**P710/1 AND P720/1**

**MECHANICAL AND BUILDING DRAWING**

**PAPER 1**

**Jul/Aug 2016**

**3 HOURS**

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**MUKONO EXAMINATIONS COUNCIL**

**Uganda Advanced Certificate of Education**

**TECHNICAL DRAWING**

MECHANICAL DRAWING AND BUILDING DRAWING

Paper 1

**3 Hours**

**INSTRUCTIONS TO CANDIDATES**

* *This paper consists of* ***TWO*** *sections* ***A*** *and* ***B****,*
* *Attempt any* ***FIVE*** *questions. Taking at least* ***TWO*** *questions from each section.*
* *All dimensions are in millimeters,*
* *For dimensions that are not given, use your own knowledge of the technical drawing.*
* *The given figures are* ***NOT*** *drawn to scale.*
* *All questions carry equal marks.*

**SECTION A**

**PLANE GEOMETRY**

1. A lorry truck moves at constant speed of 30km per hour, assuming the road is flat.

(a) Construct a diagonal scale to show the time taken by the lorry to cover 180km, in

steps of 10 sec. ***(06marks)***

Indicate the following time in the scale drawn in (a) above;

(i) 2 Hours, 30 Minutes and 30 Sec.

(ii) 3 Hours, 40 Minutes and 20 Sec.

(b) Using the scale in (a) above, construct the distance covered by the Lorry in the figure below; ***(10marks)***

From A-B it took 2 1/6 hours

From B-C it took 22/3 hours.

From A- E it took 11/3 hours

(c) Measure and state the time taken by the lorry between ***(04marks)***

(i) C - D

(ii) D - E

D

C

11/3hrs

22/3 hrs

21/6 hrs

E

600

1200

A

B

2. A hyperbola has a transverse axis of 80mm and the focus 30 mm from the vertex.

Determine the;

(a) (i) Directrix

(ii) Asymptotes ***(08 marks)***

(b) At any point, construct a normal and a tangent to the hyperbola curve.

***(12marks)***

3. A radial plate cam rotates at 20 revolutions per minute and operate in line knife edge

follower. The nearest approach of the follower to the cam center is 35 mm.

Cam rotation: Clock wise.

1. Draw the displacement group of the cam, which will impart the following motion of the follower. ***(10marks)***
2. Rise 48mm with uniform velocity for one second.
3. Dwell for 0.5 second.
4. Return to initial position with uniform acceleration and retardation for 1.5 second.
5. Draw the cam profile. ***(10marks)***

4. A beam ABCDE 6m long is simply supported at A and E. It carries a load of 200N, 400N,

300N, at B, C, and D respectively and from 2m, 2m, and 1m etc.

1. Draw the beam. ***(04marks)***
2. Draw to a specific scale the; ***(14marks)*** (i) Shear force diagram.

(ii) Bending moment.

(iii) Determine the reactions A and E.

1. Indicate and state the share force and bending moment at a point 4m from A ***(02marks)***

**SECTION B**

**SOLID GEOMETRY**

5. Shown in the figure below are two incomplete views of a cone in intersection with a

cylinder. Draw full size both views, and complete them with the curves of intersection.

∅30 mm

90 mm

40mm

∅80mm

8mm

6. In the figure, a component is drawn in orthographic projection.

(a) Draw the given plan and elevation. ***(06marks)***

(b) Project an auxiliary elevation as seen from the direction of arrow. ***(14marks)***

450

600

600

450

600

R60

40mm

15mm

Y

X

58mm

7. Given the traces of an oblique plane VHT, and hexagonal pyramid standing on it,

Draw complete ;

(a) elevation, ***(12marks)***

(b) plan. ***(08marks)***

V

40mm

30mm

90mm

30mm

90mm

H

450

600

T

8. shown in the figure below is a complete plan and incomplete elevation of lampshade made from six similar panels.

(a) the given plan. ***(03marks)***

(b) a complete elevation. ***(11marks)***

(c) a full development of one panel. ***(06marks)***

5mm

R40

R40

35mm

35mm

5mm

***End -***