JUNIOR LYCEUM ANNUAL EXAMINATIONS 2005

Educational Assessment Unit - Education Division

FORM V **TECHNICAL DESIGN** **Time: 2 hours**

Instructions

Write your name and class on ALL sheets.
Attempt ALL questions
Questions should be attempted on the pre-printed answer sheets provided
All answers are to be drawn accurately, with instruments, unless otherwise stated.
All construction lines MUST be left on each solution to show the method employed.
Drawing aids may be used.

Information

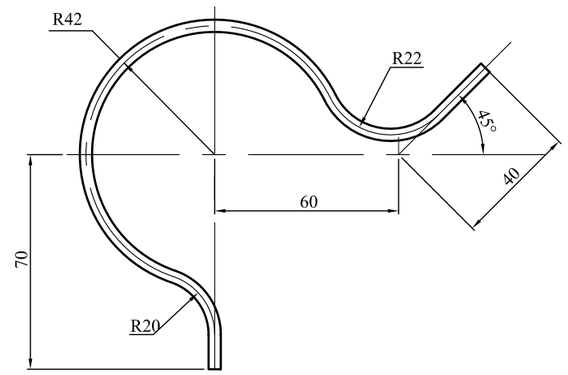
All dimensions are in millimetres
Estimate any dimensions not given.
Marks will be awarded for accuracy, clarity and appropriateness of construction

NAME: _____ **CLASS:** _____

Question No.	1	2	3	4	5	6
Total mark	15	15	20	10	20	20
Marks awarded						

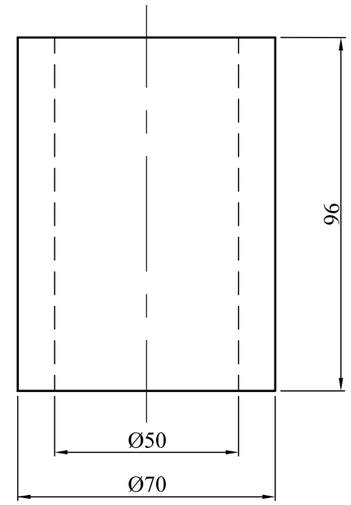
1. Figure below shows the profile of a spring formed from 4mm diameter wire.
Draw the outline and leave the construction lines used to find the arc centres.
Indicate the position of the tangency points by drawing short lines across the outline.

15 marks



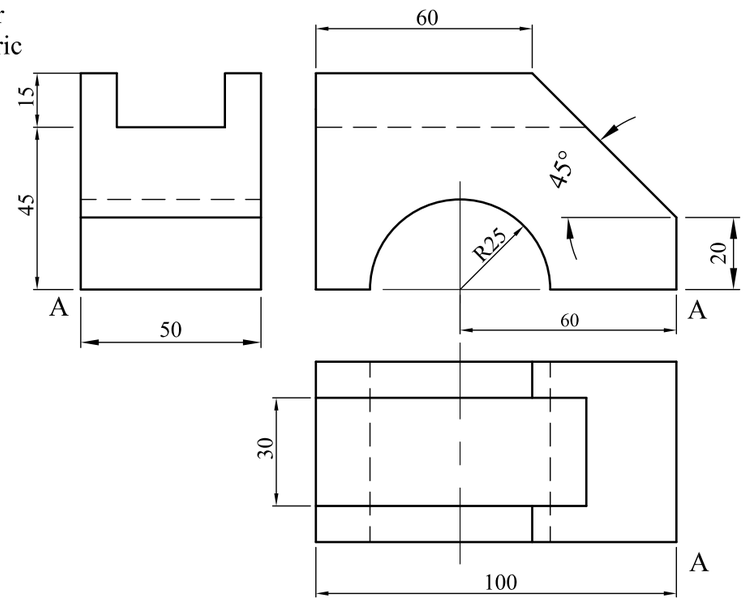
2. The front elevation of a hollow cylinder is shown in figure x.
Construct TWO complete turns of TWO Right -Hand helices, both of 48mm pitch, one on the outside and one on the inside of the cylinder.
Show all hidden details.

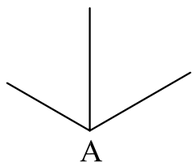
15 marks



3. Figure x shows a solid component in first angle projection.
Draw the component so that the corner A appears in the foreground in isometric projection.

