

2910/105
AGRICULTURAL ENGINEERING I
Oct./Nov. 2022
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL
DIPLOMA IN SUSTAINABLE AGRICULTURE
AND RURAL DEVELOPMENT

MODULE I

AGRICULTURAL ENGINEERING I

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination

Answer booklet;

Non-programmable scientific calculator;

Size A4 drawing paper;

Technical drawing instruments.

This paper consists of EIGHT questions.

Answer question ONE (COMPULSORY) and any other FOUR questions in the answer booklet provided.

All questions carry equal marks

Maximum marks for each part of a question are indicated.

Candidates should answer the questions in English.

This paper consists of 3 printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

1. (a) Construct a hexagon given the length of one side as 50 mm. (6 marks)
- (b) Figure 1 shows an engineering template. Draw the template full size. (14 marks)

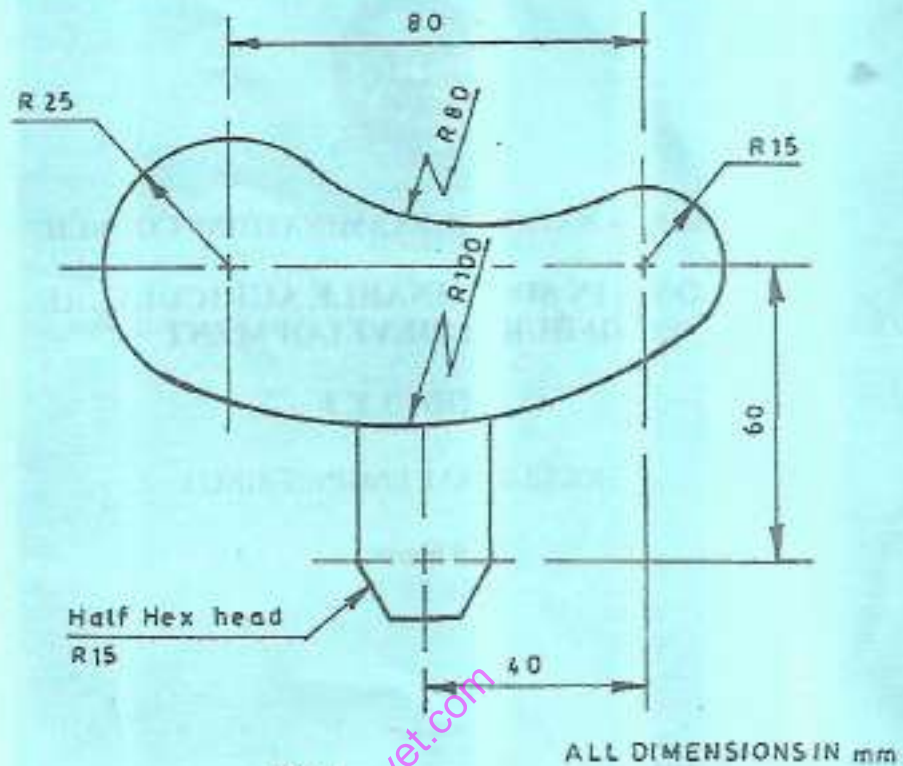


Fig. 1

2. (a) Discuss the features of a good farm workshop. (14 marks)
- (b) Outline four uses of a farm workshop. (6 marks)
3. (a) Highlight five demerits of using hydro power on farms. (5 marks)
- (b) Outline four types of power losses that occur during power transmission in agricultural machines. (4 marks)
- (c) A tractor moves a load of 5 tons for a distance of 200 metres in 30 seconds. Calculate the power developed by the tractor. (11 marks)
4. (a) Highlight six care and maintenance requirements for farm knives. (6 marks)
- (b) Explain seven factors that favour level I of farm mechanization. (14 marks)
5. (a) Outline four functions of hitches on farm machines. (6 marks)
- (b) Explain seven advantages of using hydraulics for power transmission in agricultural machines. (14 marks)

Handwritten notes:

- It is readily available.
- It is cheap.
- It cools the engine & the machine.
- It cleans the engine & the machine.
- Can operate longer working hours.
- Can work for longer working hours.
- Takes long before the engine get heated.

Handwritten notes for hitches:

- used for attachment
- used to increase capacity
- used to

6. (a) State four care and maintenance requirements for disc harrows. (4 marks)
- (b) Describe eight benefits of farm tillage. (16 marks)
7. (a) Outline four field adjustments carried out on a pick-up hay baler. (6 marks)
- (b) With the aid of a diagram, explain the operation of a pick-up hay baler. (14 marks)
8. (a) Outline three forms in which spray chemicals may be applied. (6 marks)
- (b) Explain five techniques of minimising the spray drift. (10 marks)
- (c) Highlight four safety precautions observed when handling spray chemicals. (4 marks)
- wear protective gear.
 - wear mask
 - Spray during calm day.
 - Put on gloves

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