



# MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

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## University Examinations 2019/2020

FIRST YEAR, SECOND SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL  
ENGINEERING

### EMC 2153: ENGINE TECHNOLOGY I

DATE: OCTOBER, 2020

TIME: 1½ HOURS

INSTRUCTIONS: Answer question *one* and any other *two* questions.

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#### QUESTION ONE (30 MARKS)

- a) Using well labeled sketches describe the basic parts of an internal combustion engine. (6 marks)
- b) Using a well labeled sketches describe the operation of a four stroke spark ignition engines. (6 marks)
- c) State four reasons a cooling system is necessary in a car engine. (4 marks)
- d) List four functions of a cylinder head. (4 marks)
- e) List five components of the valve train and state their functions. (10 marks)

#### QUESTION TWO (15 MARKS)

- a) State six difference between petrol and diesel engines. (6 marks)
- b) Using sketches describe three types of engine cylinder layouts and show cylinder numbering on each layout. (9 marks)

**QUESTION THREE (15 MARKS)**

- a) Describe five functions of the sump in an engine. (5 marks)
- b) Using sketches explain the operation of pressurized cooling system radiator cap. (6 marks)
- c) State four advantages of pressurized cooling system. (4 marks)

**QUESTION FOUR (15 MARKS)**

- a) Briefly describe three types of valve trains. (6 marks)
- b) Using a sketch explain the operation of a sealed cooling system (5 marks)
- c) Describe four methods of mounting gudgeon pins. (4 marks)