



MERU UNIVERSITY COLLEGE OF SCIENCE & TECHNOLOGY

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University Examinations 2011/2012

FIRST YEAR, SECOND SEMESTER EXAMINATIONS FOR DIPLOMA IN AGRICULTURAL
EDUCATION AND EXTENSION/CERTIFICATE IN AGRICULTURE

TEC 0151: FARM POWER, TRACTOR SERVICING AND OPERATION

DATE: AUGUST 2011

TIME: 1½ HOURS

INSTRUCTIONS: Answer question *one* (Compulsory) and any other *two* questions

QUESTION ONE – (30 MARKS)

- (a) Briefly explain the term “Agricultural mechanization” (5 Marks)
- (b) List five ways through which agricultural mechanization can generate increased returns. (5 Marks)
- (c) Other than the internal combustion engine, name four sources of power. (4 Marks)
- (d) State the main functions of the following engine parts:
- (i) Cylinder
 - (ii) Connecting rod
 - (iii) Piston
 - (iv) Crankcase
 - (v) Camshaft
 - (vi) Flywheel (6 Marks)
- (e) Mention the functions of the following components of the power train:
- (i) The transmission (gear box) (3 Marks)
 - (ii) The differential (3 Marks)
- (f) List four requirements for an ideal/good braking system. (4 Marks)
- (g) Mention three ideal qualities of a steering system. (3 Marks)

QUESTION TWO – (15 MARKS)

- (a) Define the following terms as used in engine technology:
- (i) Bore
 - (ii) Stroke
 - (iii) Total cylinder volume
 - (iv) Bottom dead centre
 - (v) Compression ratio (5 Marks)
- (b) Briefly describe the operation of a four-stroke cycle spark ignition engine such as the petrol/gasoline engine. (10 Marks)

QUESTION THREE – (15 MARKS)

- (a) With the aid of a labeled diagram show the main components of a distributor type of diesel fuel system (10 Marks)
- (b) Briefly explain the term “Bleeding” as used in diesel fuel systems. (5 Marks)

QUESTION FOUR – (15 MARKS)

- (a) Briefly discuss the engine intake and exhaust systems with emphasis on the main components and their functions. (10 Marks)
- (b) List the main functions of clutch. (5 Marks)

QUESTION FIVE – (15 MARKS)

- (a) With the aid of labeled diagrams show the main components of the following types of clutches:
- (i) Over-running clutch
 - (ii) Cone clutch (10 Marks)
- (b) List five main components of a hydraulic system and mention their functions. (5 Marks)