Name ..... Index No. .....

School .....Candidate's signature .....

Date .....

449/1

DRAWING AND DESIGN (THEORY)
Paper 1
July/ August 2016

Time 2½ hours

WESTLANDS JOINT EXAMINATION

Kenya Certificate of Secondary Education

DRAWING AND DESIGN

Paper - 449/1

July/August 2016

Time: 2½ hours

INSTRUCTIONS TO CANDIDATES

a) You should have the following materials for this examinations.
   - Drawing instruments.
   - 3 sheets of drawing paper size A3
   - Scale rule

b) This paper consist of three sections A, B and C.

c) Answer ALL the questions in section A and B and any two questions from section C.

d) Question in section B and C should be answered on the A3 sheet of the drawing paper provided.

e) All dimensions are in millimetres unless otherwise stated.

f) Candidates may be penalised for not following the instructions given in this paper.

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

This paper consists of 6 printed pages
Candidates should check the question paper to ensure that all the printed pages are printed as indicated and no questions are missing.

SECTION A (50 marks)
Answer ALL the questions in this section in the spaces provided.

1. a) Explain briefly what you understand by occupation information used in Drawing and Design. (2 marks)

b) By means of neat sketches differentiate between the following materials used in Design.

i) Lamin Board and Block board.

ii) Practical board and fibre board.

iii) Plywood and multi-ply. (6 marks)

2. Use standard convention to represent each of the following. (4 marks)

i) Tension spring

ii) Compression spring.

iii) Holes of linear pitch

iv) External screw thread.

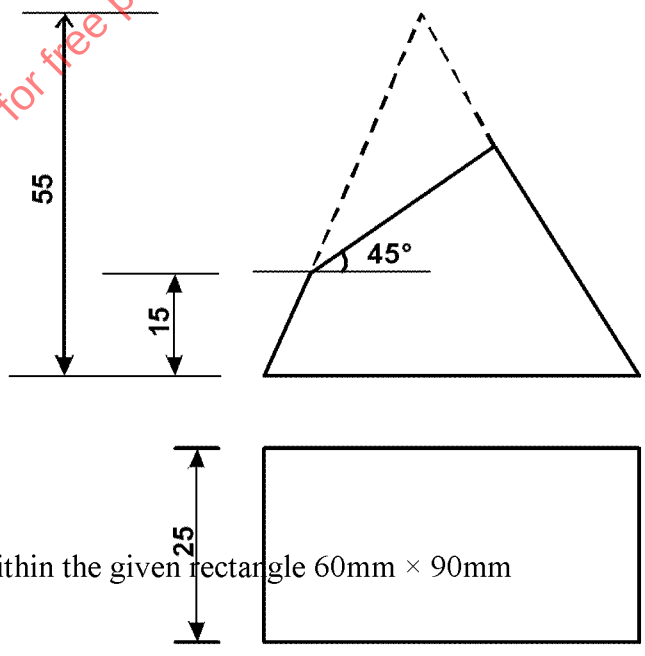
3. Draw an involute curve traced out by an end of a thin wire unwound form a regular pentagon of size 15mm, the polygon, wire being kept taut. (4 marks)

4. a) Write down any **three** factors that contribute in making good quality lettering. (3 marks)

b) State three methods of steel sheet metal finishing processing. (3 marks)

5. Construct a diagonal scale in which 40mm represents 1mm and reads to a maximum of 4mm and an accuracy of 0.01mm, Use the scale to draw a triangle whose sides are 1.50mm by 2.55mm with an included angle of 45°. Measure and record the largest angle of the triangle. (6 marks)

6. The figure below shows the front elevation and an incomplete plan of a truncated rectangular pyramid. Complete the plan and draw the true shape of the cut section. (4 marks)



Draw a parabola within the given rectangle 60mm × 90mm (5 marks)

8. A wheel 60mm diameter has a point on one of its spokes. The point is 10mm inside from the circumference. Draw the Locus of the point as the wheel rolls, without slipping for one revolution.

