

**GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE - SEMESTER–VI EXAMINATION – SUMMER 2025**

**Subject Code: 3160214**

**Date: 26-05-2025**

**Subject Name: Vehicle Testing and 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.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1**
- |     |  |           |
|-----|--|-----------|
| (a) | What is homologation? Justify the need of automotive homologation.               | <b>03</b> |
| (b) | Define Category M and Category N vehicle as per IS and AIS standard?             | <b>04</b> |
| (c) | Which are the good habits of driving, the driver should have? Explain in detail. | <b>07</b> |

- Q.2**
- |     |  |           |
|-----|--|-----------|
| (a) | Define: (1) Dynamometer (2) Brake Power (3) Flue Gases           | <b>03</b> |
| (b) | Describe measurement of IHP.                                     | <b>04</b> |
| (c) | Classify dynamometer. Explain hydraulic dynamometer with sketch. | <b>07</b> |

**OR**

- |     |   |           |
|-----|---|-----------|
| (c) | Explain construction and working of ORSAT apparatus method with neat sketch | <b>07</b> |
|-----|---|-----------|
- Q.3**
- |     |   |           |
|-----|---|-----------|
| (a) | Demonstrate gradability test.                                 | <b>03</b> |
| (b) | What is Turning radius? Explain turning circle diameter test. | <b>04</b> |
| (c) | Explain steering effort test.                                 | <b>07</b> |

**OR**

- Q.3**
- |     |  |           |
|-----|--|-----------|
| (a) | Write short note on side slip tester.                    | <b>03</b> |
| (b) | Describe dynamic wheel balancing.                        | <b>04</b> |
| (c) | Explain four wheel chassis dynamometer with neat sketch. | <b>07</b> |

- Q.4**
- |     |   |           |
|-----|---|-----------|
| (a) | Explain fundamental of acoustic.                            | <b>03</b> |
| (b) | Illustrate pass by noise test.                              | <b>04</b> |
| (c) | Explain various sources of noises in an automobile vehicle. | <b>07</b> |

**OR**

- Q.4**
- |     |   |           |
|-----|---|-----------|
| (a) | Differentiate active safety and passive safety. | <b>03</b> |
| (b) | Explain effect of noises on human being.        | <b>04</b> |
| (c) | Explain four wheel alignment testing procedure. | <b>07</b> |

- Q.5**
- |     |   |           |
|-----|---|-----------|
| (a) | What do you mean by EURO standards and AIS standards?   | <b>03</b> |
| (b) | Explain ISO 26262 standards for functional safety of electrical and/or electronic systems in automobiles. | <b>04</b> |
| (c) | Explain SHED test on chassis dynamometer.   | <b>07</b> |

**OR**

- Q.5**
- |     |   |           |
|-----|---|-----------|
| (a) | Explain SAE standard.                     | <b>03</b> |
| (b) | Explain headlight beam alignment testing. | <b>04</b> |
| (c) | Explain in brief: AIS – 038 standards.    | <b>07</b> |