1501/204 1508/204
1502/204 1509/204
1503/204
TECHNICAL DRAWING II
Oct./Nov. 2022
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

CRAFT CERTIFICATE IN MECHANICAL ENGINEERING (PLANT OPTION) (PRODUCTION OPTION)
CRAFT CERTIFICATE IN AUTOMOTIVE ENGINEERING
CRAFT CERTIFICATE IN WELDING AND FABRICATION
CRAFT CERTIFICATE IN CONSTRUCTION PLANT ENGINEERING

MODULE II

TECHNICAL DRAWING II

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:
- *Drawing instruments;*
- *Drawing paper size A2;*
- *Answer booklet;*
- *Non-programmable scientific calculator.*

*This paper consists of **SIX** questions in **TWO** sections; **A** and **B**.*
*Answer question **ONE** in section **A** (**compulsory**) and **FOUR** questions from section **B**.*
Maximum marks for each part of a question are as shown.
All dimensions are in millimeters.
Candidates should answer the questions in English.

This paper consists of 7 printed pages.

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

Turn ove

SECTION A (40 marks)

*Answer question **ONE (compulsory)** in this section.*

1. Figure 1 shows parts of a stand drawn in first angle projection. Assemble the parts and draw full size the following views:

   (a) a sectional front elevation along the cutting plane Y–Y;

   (b) end elevation.

   Include hidden details and **five** major dimensions.

   (40 marks)

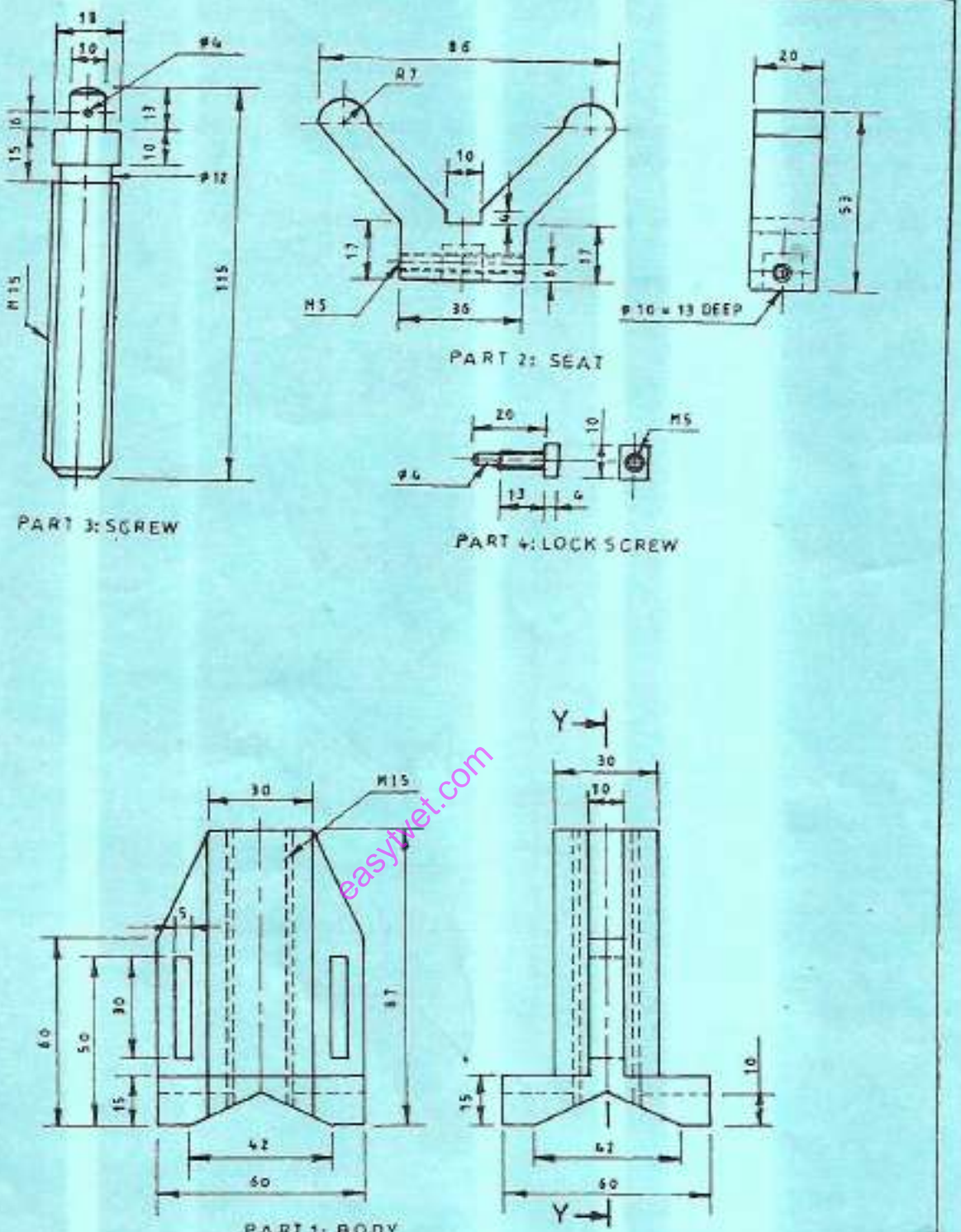

Fig.1

SECTION B (60 marks)

