ISC

INDIAN SCHOOL CERTIFICATE EXAMINATION

YEAR 2028



GEOMETRICAL AND MECHANICAL DRAWING

(869)

Developed by:
Research, Development and Curriculum Division (RDCD)
CISCE

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Council for the Indian School Certificate Examinations (CISCE)

MISSION STATEMENT

The Council for the Indian School Certificate Examinations is committed to serving the nation's children, through high quality educational endeavours, empowering them to contribute towards a humane, just and pluralistic society, promoting introspective living, by creating exciting learning opportunities, with a commitment to excellence.

ETHOS OF CISCE

- Trust and fair play.
- Minimum monitoring.
- Allowing schools to evolve their own niche.
- Catering to the needs of the children.
- Giving freedom to experiment with new ideas and practices.
- Diversity and plurality - the basic strength for evolution of ideas.
- Schools to motivate pupils towards the cultivation of:
  Excellence - The Indian and Global experience.
  Values - Spiritual and cultural - to be the bedrock of the educational experience.
- Schools to have an 'Indian Ethos', strong roots in the national psyche and be sensitive to national aspirations.

CLASS XII

*There will be **two** papers in the subject:*

***Paper I -** Theory: 3 hours…… 80 Marks*

***Paper II** - Project Work ……. 20 Marks*

PAPER I (THEORY) : 80 Marks

Drawing (Engineering)
Candidates will be required to answer **all** questions.

The preparation of working drawings and assemblies from dimensioned sketches based on the following:

(a) fastening (nuts, bolts, studs, keys, cotters, pins, locking devices);

(b) rigid and flexible joints;

(c) screw threads; their projection and the proportions of standard types, profiles and proportions of spur gear teeth; conventional methods of drawing gear wheels;

(d) transmission of motion and power, bearings, supports, shafts, coupling and clutches;

(e) pressure transmission in pipes using water, oil, steam and gas, joints, unions, tees and bends, expansion joints, pressure packing;

(f) constructional details of prime moves and simple machine tools;

(g) the use of reference points and planes in dimensioning, machining and surface texture symbols;

(h) toleranced dimensions involving the use of IS:919 or B.S. 4500 Limits and Fits for Engineering.

Candidates will be expected to follow the recommendations given in IS:696 - 1972 Indian Standard, Code of Practice for General Engineering Drawing. They should be familiar with both First and Third Angle projections.

PAPER II (PROJECT WORK) : 20 Marks

In addition to the syllabus prescribed above, candidates are also required to be assessed in Project Work.

All candidates will be required to have completed **three** project sheets, selecting at least **one** from Section A (Orthographic Projections) and **one** from Section B (Assembly Drawings). **Each** Project sheet will carry **5 Marks**.

The Project work will be assessed by the subject teacher and the Visiting Examiner appointed locally and approved by CISCE.

Mark allocation for *each* Project sheet (5 marks)*:

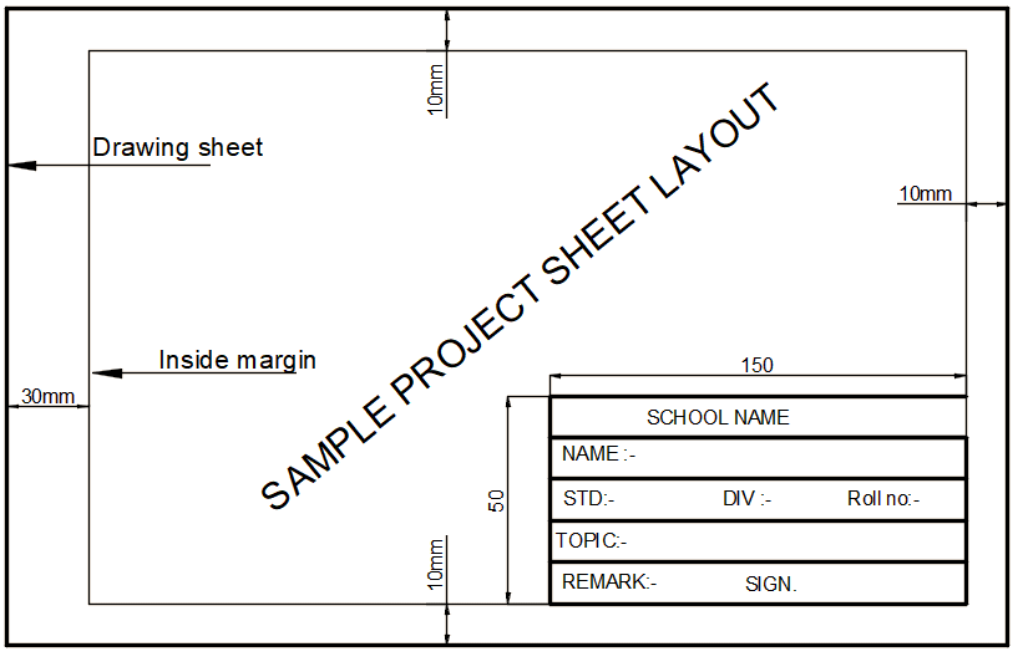
	Criteria	Marks
1.	Project size / completeness	1
2.	Line Quality	1
3.	Neatness	1
4.	Accuracy	1
5.	Title Block	1
TOTAL		**5**

