GUJARAT TECHNOLOGICAL UNIVERSITY

BE-6 SEMESTER – OLD PAPER – S22 TO W25 – QUESTION BANK

Subject Name & Code:

VEHICLE TESTING AND HOMOLOGATION (3160214)

Unit 1: Introduction to Vehicle Testing and Homologation

Repeated Questions:

1. What is homologation? Justify the need of automotive homologation. (S25 - Q1a, 03 marks)
   (Also appears in: S22 - Q1a, W23 - Q1a, S23 - Q1a, W22 - Q1a)
2. Explain the need of vehicle testing and homologation. (W25 - Q1b, 04 marks)
   (Also appears in: W22 - Q1a, S24 - Q1a)
3. Explain AIS-037 in detail. (S24 - Q1c, 07 marks)
   (Also appears in: S23 - Q1c, W22 - Q3c, W25 - Q5a)
4. List the various testing and homologation centers across India. Also list the testing facilities available at each organization. (W23 - Q1b, 04 marks)
   (Also appears in: S24 - Q1b)

Other Important Questions:

1. What do you mean by homologation? (W25 - Q1a, 03 marks)
2. Explain Need of vehicle testing and homologation. (W25 - Q1b, 04 marks)
3. What are the types of approval? (S23 - Q1b, 04 marks)
4. Explain conformity of production test, COP period and COP testing. (S23 - Q1c, 07 marks)
5. Why to perform testing and Homologation for automotive? (S24 - Q1a, 03 marks)
6. Discuss about vehicle testing organization. (W24 - Q1b, 04 marks)
7. Define Category M and Category N vehicle as per IS and AIS standard? (S22 - Q1b, 04 marks)
8. Which are the good habits of driving, the driver should have? Explain it detail. (S22 - Q1c, 07 marks)
9. List the various Active and Passive safety systems in vehicle? (W25 - Q3a, 03 marks)
   (Also appears in: W23 - Q3a)

Unit 2: Engine, Fuel Systems and Emissions Testing

Repeated Questions:

1. Write Measurement of BHP, IHP, BSFC, Thermal Efficiency of IC engine with proper notation. (W25 - Q2b, 04 marks)
   (Also appears in: W22 - Q1b, W23 - Q5b)
2. Explain Spectroscopic methods. (W25 - Q4a, 03 marks)
   (Also appears in: S23 - Q2c OR, W22 - Q2c OR)
3. What is FIP calibrating? Explain FIP calibrating testing. (W25 - Q4c, 07 marks)
   (Also appears in: S23 - Q4c, W22 - Q4c)
4. Define: Dynamometer, Brake Power & Flue Gases. (W25 - Q3b, 04 marks)
   (Also appears in: S23 - Q2a, S22 - Q2a, W23 - Q3a)
5. Classify dynamometer. Explain hydraulic dynamometer with sketch. (W25 - Q3c, 07 marks)
   (Also appears in: S23 - Q2c, S22 - Q2c, W22 - Q4c, W23 - Q4c)
6. Describe measurement of IHP. (S23 - Q5b, 04 marks)
   (Also appears in: S22 - Q2b, W23 - Q3b)

Other Important Questions:

1. Explain working of rope brake dynamometer. (W25 - Q1c, 07 marks)
2. List the types of Dynamometers. (S24 - Q2a, 03 marks)
3. Define: (1) Brake Power (2) Indicated Power (3) Frictional Loss. (S24 - Q2b, 04 marks)
4. Explain with sketch Flame Ionization Detector equipment. (S24 - Q2c, 07 marks) OR
   Explain with neat sketch Non Dispersive Infrared equipment. (S24 - Q2c OR, 07 marks)
5. What is Emission test? Explain Emission test for CO and HC. (S23 - Q5c, 07 marks)
   (Also appears in: W22 - Q2c)
6. Explain Gas Chromatograph and Smoke meters. (S23 - Q3c, 07 marks)
   (Also appears in: W22 - Q3c)
7. Explain construction and working of ORSAT apparatus method with neat sketch. (W23 - Q3c, 07 marks)
   (Also appears in: S22 - Q2c OR)
8. Define dynamometer? Explain Eddy current dynamometer with sketch. (W24 - Q2c, 07 marks) OR
   Explain infrared gas analyzers with sketch. (W24 - Q2c OR, 07 marks)

Unit 3: Noise, Vibration and Harshness Testing

Repeated Questions:

1. State various noise sources from vehicle and explain wind noise. (S23 - Q2b, 04 marks)
   (Also appears in: W22 - Q2b, S24 - Q3a)
2. Explain pass by noise test. (S23 - Q3b, 04 marks)
   (Also appears in: S22 - Q3b, W24 - Q5b, W22 - Q5b)
3. Explain noise control methods in Vehicle Testing and Homologation. (W25 - Q3c, 07 marks)
   (Also appears in: W22 - Q3b)

Other Important Questions:

1. Classify various noise emits from the engine with reasons. (W25 - Q2c, 07 marks)
   (Also appears in: W23 - Q2c)
2. What does it mean by Squeak, Buzz and Rattle noise. (W25 - Q4c, 07 marks)
   (Also appears in: W23 - Q2b)
3. Explain fundamental of acoustic. (S23 - Q3a, 03 marks)
   (Also appears in: S22 - Q3a)
4. Write short note on side slip tester. (S23 - Q4a, 03 marks)
   (Also appears in: S22 - Q4a, W22 - Q3a)
5. Explain effect of noises on human being. (S23 - Q3b, 04 marks)
   (Also appears in: S22 - Q3b, W24 - Q4b)
6. Describe Noise, Vibration and Harshness. (S24 - Q3a, 03 marks)
   (Also appears in: W23 - Q2a)
7. Explain pass by noise testing method along with diagram. (S24 - Q3c, 07 marks)
8. Differentiate Air borne and Structure borne noise. (S24 - Q3b, 04 marks)
9. Explain with neat sketch brake squeal noise test method. (S24 - Q3c, 07 marks)
10. Explain various sources of noises in an automobile vehicle. (S22 - Q3c, 07 marks)
    (Also appears in: W24 - Q4c)
11. Explain Standard noise measurement methods. (W22 - Q4c, 07 marks)

