


Name: Enrolment No:			
<p style="text-align: center;">UPES End Semester Examination, May 2025</p> <p> Course: Auto Certification and Homologation Program: B.Tech ADE Course Code: MEAD 4014 Instructions: Attempt all the questions in the same order </p> <p style="text-align: right;"> Semester: VIII Time : 03 hrs. Max. Marks: 100 </p>			
SECTION A (5Qx4M=20Marks)			
S. No.		Marks	CO
Q.1	Define the term Gradability and starting Gradability for a vehicle.	4	CO1
Q.2	What Do you mean by Steering Effort Test, what does it signify?	4	CO2
Q.3	Define the term used in vehicle testing A) Head Restraints B) True Speed	4	CO1
Q.4	What is turning radius and what all can influence the turning radius of a vehicle.	4	CO2
Q.5	Explain how the Mean fully developed deceleration (MFDD) is used in the braking performance test.	4	CO2
SECTION B (4Qx10M= 40 Marks)			
Q.6	According to IS 14664:1999, following are the tests conducted to assess braking performance of a vehicle. Explain the purpose of (i) Type P Test (Dynamic Performance) (ii) Type F Test (Heat Fade) (iii) Type W Test (Water Fade)	10	CO3
Q.7	In reference with the wind screen wiping system, Explain the following tests, A. Wiped Area Test B. Ozone Test C. Wiper System Stall (Strength) D. Cold Test E. Chemical Resistance Test	10	CO3

Q.8	<table><tr><th>Parameter</th><th>Diesel</th><th>Petrol</th></tr><tr><td colspan="3">Main chassis dimension (in mm)</td></tr><tr><td>Wheel base</td><td>2498</td><td>2498</td></tr><tr><td>Track front</td><td>1540</td><td>1540</td></tr><tr><td>Track rear</td><td>1530</td><td>1530</td></tr><tr><td>Overall length</td><td>3994</td><td>3994</td></tr><tr><td>Overall height</td><td>1607</td><td>1607</td></tr><tr><td>Max. Width</td><td>1811</td><td>1811</td></tr><tr><td>Ground clearance</td><td>165 (Laden)- 195/60 R16 184 (Laden)- 215/60 R16</td><td>165 (Laden)- 195/60 R16 184 (Laden)- 215/60 R16</td></tr><tr><td colspan="3">Performance</td></tr><tr><td>Max. Speed</td><td>165</td><td>165</td></tr><tr><td>Max. Recommended gradability</td><td>30%</td><td>30%</td></tr></table> <p>In the technical Specification, sheet of a vehicle the Max. Recommended gradability is provided. Find the slope (rise over 100 m run) this vehicle can climb.</p>	Parameter	Diesel	Petrol	Main chassis dimension (in mm)			Wheel base	2498	2498	Track front	1540	1540	Track rear	1530	1530	Overall length	3994	3994	Overall height	1607	1607	Max. Width	1811	1811	Ground clearance	165 (Laden)- 195/60 R16 184 (Laden)- 215/60 R16	165 (Laden)- 195/60 R16 184 (Laden)- 215/60 R16	Performance			Max. Speed	165	165	Max. Recommended gradability	30%	30%	10	CO2
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Q.9	<p>A chassis dynamometer is an important testing facility for measuring the power, emission and efficiency of an engine. Explain What all it can do and how these test are performed on a dynamometer?</p> <p style="text-align: center;">OR</p> <p>Categories the below mentioned safety systems used in automobiles into passive and active safety system.</p> <p>Advanced driver assistance system(ADAS), Anti-lock braking system (ABS), Airbag (AB), Seat Belt (SB), electronic stability control (ESC), adaptive cruise control (ACC), tire pressure monitoring system (TPMS), occupant sensing systems (OSS), lane departure warning (LDW), night vision system (NVS), blind spot detection system (BSDS), whiplash protection (WP), driver monitoring (DM), road sign recognition (RSR), automatic emergency braking (AEB), child safety system (CHS), pedestrian safety system (PSS)</p>	10	CO3																																				
<p style="text-align: center;">SECTION-C (2Qx20M=40 Marks)</p>																																							
Q 10	<p>Lately some changes has been adopted in IDC to measure the emissions from the engines in more realistic and reliable way. Elaborate the inclusions in following in support of your answer (a) Indian Driving Cycle (IDC) and (b) Modified Indian Driving Cycle.</p>	20	CO4																																				

Q.11	<p>How does Global NCAP score cars? Discuss the important element of the test in the following category, Do you feel the current program of test is comprehensive or some additions are required in these categories.</p> <p>A. The 17-point Adult Occupant Protection score</p> <p>B. 49- point Child Occupant Protection</p> <p>Full frontal, front offset, side impact and side pole tests</p> <p style="text-align: center;">OR</p> <p>As a automotive manufacturer, according to the existing norms of NVH you need to perform the Pass by noise test on the vehicle.</p> <p>A. With proper test set up diagram explain the test procedure.</p> <p>B. Explain different noise limiting values for various categories of vehicle like M and L.</p> <p>C. Various operating conditions need to follow before and during the test</p>	20	CO4
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