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Question Paper Code: 31575

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Sixth Semester

Mechanical Engineering

ME 2354/ME 62/10122 ME 604 — AUTOMOBILE ENGINEERING

(Regulation 2008/2010)

(Common to PTME 2354 Automobile Engineering for B.E. (Part-Time) Fifth Semester Mechanical Engineering Regulation 2009)

Time: Three hours

Maximum: 100 marks

Answer ALL questions.

PART A — $(10 \times 2 = 20 \text{ marks})$

- 1. What is known as Unitary or monocoque construction in an automobile?
- 2. Write any two merits and demerits of horizontal engines?
- 3. State any four reasons due to which, the spark plug may fail to function properly.
- 4. What is known as valve overlap?
- 5. Why synchronizer is required in the automotive transmission system?
- 6. What is known as selective transmission?
- 7. Why is camber angle provided in steering system?
- 8. What causes vapour lock in a braking system?
- 9. What are the main components of a hybrid automobile?
- 10. State any four disadvantages of using hydrogen as fuel.

PART B - (5 × 16 = 80 marks)

- 11. (a) Write short notes on the following with respect to vehicle motion:
 - (i) Aerodynamic drag
 - (ii) Gradient resistance
 - (iii) Rolling resistance.

Or

(b) Explain front and rear wheel drive layout in detail with relevant sketches.

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	12.	(a)	(i) Enlist the merits and demerits of Electronic fuel injection system. (8)	
			(ii) Briefly explain the electronic diesel injection system with necessary controls. (8)	•
			Or	
		(b)	(i) Explain engine emission control system. (8)	
•			(ii) Explain a turbocharger with a neat sketch. (8)	
•	13.	(a)	Explain briefly the following:	
•		· · · · · · · · · · · · · · · · · · ·	(i) Conventional differential. (5)	
•		-	(ii) Power lock differential. (5)	•
	•		(iii) Double reduction type differential. (6)	
			\mathbf{Or}	•
		(b)	Describe the construction and working of an over drive with a neat sketch and list out its advantages.	
	14.	(a)	Write short note on	
	•	•	(i) Steering gear mechanisms	
			(ii) Steering geometry	
			(iii) Power steering.	
			\mathbf{Or}	•
		(b)	(i) Compare and contrast Pneumatic and hydraulic braking systems. (6)	
			(ii) Explain the elements, types and stages of a suspension system. (10)	•
·	15.	(a)	Explain in detail about the electrical vehicle system with a block diagram.	
		•	\mathbf{Or}	
		(b)	Explain the modifications required in SI and CI engines to employ alternate fuels to produce on par performance, combustion and emission characteristics of conventional engines.	
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