

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER- VII (New) EXAMINATION – WINTER 2019

Subject Code: 2170204

Date: 03/12/2019

Subject Name: Vehicle Testing & Homologation

Time: 10:30 AM TO 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) Define following terms. **03**
 (1) ARAI (2) CMVR (3) Vehicle vibration
- (b) Define Category M and Category N vehicle as per IS and AIS standard? **04**
- (c) A Gasoline engine working on 4-stroke develops a break power of 22 kW. A Morse Test was carried out on this engine and the brake power (kW) obtained when cylinder made inoperative by short circuiting. The spark plug are 14.9, 14.3, 14.8 and 14.5 respectively and Engine running at 3000 RPM. Engine Bore is 80 mm and stroke 90 mm. Find Indicated Power, Mechanical efficiency and BMEP when all cylinders are firing. **07**
- Q.2** (a) Explain Willians line method. **03**
 (b) Explain Eddy current dynamometer with neat sketch. **04**
 (c) Explain infrared gas analyzers **07**
- OR**
- (c) Explain Orsat apparatus in detail with neat sketch. **07**
- Q.3** (a) Explain fundamental of acoustic. **03**
 (b) Divide aerodynamic noise in three part and explain it. **04**
 (c) Explain noise control methods and Pass by Noise testing method with required figure. **07**
- OR**
- Q.3** (a) Which are the adjustment factors for ambient condition, considered while IC engine testing **03**
 (b) Explain tyre and road condition and traffic condition on fuel economy **04**
 (c) Explain hill climbing, handling and ride characteristics. **07**
- Q.4** (a) Enlist the requirement of model for wind tunnel testing of vehicle. **03**
 (b) Explain how roll over test is carried out? **04**
 (c) Explain wheel alignment testing **07**
- OR**
- Q.4** (a) How to evaluate steering effort of an automotive vehicle? **03**
 (b) Differentiate road testing of vehicle and laboratory testing of vehicle based on any four aspects. **04**
 (c) Explain two wheel & four wheel testing on chassis dynamometers **07**
- Q.5** (a) Explain crash test, seatbelt test and airbag test. **03**
 (b) Differentiate safety system of automobile. **04**
 (c) Explain Head lamp alignment test. **07**
- OR**
- Q.5** (a) Write a name of basic measurement parameter. **03**
 (b) Difference between active safety and passive safety. **04**
 (c) Explain testing standards like; AIS testing standards, Euro Standards, SAE standards. **07**