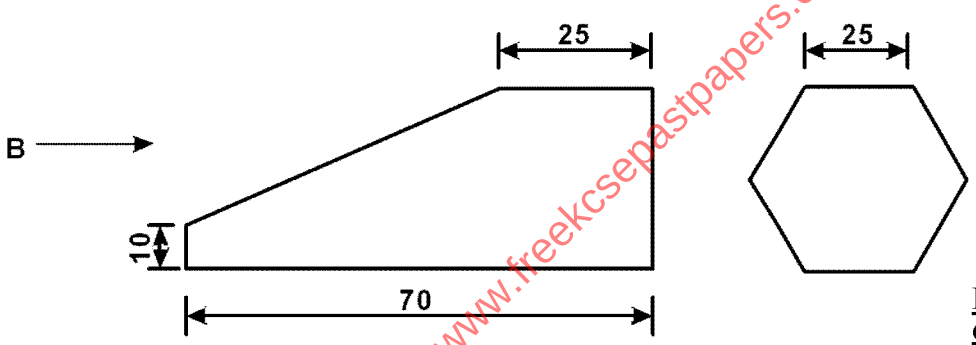
(6 marks)

9. Draw a rectangle whose sides is 35 × 65 and construct a square equal in area to the given rectangle. (3 marks)

10. The figure given below is an elevation of part of a hexagonal prism and an incomplete end elevation drawn in first angle projection. Draw

i) Complete end elevation in the direction of arrow B. (4 marks)

