F G1198 Pages: 2

Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

SEVENTH SEMESTER B.TECH DEGREE EXAMINATION(S), MAY 2019

Course Code: ME463

Course Name: Automobile Engineering

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any three full questions, each carries 10 marks. Marks

1 a) Distinguish between supercharged engine and turbocharged engines with neat sketches. (6)

b) What is turbo lag, how can turbo lag be reduced in turbo charged engines? (4)

2 a) List out the functions of the following IC engine parts (6)

(i) Piston (ii) Piston ring (iii) Flywheel (iv) Connecting rod (v) Crankshaft (vi) Camshaft

b) What is the purpose of front wing and rear wing in F1 racing car? (4)

3 a) List out the factors affecting the maximum torque transmitting capacity of a friction clutch. (4)

b) With the help of a neat sketch explain the working of an overdrive unit used in automobiles. (6)

4 a) Explain the working of synchromesh gear box engaged in any gear using a neat diagram. (6)

b) List out the different resistive forces a vehicle must overcome to keep moving at different driving conditions. (4)

PART B

Answer any three full questions, each carries 10 marks.

5 a) Explain the working of rack and pinion steering mechanism with a neat sketch (6)

b) What are the advantages of power assisted steering system with the other systems? (4)

6 a) Derive for the perfect rolling condition in Ackerman steering mechanism with a neat sketch (6)

b) What is 'Under Steer' and 'Over Steer' in automobiles? (4)

7 a) Explain the features of McPherson Strut suspension system with a sketch (6)

b) What are the functions and advantages of independent suspension systems? (4)

8	a)	Illustrate the working of swing arm rear wheel drive independent suspension	(7)
	b)	Define (i) Suspension roll centres (ii) Suspension roll axis (ii) Body roll stiffness	(3)

PART C

Answer any four full questions, each carries 10 marks.

9	a)	Explain the working of Front disc brakes in an automobile with a sketch	(5)
	b)	Discuss the function & working of a Master cylinder assembly in brake system with a sketch	(5)
10	a)	Derive an expression for brake applied for the rear wheels and front wheels?	(6)
	b)	What are the desirable properties of brake pad materials?	(4)
11	a)	Explain the working of vacuum brakes with a neat sketch	(6)
	b)	What is the need of ABS?	(4)
12	a)	What is the effect of 'aerodynamic drag' on the efficiency of a vehicle	(5)
	b)	Discuss the effect of 'Negative lift' of aerofoil wings on vehicles	(5)
13	a)	Discuss on the need and function of a rear end spoiler in a vehicle	(5)
	b)	Explain on the concept of "Hatch back Drag'	(5)
14	a)	What are the methods to control the aerodynamic lift?	(5)
	b)	How under body height affect the aerodynamic lift and drag?	(5)

****