

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV • EXAMINATION – SUMMER • 2014****Subject Code: 140202****Date: 25-06-2014****Subject Name: Fundamental of Automobile Systems****Time: 10:30 am - 01:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1 (a)** Give function of following components of automobile vehicles: **07**
i. Engine ii. Flywheel iii. Clutch iv. Transmission v. Universal joints
vi. Propeller shaft vii. Differential.
- (b)** List various vehicle layouts and explain any one of them. **07**
- Q.2 (a)** Explain construction of chassis frame with figure. **07**
- (b)** i. Why we do not use CNG conversion kit with diesel engine vehicles? **02**
ii. Classify automobile engines based on various aspects. **05**
- OR**
- (b)** i. Which are the basic sources of Bio-diesel? **02**
ii. Write advantages and limitations of Bio-diesel over petroleum diesel. **05**
- Q.3 (a)** Draw neat sketch of 3 forward and 1 reverse speed constant mesh gear box and explain how top and reverse gear are obtained. **07**
- (b)** What are the functions of clutch? Classify automobile clutches. **07**
- OR**
- Q.3 (a)** How automatic transmission works? Explain continuous variable transmission with neat sketch. **07**
- (b)** Explain construction and working of any one type of clutch used in automobile vehicle with neat sketch. **07**
- Q.4 (a)** Define following terms related to performance of automobile vehicle: **07**
i. Air resistance ii. Road resistance iii. Grade resistance iv. Tractive effort
v. Gradiability vi. Drawbar pull vii. Over turning speed.
- (b)** Explain construction and working of internal expanding shoe brake with its layout sketch. **07**
- OR**
- Q.4 (a)** Draw layout of single line hydraulic braking system and explain its working principle. **07**
- (b)** What is requirement of divided propeller shaft? Explain construction of various types of divided propeller shafts. **07**
- Q.5 (a)** Decode 10.00 G-20 for automobile wheel. Draw various tread patterns of automobile tyre. **07**
- (b)** What are the causes of following actions/conditions related to steering geometry on automobile vehicle performance? **07**
i. Camber ii. Caster iii. Toe-in and Toe-out iv. King-Pin inclination
- OR**
- Q.5 (a)** Explain construction of three-quarter-floating axle with figure. **07**
- (b)** Write requirement of suspension system in automobile vehicles. Explain construction and working of McPherson strut suspension. **07**