*Answer any **FOUR** questions from this section.*

2. Figure 2 shows incomplete front and plan views of two unequal cylindrical pipes intersecting each other. Draw the following from the figure:

(a) complete front view showing the curve of intersection PQ;

(b) development of the branch pipe;

(c) complete plan. (15 Marks)

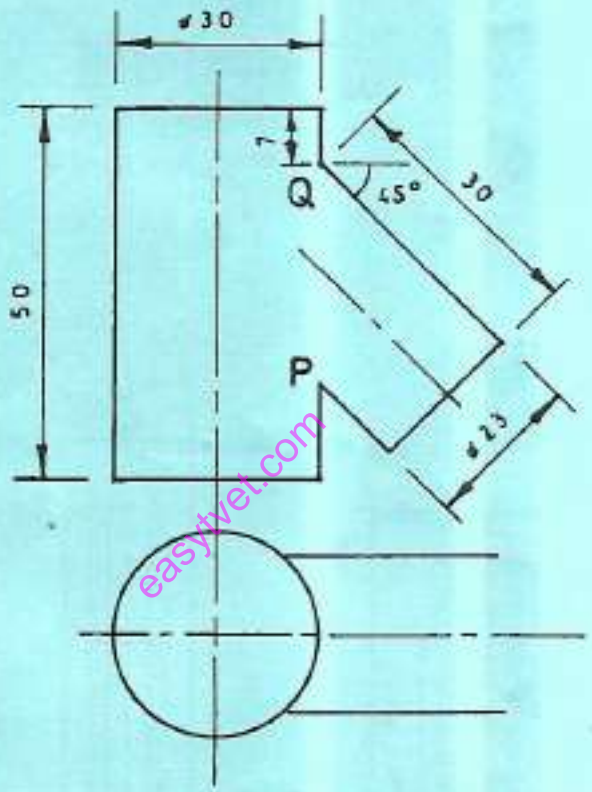

Fig. 2

3. Figure 3 shows a pin-jointed mechanism. The cranks AB and CD revolve about A and C respectively at the same speed. Draw the locks of the points E and F for a complete revolution of crank AB.

(15 marks)

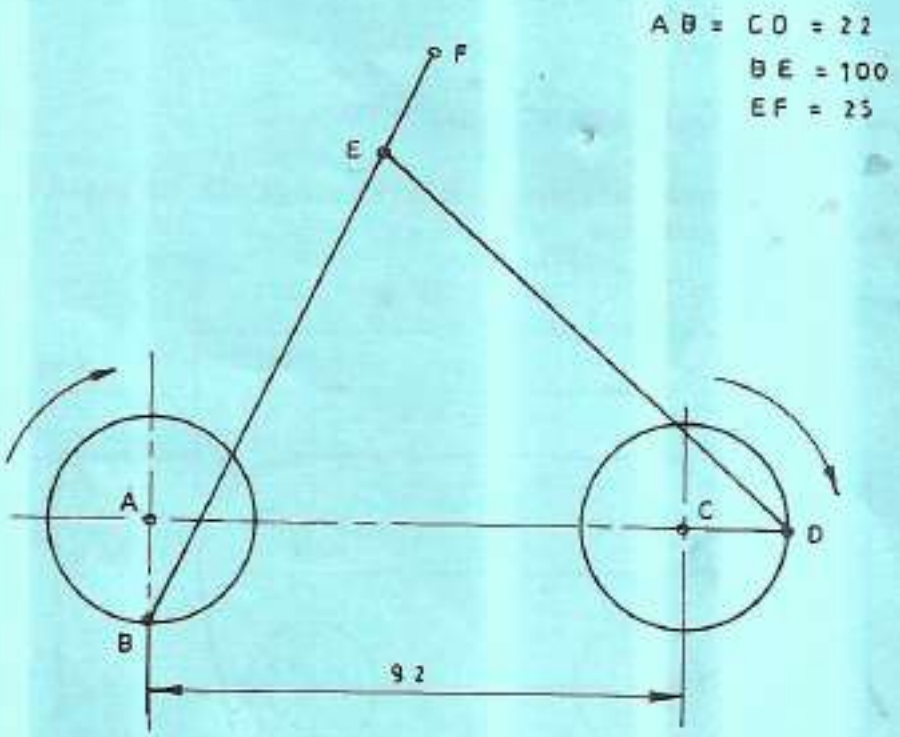

Fig. 3

4. (a) Sketch each of the following in accordance to BS 308 abbreviations and symbols:

(i) interrupted view of a shaft;
(ii) square hole;
(iii) bearing on a shaft;
(iv) splined hole.