20 marks

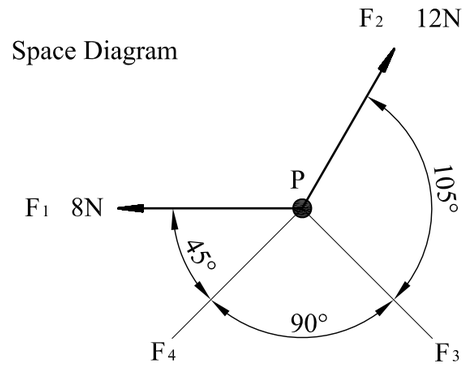




4. The figure shows a system of four coplanar concurrent forces. Forces F_1 and F_2 are defined completely, whereas only the lines of action are given for F_3 and F_4.
Determine by drawing a polygon of forces the magnitudes and direction of F_3 and F_4 that are required to put the system in a state of equilibrium.
Use a scale of 10mm representing 1N.. Write the magnitudes in the spaces below and indicate the direction of the forces on the given figure.

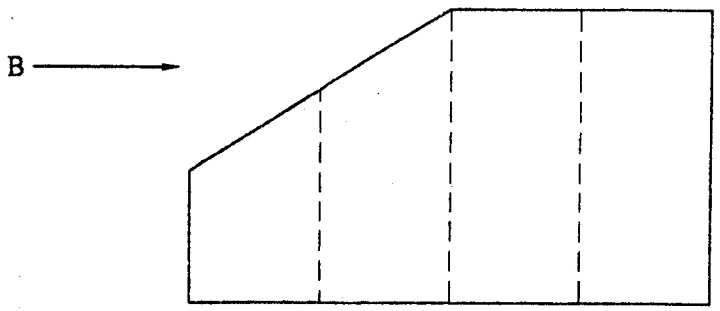
10 marks

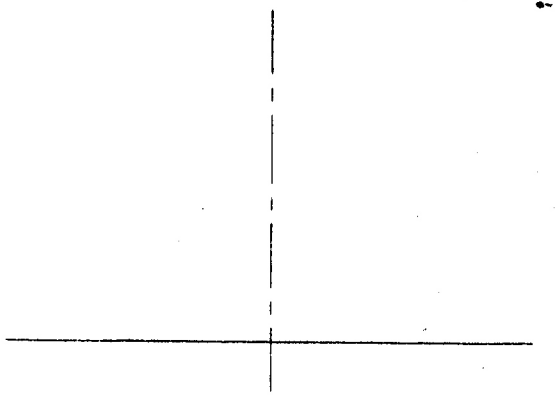
Space Diagram

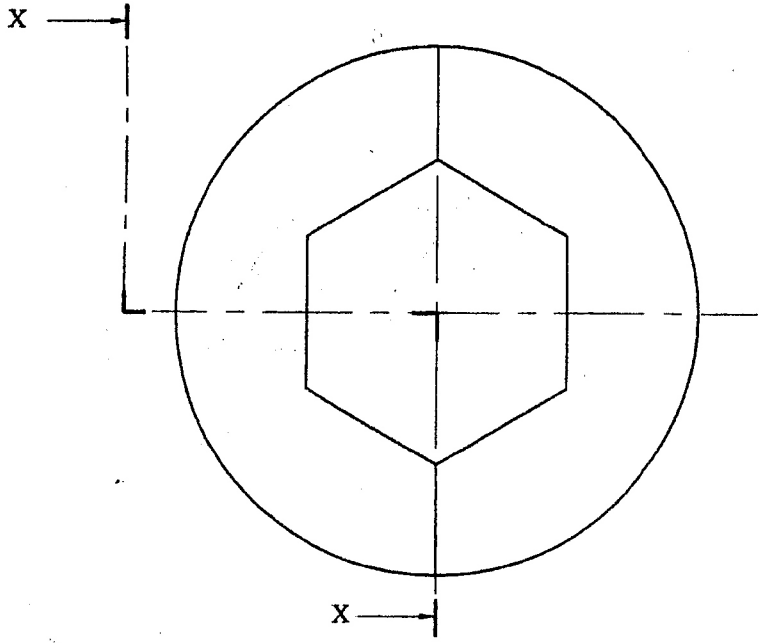


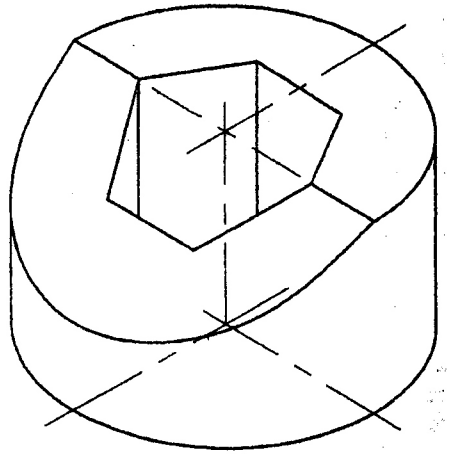
Magnitude of F_3 ..... Magnitude of F_4 .....

