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Reg. No.:
Question Paper Code: 20818
B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.
Sixth Semester
Mechanical Engineering
ME 6602 — AUTOMOBILE ENGINEERING
(Common to : Mechanical Engineering (Sandwich)/Mechatronics Engineering/Robotics and Automation Engineering)
(Regulations 2013)
Time: Three hours Maximum: 100 marks
Answer ALL questions.
PART A — $(10 \times 2 = 20 \text{ marks})$
List down the various aerodynamic forces and moments acting on a vehicle in motion.
2. Write the need of using I - Cross section in connecting rod design.
3. Write the expansion of WGT type turbocharger and write the significance of it.
4. Compare the differences between MPFI and GDI systems. (Any four points)
5. Mention the need of using an overdrive in two wheelers.
6. Write down the importance of using slip joints in the driveline of a vehicle.
7. Differentiate between passive and semi-active suspension systems.
8. Enumerate any two merits of using full floating front axle.
9. Define "Bio-fuel" with any one example.
10. Sketch the layout of a parallel - configured electric vehicle.

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(b) Explain about the construction and operation of a variable valve timi mechanism adopted in an IC engine. (1  12. (a) Elaborate about the working of a Rotary Distributor type Diesel Injection system with a neat sketch	ont (13)
Or  (b) Explain about the construction and operation of a variable valve timi mechanism adopted in an IC engine.  (1)  (1)  (2)  (3)  (4)  (5)  (6)  (7)  (7)  (8)  (9)  (9)  (1)  (1)  (1)  (1)  (1)  (1	
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System with a near cycich	ing (13)
	ion 13)
Or	
(b) (i) With the aid of a cutaway sketch explain about the working of	
three-way catalytic converter used in vehicles.	(9)
(ii) Write down the various chemical reactions relevant to emissic control in a three-way catalytic converter.	ion (4)
13. (a) (i) Enumerate the need of a transmission system in an automobi (Any four points).	oile (4)
(ii) Write short notes on any one positive displacement type clutch use	
Or	100
(b) Enumerate the components used and brief about their functions in Torque Tube drive configuration. Write a neat sketch. (1	13)
14. (a) With relevant sketches brief about the construction of the followir steering gear boxes.	ng
(i) Recirculating Ball type.	(7)
(ii) Rack and Pinion type	(6)
Or	
(b) With a simple block diagram, analyze the working of a typical traction control system used in passenger cars. (1:	on (3)
15. (a) Discuss about the challenges faced in production and storage of Hydroge gas.	en (3)
Or	
(b) With aid of a simple sketch, discuss about the working of a Solid Oxid fuel cell.	
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		D. Dom G			
	= 15 marks)	PART C — (1 × 15			
wind tunnel in a 10 m and 1.65 m	erimentally in a larged idth of the car are considered acting on the car	amic drag coefficien be determined exper- . The height and will lf the horizontal for ate the total aerodyn as 1.2 kg/m <sup>3</sup> .	full-scale test.	6. (a)	16.
		Or			
car available in on the suitability (15)	ons of any one electrople of it and commen	echnical specification to the working princi in India.	Express the to India. Describe to adopt EVs i	(b)	
					Co. Service
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