(8 marks)

(b) Sketch each of the following mechanical fasteners:

(i) screw stud assembly;
(ii) plan and sectional view of a double riveted lap joint.

(7 marks)

5. (a) Explain each of the following functions in Computer Aided Drawing (CAD):

(i) mirroring;
(ii) duplicating;
(iii) zooming.

(6 marks)

(b) List three advantages of CAD. (3 marks)

(c) Figure 4 shows a view of a component drawn using CAD. Explain **six** CAD commands possible for its production. (6 marks)

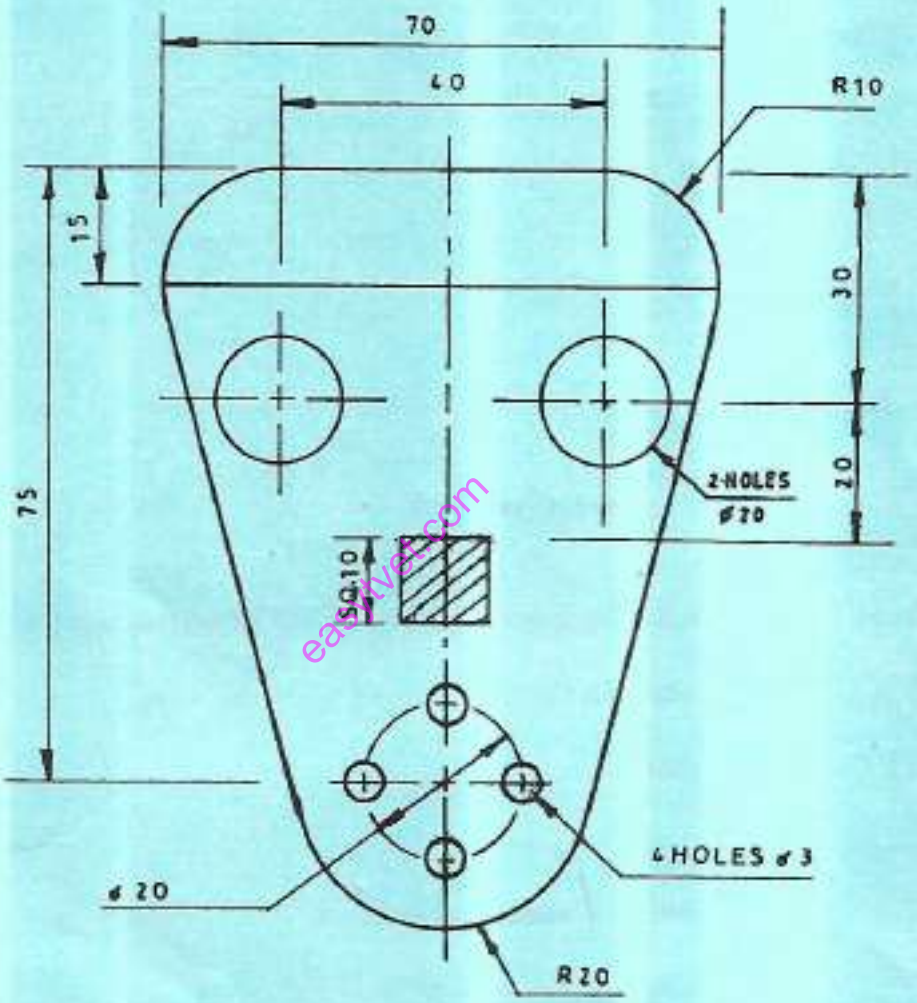

Fig. 4

6. Figure 5 shows a component which is cuboid in shape and has **three** holes to be drilled simultaneously. Design a device that can be used to hold the component assuming that a multi-drilling machine is available for the operation. (15 marks)

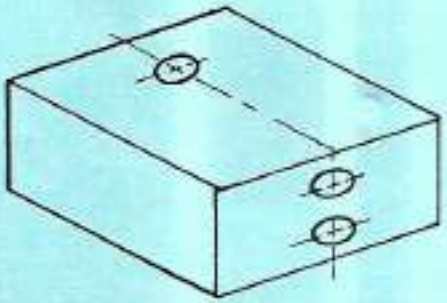

Fig. 5

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