**2**

PART-C (1 x 10 = 10 Marks)

(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
16.	Suggest a safety feature that prevents wheels from locking to avoid skidding or to retain more control while skidding. Explain the same with the help of neat sketches.	**(10)**	**2**	**3**

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