Seat	No.:	Enrolment No	
South	<u>.</u>	GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER-VII • EXAMINATION – SUMMER 2013	_
Subject Code: 171902 Date: 24-05-20 Subject Name: Automobile Engineering			3
	e: 02 uction	2.30 pm - 05.00 pm Total Marks: 70 ns:	
	2.	Attempt all questions.  Make suitable assumptions wherever necessary.  Figures to the right indicate full marks.	
Q.1	(a)	Suspension system of a scooter is fitted with a helical coiled spring of free length155mm. Due to a road jerk of 500 N, it compresses to length of 105 mm. If coil diameter has to be 8 times wire diameter of spring, design the spring. The maximum shear stress should not exceed 65 N/ mm <sup>2</sup> . Take G=85 MPa calculate the spring stiffness and strain energy absorbed by it.	07
	(b)		07
Q.2	(a)	<ul> <li>Explain the following: <ol> <li>Resistance to the motion of the vehicle and power required for propulsion of the vehicle,</li> <li>Power required for acceleration and effect of different drives like front wheel/rear wheel/for wheel drive</li> </ol> </li> </ul>	07
	<b>(b)</b>	Compare the following  i. Conventional frame with semi integral frame and unit frame.  ii. Bias ply tyre and radial tyre.  OR	07

Q.3 (a) Explain following terms: pitching and rolling, bouncing and yawing, sprung 07 and unsprung weight, soft and hard suspension.

(a) With neat sketch explain construction and working of Master cylinder.

(b) Explain the mechanism of working of cooling water temperature gauge and 07

OR

(b) Explain the effect of various factors on the performance of a tyre. In respect, 07

justify the importance of tyre rotation.

Worm and nut type steering gear,

Layout of compressed air brake system

Different types of stub axles,

**(b)** Draw neat sketches of following:

Ball joint,

i.

ii.

iii.

iv.

**Q.3** 

07 07 lubricating oil pressure gauge.

Q.4	(a)	Compare the following	07
		i. Cone clutch and Single plate clutch	
		ii. Synchromesh and Constant mesh gear box	
	<b>(b)</b>		07
		scrub radius, camber.  OR	
Q.4	(a) (b)	With neat sketch explain construction and working of shock absorber. Sketch typical wiring diagram of modern car and explain function of each component briefly.	07 07
Q.5	(a) (b)	With neat sketch explain construction and working of lead acid battery. Explain following terms and their salient features: servo brakes, booster brakes, anti lock brakes, anti skid brakes.	07 07
		OR	
Q.5	(a)	Explain briefly the troubles and repair of engine part relating to cylinder head /cylinder block, crankshaft assembly	07
	<b>(b)</b>	Write brief notes	07
		i. Electric vehicle	
		ii. Motor vehicle act	

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