

Birla Institute of Technology & Science, Pilani
Work Integrated Learning Programmes Division
Second Semester 2022-2023

MID Semester test
(EC-2 Regular)

Course No. : AE ZG518 / AEL ZG518
Course Title : Electric & Hybrid vehicles
Nature of Exam : Open Book
Weightage : 30% (As per Course Handout)
Duration : 2 Hours
Date of Exam : 24/9/2022

No. of Pages	=
No. of Questions	=

Note to Students:

1. Please follow all the *Instructions to Candidates* given on the cover page of the answer book.
2. All parts of a question should be answered consecutively. Each answer should start from a fresh page.
3. Assumptions made if any, should be stated clearly at the beginning of your answer.

Please Note:

- Q.1. Compare 3 electric vehicles available in the market in terms of motor rating, source rating and draw the block diagram rating of the vehicles 6 Marks
- Q.2. Consider a vehicle moving along a flat road. Draw the graphs of the aerodynamic force, rolling resistance force and total resistance force versus longitudinal speed. Use the following vehicle parameters in the table below. At the speed of 20km/hr and 80km/hr, find the percentage of aerodynamics force from the total resistance force. Determine the approximate motor ratings corresponding to these speeds. 12 Marks

$$\rho_a = 1.2 \frac{kg}{m^3} \quad C_d = 0.3 \quad A_f = 2.1 m^2 \quad M = 1200 kg \quad \mu_R = 0.015$$

- Q.3. Compare the motors used in traction application. 8 Marks
- Q.4. What are the hindrances for EV adoption in India? 4Marks

Check List

Birla Institute of Technology & Science, Pilani
Work-Integrated Learning Programmes Division
Second Semester 2020-2021
Proofreading and Checking of Question Papers

Course Number : _____ AE ZG518 / AEL ZG518 _____

Course Title : _____ Electric & Hybrid vehicles _____

Please check and verify to ensure that the question papers are good, correct and complete in all aspects such as:

S.No.	Particulars	YES	NO
1	<u>All questions are well within the syllabus prescribed</u> for the evaluation component according to the Plan of Self-Study given in the course handout. No question is outside the prescribed syllabus.	Yes	
2	Balanced coverage of the topics given in the prescribed syllabus for the evaluation component.	Yes	
3	All Questions are appropriate for the type of evaluation component	Yes	
4	<u>Appropriate weightage</u> for each question or part(s) thereof is provided.	Yes	
5	There are no spelling or grammatical mistakes or typographical errors.	Yes	
6	Numbering of questions and the parts thereof are correct.	Yes	
7	Figures / tables / mathematical symbols / data for questions are provided.	Yes	
8	The total marks of the question paper is exactly the same as the maximum marks for the evaluation component.	Yes	
9	Specific instructions are provided wherever applicable.	Yes	
10	There are no objective type or multiple choice type questions or options among questions.	Yes	

Evaluation Component Comprehensive Examination
(EC-3 Regular)

I have carefully checked the above mentioned question paper based on the guidelines given above and certify that the question paper is correct and complete in all respects. I also confirm that the complete solutions with detailed marking scheme have been prepared.

Instructor's Name : Dr.Madhuri Bayya

Instructor's Signature _____

Date : 5th April 2021