5. The figure shows in first angle projection details of a cylindrical component having a regular hexagonal core.
   a) Project from the given front elevation an end view looking in the direction of arrow B showing that part of the end view to the right of the centre line to be in section on plane X - X.
   b) Show all hidden detail. 20 marks



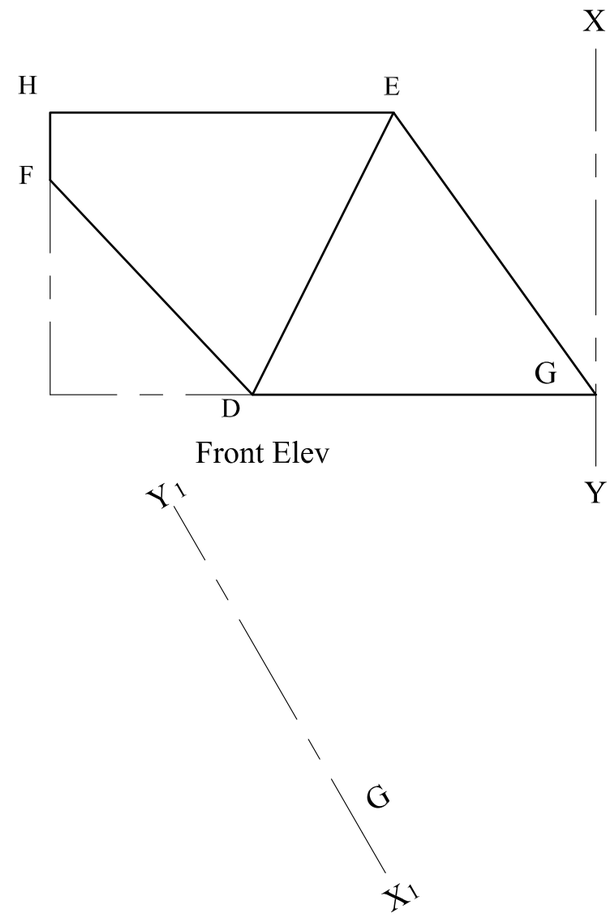


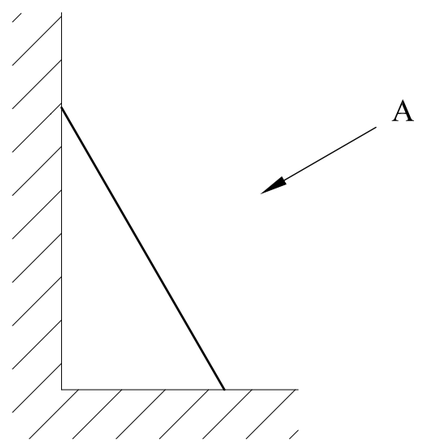


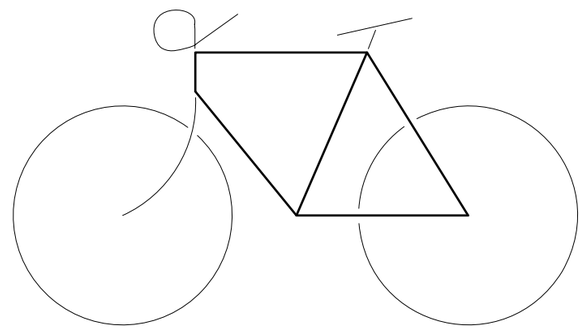


6. The figure below shows two views in first angle projection of a **bicycle frame** leaning against a wall.

a) Draw a complete auxiliary plan in the direction of arrow A and state
b) the true lengths of DE and DF
c) all projection line must be shown. 20 marks







DE =
DF =