**P720/1**

**Geometry and Mechanical Drawing**

**Paper 1**

**July/august**

**2019**

**TECHNICAL DRAWING DEPARTMENT**

**S.6 INTERNAL MOCKS 2019**

**GEOMETRICAL AND MECHANICAL DRAWING**

**PAPER 720/1**

**TIME: 3 HRS**

***Instructions***

* This paper consists of two questions A and B
* Attempt 3 (three) questions at least 2 (two) from each section
* Unless otherwise stated, all dimensions are millimeters
* Use geometrical methods only
* The given figures are not drawn to scale
* Be neat and orderly

**SECTION A- PLANE GEOMETRY**

1. The figure shows an axis of a hypabola, given VV the transverse axis, together with F ad F1 the focal points.

a) Determine the directrix

b) Construct the two branches of the hyperbola

c) Construct an evolute on one of the branches and construct a tangent and normal

on the other branch.

18 18

48

F V V1 F1

2.a) Construct a diagonal scale of 20:1 to read up to 7mm.

b) Use the scale to construct a triangle, given its perimeter as 5.27mm, and ratio of its angles 2:3:4.

c) State the length of sides of the triangle, its altitude, and diameters of inscribed and circumscribed circles.

d) Transfer the triangle in (b) above and divide it into four equal parts using lines parallel to the base.

3.) A radial plate can rotate at 20 revolutions per minute and operates a off-set point follower line of active off set 20mm to right of concrete.

a) Draw the displacement diagram of the cam which will impact the following motion to the follower.

(i) Rise 48 with uniform velocity for 1 second

(ii) Dwell for 0.55 seconds

(iii) Return to initials position with uniform acceleration and retardation for 1.45 seconds.

b) Draw the profile of the cam.

4. Vector

a) The figure shows a systan of coplanar concurrent forces acting at a point.

(i) Draw the given figure

(ii) Determine graphically the magnitude and direction of the equilibrant.

b) Figure 3 shows a simply supported frame work. Determine graphically,

(i) the reactions R1 and R2

(ii) the forces acting in each member

500N 15⁰ 350⁰

60⁰

30⁰

600N 100N 80N

1m 1m

60⁰

R1  R2

2m

5. The figure below shows the plan view of a right hexagonal pyramid, and a development of the sides after part of the pyramid has been cut away. For the remaining part. Draw full size;

a) the given development

b) the plan and elevation

c) the true shape of the section

60

C

B 60 A

6) The figure below shows two views of a machine devise, drawn in third angle projection

(a) Draw the given views

(b) Project an auxiliary elevation of X1Y1

40

20

Y1

10 40

30

25

15

80 X1

7. The figure below is of two views of a machined piece produce an isometric of the piece, taking point A to be the lowest point.

40 64 30 125

24 31 24 20

8. The figure below the traces VTH of an oblige plane, together with the front and plan view of a triangle lamina.

a) Draw the given views

b) Project the lamina on to the oblige plane, and draw the front and plan of the projection.

V

a c

40 52

b

6 50⁰

T 30⁰

38

b 60

26 a c

5 15 46 H

***END***