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UNIVERSITY EXAMINATIONS 2024/2025

FOUR YEAR FIRST SEMESTER EXAMINATION FOR DEGREE OF BACHELOR OF EDUCATION TECHNOLOGY IN MECHANICAL ENGINEERING

EMT 3416: VEHICLE TECHNOLOGY AND PRACTICE II

DATE: JANUARY 2025

TIME: 2 HOURS

INSTRUCTIONS: Answer Question ONE and any other TWO questions.

QUESTION ONE (30 MARKS)

- a. Explain the need for a braking system in a vehicle (4 marks)
- b. Describe the following panel beating techniques
 - i. Shrinking/Stretching (1 mark)
 - ii. Planishing (1 mark)
 - iii. Welding (1 mark)
 - iv. Filling (1 mark)
 - v. Sanding (1 mark)
- c. Briefly describe the functions of the steering system in a vehicle (5 marks)
- d. With the aid of sketches, explain the following terms below:
 - i. Camber angle (2 marks)
 - ii. Kingpin inclination (2 marks)
 - iii. Caster angle (2 marks)



- e. A vehicle has been brought into the workshop and the driver complains that he/she must constantly turn the steering wheel to the left and right to keep the vehicle going straight on a level road. Identify any five causes of the problem. (5 marks)
- f. Identify any five common complaints caused by faulty shock absorbers (5 marks)

QUESTION TWO(15MARKS)

- a. A vehicle fitted with disc brakes has been brought into the workshop with faulty brake pads. Outline the procedure to be followed to replace the brake pads. (10 marks)
- b. Briefly describe five methods used to prevent Jack Knifing in articulated vehicles (5 marks)

QUESTION THREE(15MARKS)

- a. A vehicle has been brought into the workshop and you are required to replace the steering ball joints, outline the procedure for carrying out the task (7 marks)
- b. Describe how to perform a proper road test for the diagnosis of suspension-related problems (8 marks)

QUESTION FOUR (15MARKS)

- a. During spray painting of a vehicle several defects may arise. Describe any four of these defects (8 marks)
- b. With aid of a well labelled diagram, illustrate the layout of the hydraulic braking system. (7Marks)

QUESTION FIVE(15MARKS)

- a. Briefly describe the following steering system defects and name any two possible causes of each.
 - i. Excessive Steering-Wheel Play (3 marks)
 - ii. Feedback (3 marks)
 - iii. Shimmy (3 marks)
- b. Explain the difference between sprung and unsprung weight and any two examples of each (6 marks)