Unit 4: Vehicle Performance Testing

Repeated Questions:

1. Demonstrate gradability test. (W25 - Q5a, 03 marks)
   (Also appears in: S23 - Q4a, S22 - Q4a, W22 - Q5a, W23 - Q5a)
2. What is Turning radius? Explain turning circle diameter test. (S23 - Q4b, 04 marks)
   (Also appears in: S22 - Q4b, W23 - Q5b)
3. Explain steering effort test. (S23 - Q4c, 07 marks)
   (Also appears in: S22 - Q4c, W22 - Q5c, W23 - Q5c)
4. Explain Brake stopping distance. (W25 - Q3a, 03 marks)
   (Also appears in: W22 - Q2a)
5. Explain procedure for brake stopping distance test. (W25 - Q3b, 04 marks)
   (Also appears in: W24 - Q3b)

Other Important Questions:

1. Explain Measurement of steering effort. (W25 - Q4a, 03 marks)
   (Also appears in: W22 - Q4a)
2. Explain Steering Impact test. (W22 - Q3a, 03 marks)
3. Write short note on engine durability test. (W25 - Q4b, 04 marks)
   (Also appears in: W23 - Q4a)
4. Explain slide slip tester. (W25 - Q5b, 04 marks)
5. List the point for evaluating vehicle performance. (S24 - Q4a, 03 marks)
6. With the neat sketch explain Turning Circle Diameter test. (S24 - Q4b, 04 marks)
7. With the neat sketch explain Steering Impact test. (S24 - Q4c, 07 marks)
8. list the various road testing tracks for automotive. (S24 - Q4a, 03 marks)
9. Write an application of "Wading Troughs" and "Serpentine" test tracks. (S24 - Q4b, 04 marks)
10. Explain accelerated fatigue track with suitable sketch. (S24 - Q4c, 07 marks)
11. What is the function of Vehicle Test lane for laboratory testing of vehicle. (S23 - Q4a, 03 marks)
12. Explain energy consumption in conventional automobiles, performance, emission and fuel economy. (W24 - Q3c, 07 marks)
13. Explain operation of full load and part load conditions. (W24 - Q3a, 03 marks)
14. Illustrate wind tunnel testing. (W24 - Q3c, 07 marks)
    (Also appears in: W23 - Q5c)
15. Explain Willan's line method. (W24 - Q5b, 04 marks)
16. Explain vehicle's wheel rim test for cornering and radial fatigue with sketch. (W23 - Q3c, 07 marks)
17. Describe dynamic wheel balancing. (S23 - Q4b, 04 marks)
    (Also appears in: S22 - Q4b)

Unit 5: Vehicle Testing on Chassis Dynamometers & Standards

Repeated Questions:

1. Explain chassis dynamometer. (W25 - Q5c, 07 marks)
   (Also appears in: S24 - Q5c)
2. What do you mean by EURO standards and AIS standards? (W25 - Q5b, 04 marks)
   (Also appears in: S23 - Q5a, S22 - Q5a, W23 - Q5a)
3. Explain SHED test on chassis dynamometer. (S23 - Q5c, 07 marks)
   (Also appears in: S22 - Q5c, W23 - Q4c)
4. Explain two wheel and four wheel chassis dynamometer. (W24 - Q1c, 07 marks)
   (Also appears in: S22 - Q4c)

Other Important Questions:

1. Discuss need of vehicle inspection. (W25 - Q5c, 07 marks)
   (Also appears in: W22 - Q5c)
2. Write an objective of chassis dynamometer. (S24 - Q5a, 03 marks)
3. Explain side slip test. (S24 - Q5b, 04 marks)
4. List the various EURO and AIS standards for vehicle. (S24 - Q5a, 03 marks)
5. AIS-003 (Starting Grade-ability). (S24 - Q5b, 04 marks)
6. AIS-038 (Battery Operated Vehicles). (S24 - Q5c, 07 marks)
7. Explain ISO 26262 standards for functional safety of electrical and/or electronic systems in automobiles. (S23 - Q5b, 04 marks)
   (Also appears in: S22 - Q5b, W23 - Q4b)
8. Give the full form of following terms:1) CMVR, 2) ARAI, 3) NATRiP. (W23 - Q5a, 03 marks)
9. Explain SAE standard. (S22 - Q5a, 03 marks)
10. Explain headlight beam alignment testing. (S22 - Q5b, 04 marks)
    (Also appears in: W23 - Q5b)
11. Explain in brief: AIS - 038 standards. (S22 - Q5c, 07 marks)
12. Explain AIS- 093 (code of practice for construction and approval of truck cabs and truck bodies). (W24 - Q5b, 04 marks)
13. What is wheel balancing? Give its importance and explain types of wheel balancing with sketch. (W24 - Q5c, 07 marks)
14. Explain four wheel alignment testing procedure. (S22 - Q3c, 07 marks)
15. Explain testing standards like; AIS testing standards, Euro Standards, SAE standards. (W22 - Q5c, 07 marks)

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