GEOMETRICAL AND MECHANICAL DRAWING

(Maximum Marks: 100)

(Time allowed: Three hours)

*(Candidates are allowed additional 15 minutes for **only** reading the paper.*
They must NOT start writing during this time.)

The intended marks for questions or parts of questions are given in brackets [ ].

A sheet of drawing paper size A2 (594 mm × 420 mm) is provided.

All dimensions are in millimetres.

Arcs of circles less than 4 mm radius may be drawn freehand.

All construction lines must be shown clearly.

Accuracy and good draughtsmanship are essential.

Write your Unique Identification Number (UID) and Index Number at the bottom right-hand corner of
your paper in a title block 120 mm × 50 mm.

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*Answer **all** Questions*

Question1

Draw the three views of the given object *(Figure 1)* in correct projection.

First or Third Angle:

(a)   Front elevation in the direction of the arrow.   [10]

(b)   The end elevation (side view).   [10]

(c)   The plan (top view).   [10]

(d)   Symbol of the method of projection you have chosen.   [5]

Question 2

Figure 2 attached, shows the details of a sleeve and a cotter joint which is used to typically connect two similar coaxial cylindrical rods to take both tensile and compressive loads. Assemble the parts as follows:

Two cylindrical rods (part 1, part 2), which are to be joined, are aligned coaxially. Part 1 is inserted from left in such a way that the cavity of part 1 is aligned with the left cavity of the sleeve (part 3). Similarly, part 2 is inserted from right in such a way that the cavity of part 2 is aligned with the right cavity of the sleeve (part 3). Two cotters (part 4 and part 5) are inserted into the aligned slots such that the tapered ends are facing each other.

(a)   Draw a full size sectional elevation of the assembled components (along A – B).   [30]

(b)   Draw the plan (top view) of the complete assembly, omitting all the hidden details.   [10]

This Paper consists of 3 printed pages and 1 blank page.

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Turn over

(c)   Draw the side view of the assembly, omitting all the hidden details.   [15]

(d)   Make a neat parts list for all the components, on the drawing sheet.   [10]
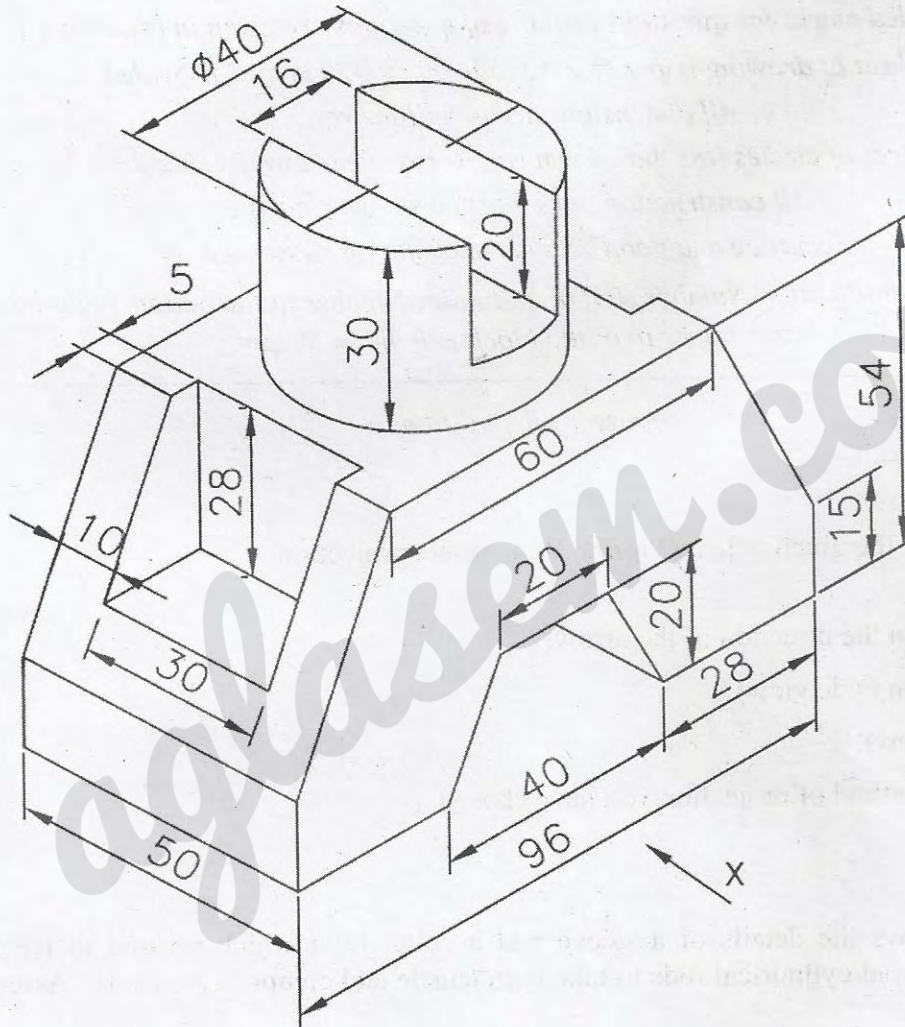
Figure 1 for Question 1

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Figure 2 for Question 2

TAPER 1 in 30

F.V.
L.H.S.V.
Part 5
Sleeve 2

6
80
27
25

TAPER 1 in 30

F.V.
L.H.S.V.
Part 4
Sleeve 1

6
80
27
25

L.H.S.V.
R12
6
Ø50

TAPER 1 in 30
TAPER 1 in 30
F.V.
T.V.
Part 3
Sleeve

26
26
160
28
30
26
26
9
A
B

Ø20
TAPER 1 in 30
23
29
78
Ø26
2x45°
F.V.
T.V.
Part 2
Rod 2
Ø26
9

2x45°
Ø26
TAPER 1 in 30
29
23
78
F.V.
T.V.
Part 1
Rod 1
Ø26
Ø20
9

3