

# C.U.SHAH UNIVERSITY

## Summer Examination-2018

**Subject Name: Automobile Engineering**

**Subject Code: 4TE06AEN1**

**Branch: B.Tech (Mechanical)**

**Semester: 6**

**Date: 04/05/2018**

**Time: 02:30 To 05:30**

**Marks: 70**

**Instructions:**

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

- Q-1      Attempt the following questions:      (14)**
- a)** Incorrect steering axis inclination (S.A.I.) causes 1
- A. tendency to assume toe-out orientation
- B. generation of a braking effect at tight corners
- C. poor recovery of the steering wheel after making a turn
- D. the vehicle to pull to the side of lesser inclination
- b)** In radial tires 1
- A. one ply layer runs diagonally one way and another layer runs diagonally the other way
- B. all plies run parallel to one another and vertical to tire bead
- C. inner tubes are always used
- D. none of these
- c)** The effect of having excess camber is 1
- A. excessive steering alignment torque      B. hard steering
- C. too much traction      D. uneven tire wear
- d)** The operation of removing trapped air from the hydraulic braking system is known as 1
- A. trapping      B. tapping
- C. bleeding      D. cleaning
- e)** The tilting of the front wheels away from the vertical, when viewed from the front of the car, is called 1
- A. camber      B. caster
- C. toe-in      D. toe-out
- f)** The main function of the tread pattern on tire is that 1
- A. the tread grooves pass air between the tire and road surface, thereby preventing tire from overheating
- B. the crests between the tread grooves absorb road noise
- C. in wet conditions, the tread grooves expel water that is drawn between the tire and road surface
- D. the tread pattern protects the tire's inner carcass from small stones and pieces of glass
- g)** The component that connects the steering rack to the knuckles is 1
- A. tie-rod      B. sector gear
- C. pivot      D. spline
- h)** The main task of a battery in automobiles is to 1



- A. supply electricity to the alternator  
 B. act as a reservoir or stabilizer of electricity  
 C. supply electricity to the vehicle's electrical system at all times while the engine is running  
 D. supply a large amount of power to turn the starter motor when the engine is being started
- i) The function of antilock brake system (ABS) is that is 1  
 A. reduces the stopping distance  
 B. minimizes the brake fade  
 C. maintains directional control during braking by preventing the wheels from locking  
 D. prevents nose dives during braking and thereby postpones locking of the wheels
- j) A worm gear is used as the pinion for the rack and pinion type of steering gearbox, because it 1  
 A. improves steering comfort when steering wheel is turned to effect small changes in the direction of forward motion  
 B. allows the steering wheel to be turned by a greater amount when steering  
 C. makes the steering more responsive  
 D. reduces the amount of kick-back for large steering angles
- k) Which part of the automobile tire is subjected to greatest flexing action? 1  
 A. Bead B. Side wall  
 C. Shoulder D. Tread
- l) The correct flow of power through the drive train is 1  
 A. engine – drive shafts - clutch – main shaft - countershaft - final driven gear - wheels  
 B. engine - clutch – main shaft - countershaft - final driven gear – drive shafts - wheels  
 C. engine - clutch - countershaft – main shaft - final driven gear – drive shafts - wheels  
 D. engine – main shaft - countershaft - clutch - final driven gear – drive shafts - wheels
- m) Two advantages of using helical gears rather than spur gears in a transmission system are 1  
 A. strength and cost B. strength and less end thrust  
 C. noise level and strength D. noise level and economy
- n) The main function of a master cylinder is to 1  
 A. adjust the extent of brake pedal free play  
 B. boost the force applied to brake pedal  
 C. convert brake pedal force into hydraulic pressure  
 D. ensure that all the wheel brakes are supplied with the same amount of fluid pressure

**Attempt any four questions from Q-2 to Q-8**

- Q-2 Attempt all questions (14)**  
 a) With neat sketch explain any two types of drives. 7  
 b) With neat sketch explain construction and working of multi plate clutch. 7
- Q-3 Attempt all questions (14)**  
 a) Classify automobiles. 7  
 b) With neat sketch explain construction and working of torque converter also draws the performance curve. 7
- Q-4 Attempt all questions (14)**  
 a) With neat sketch explain about conventional frame and also draw the different frame 7



	sections.	
b)	With neat sketch explain about principle of differential.	7
<b>Q-5</b>	<b>Attempt all questions</b>	<b>(14)</b>
a)	With neat sketch explain construction and working of synchromesh gear box.	7
b)	With neat sketch explain about under steer and over steer.	7
<b>Q-6</b>	<b>Attempt all questions</b>	<b>(14)</b>
a)	With neat sketch explain about air suspension.	7
b)	With all major components explain about electrical car layout.	7
<b>Q-7</b>	<b>Attempt all questions</b>	<b>(14)</b>
a)	With neat sketch explain about layout and components of hydraulic brake.	7
b)	Explain about wheel and tire trouble shooting.	7
<b>Q-8</b>	<b>Attempt all questions</b>	<b>(14)</b>
a)	Explain carcass types with neat sketch	7
b)	What is CVT? Describe its principle of working with neat sketch. Also discuss its advantages and disadvantages.	7

