Question Paper

Exam Date & Time: 25-Nov-2019 (02:00 PM - 05:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

INTERNATIONAL CENTRE FOR APPLIED SCIENCES END SEMESTER THEORY EXAMINATIONS NOVEMBER2019 III SEMESTER B.sc. (Applied Sciences) in Engg. AUTOMOBILE ENGG. [IME 235 - S2]

Marks: 100

Duration: 180 mins.

Answer 5 out of 8 questions. Any missing data may be suitably assumed.

1)		Write short notes on vehicle resistance.	(5)
	A) B)	With a neat sketch explain the working principle of twin tube telescopic shock absorber.	(7)
	C)	Write short notes on wire wound and split skirt piston with neat sketches.	(8)
2)		With a neat sketch explain the working of thermosyphon cooling system.	(10)
	A) B)	With a neat sketch explain the working principle of epicyclic gear box system. List its four advantages.	(10)
3)		Draw a neat sketch of rotating armature type magneto ignition system.	(5)
	A) B)	List five differences between dry and wet liners.	(5)
	C)	Sketch and explain the working principle of electromagnetic fuel pump.	(10)
4)		With a neat sketch explain the working of fixed caliper disc brake.	(5)
	A) B)	Draw a neat labeled sketch of simple carburetor with compound jet provision.	(5)
	C)	Sketch and explain semi floating and fully floating rear axles.	(10)
5)		Draw a neat labeled sketch of crankshaft.	(5)
	A) B)	Draw a neat labeled sketch of poppet valve.	(5)
	C)	Sketch and explain the working principle of vacuum braking system.	(10)

- ⁶⁾ List any five advantages of air cooling system.
 - A) B)
- Sketch and explain the working of rack and pinion steering gear system. ⁽⁵⁾
- C) A car weighs 13KN and has a wheel base of 2.5 metres. The centre of gravity of the car is 1.2m in front of the rear axle and 800mm above the ground level. The car is having brakes on all four wheels. The coefficient of adhesion between the road and the wheel is 0.5. If the car is moving down at an incline of angle whose sine is equal to 0.1, calculate the distance at which it can be stopped while going at a speed of 50Km/hr. when only rear wheel brakes are used.
- ^{D)} With a neat sketch explain the working principle of wheel cylinder. ⁽⁵⁾
- ⁷⁾ With a neat sketch explain the working principle of centrifugal clutch. ⁽¹⁰⁾
 - A)
 B) With a neat sketch explain the working principle of torsion bar. List its two advantages and disadvantages.
- ⁸⁾ List any five differences between constant velocity joint and universal joint. ⁽⁵⁾
 - A)
 - B) A vehicle has pivot pins 1.75m apart. Length of each track arm is 0.25m and ⁽⁷⁾ track rod is behind front axle and is 1.45m long. Determine the wheel base which will give true rolling for all wheels when the vehicle is turning so that inner wheel stub axle is 50⁰ to the centerline of the vehicle.
 - C) Draw a neat labeled sketch of constant vacuum SU carburetor with full ⁽⁸⁾ throttle condition.

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(5)

(10)