ii) The plan

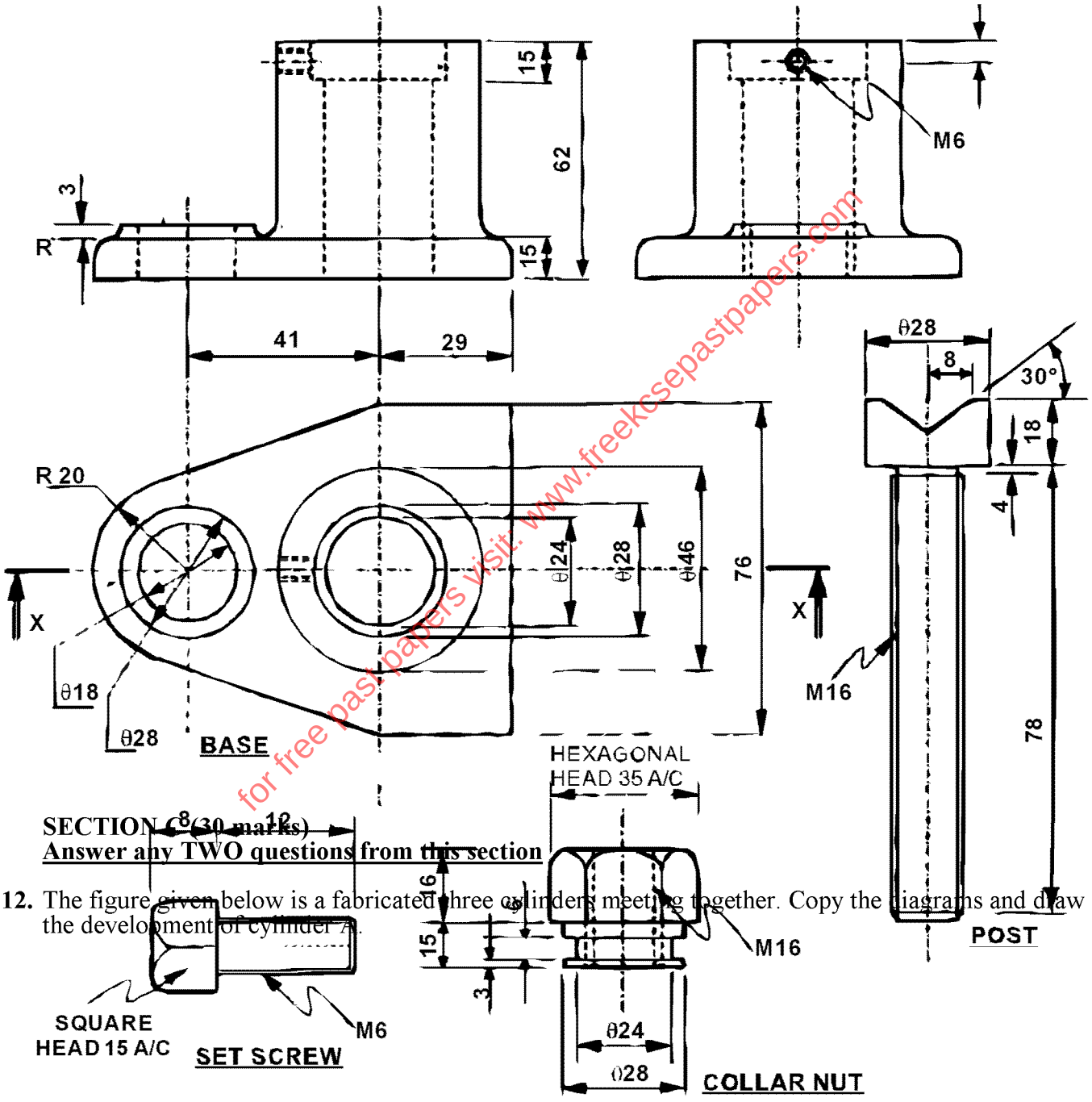


SECTION B (30 marks)
This question is compulsory. Candidates are advised to spend not more than one hour on this question.

11. Figure 8 shows parts of a tool post drawn in first angle projection. Assemble the parts and draw FULL SIZE, the following views in third angle projection:

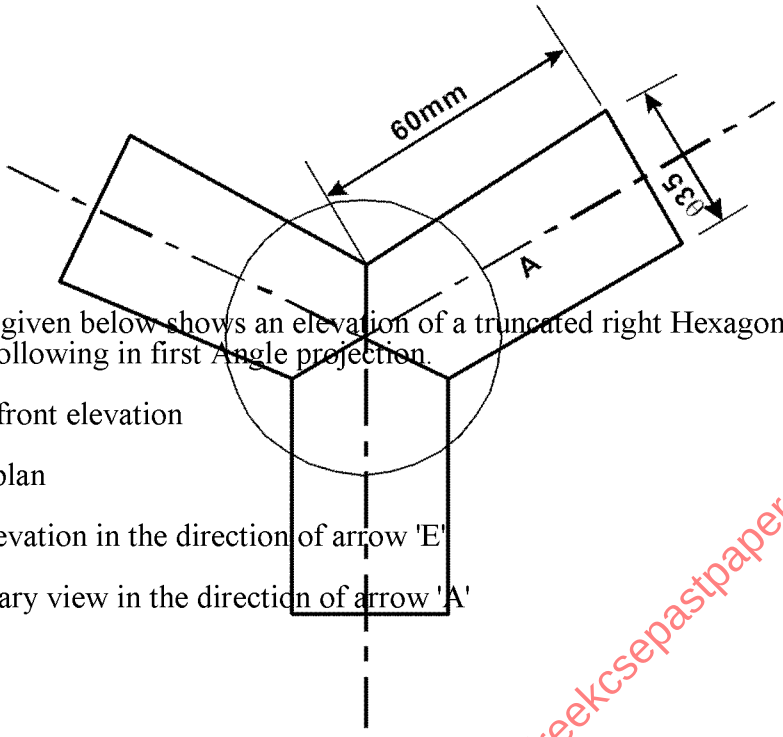
a) a sectional front elevation along the cutting plane X - X
b) the plan

Insert **four** leading dimensions and do not show hidden details.



SECTION C (30 marks)
Answer any TWO questions from this section

12. The figure given below is a fabricated three cylinders meeting together. Copy the diagrams and draw the development of cylinder A.



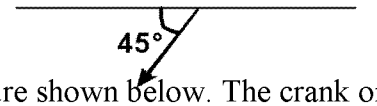
13. The figure given below shows an elevation of a truncated right Hexagonal Pyramid of size 32mm. Draw the following in first Angle projection.

a) The given front elevation

b) Complete plan

c) The end elevation in the direction of arrow 'E'

d) The Auxiliary view in the direction of arrow 'A'



14. Draw the Locus of the point P. On the linkage figure shown below. The crank or moves through 360° about centre O. The connection rod PQ is joined the crank OR at R. Point Q is free to move in the direction shown along XX,