## POLYTECHNIC, B.E/B.TECH, M.E/M.TECH, MBA, MCA & SCHOOL

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	Reg. No. :
	Question Paper Code: 90844
	B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2022.
	Sixth/Eighth Semester
	Mechanical Engineering
	ME 8091 – AUTOMOBILE ENGINEERING
	(Common to : Mechanical Engineering (sandwich) / Mechatronics Engineering / Robotics and Automation)
	(Regulations 2017)
T	ime: Three hours Maximum: 100 marks
	Answer ALL questions.
1. 2.	What is integral body construction?  Mention the significance of camshaft.
3.	List any two merits of a capacitive ignition system.
4.	State the main function of a turbocharger.
5.	What is wet type multi-plate clutch?
6.	Sketch a differential and identify the associated components.
7.	Compare and contrast between toe-in and toe-out.
8.	Write any two merits of an independent suspension system.
9.	What is the composition of Compressed Natural Gas?
	0. Why does hydrogen in a liquid form stored in cryogenic temperatures?
1	
10	PART B — (5 × 13 = 65 marks)
	PART B — (5 × 13 = 65 marks)  1. (a) With aid of a neat layout, describe the constructional details and power flow of a front-engine all-wheel-drive vehicle.
	(a) With aid of a neat layout, describe the constructional details and power
	<ol> <li>(a) With aid of a neat layout, describe the constructional details and power flow of a front-engine all-wheel-drive vehicle.</li> </ol>
	<ol> <li>(a) With aid of a neat layout, describe the constructional details and power flow of a front-engine all-wheel-drive vehicle.         Or         (b) With aid of an illustrative sketch, describe the working principle of the     </li> </ol>
	<ol> <li>(a) With aid of a neat layout, describe the constructional details and power flow of a front-engine all-wheel-drive vehicle.         Or         (b) With aid of an illustrative sketch, describe the working principle of the     </li> </ol>

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 (a) With aid of a neat sketch, explain the constructional details and working principle of a Gasoline Direct Injection system.

Or

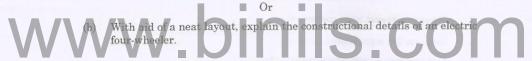
- (b) With aid of a neat sketch, explain the constructional details and working principle of a Common Rail Direct Injection system.
- 13. (a) With aid of an illustrative sketch, elaborate upon the constructional details and working principle of a 3-element torque converter used in automatic vehicles.

Or

- (b) With aid of an illustrative sketch, elaborate upon the functions of a Hotchkiss type to rear drive and its associated components.
- (a) With aid of a relevant sketch, explicate the working principle of a Hydraulic Power-assisted steering system.

Or

- (b) With aid of a relevant sketch, explicate the working principle of an Electronic Brakeforce Distribution system.
- 15. (a) Summarize any three techniques of using alcohol in diesel engines.



PART C —  $(1 \times 15 = 15 \text{ marks})$ 

 (a) With aid of suitable sketches, explain the constructional details and working principle of an electromagnetic clutch.

Or

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(b) With aid of a suitable sketch, explain the constructional details and working principle of a 3 forward and 1 reverse speed constant mesh gearbox.

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