Marks out of 20 will be distributed as given below:

1.	3 Project sheets × 5 Marks	15 Marks
2.	Viva-Voce (Visiting Examiner)	5 Marks
TOTAL		**20 Marks**

Instructions for Project Work:

Candidates must use A2 size (**Half Imperial**) drawing sheets to complete all projects. A sample project sheet layout with specifications, is given below:



- Candidates must use the given layout and specifications to complete each project sheet.
- Accuracy, neat and clean work is expected from candidates while completing the project sheets.
- Candidates need **not** draw / paste the questions.

For assembly drawing, candidates need to draw:

(i) Full sectional F.V.

(ii) T.V. by using 1st **OR** 3rd angle method of projection (omitting all the hidden lines)

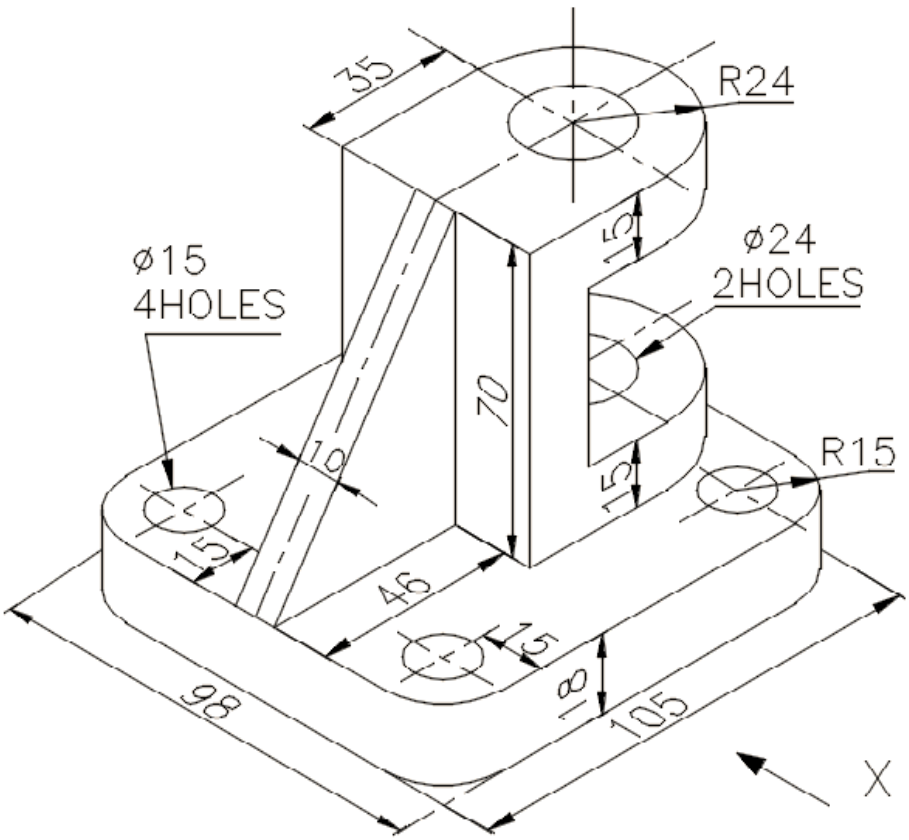
PROJECT SHEETS

*Candidates are required to have completed **three** project sheets, selecting at least **one** from **Section A** (Orthographic Projections) and **one** from **Section B** (Assembly Drawings).*

SECTION A - ORTHOGRAPHIC PROJECTIONS

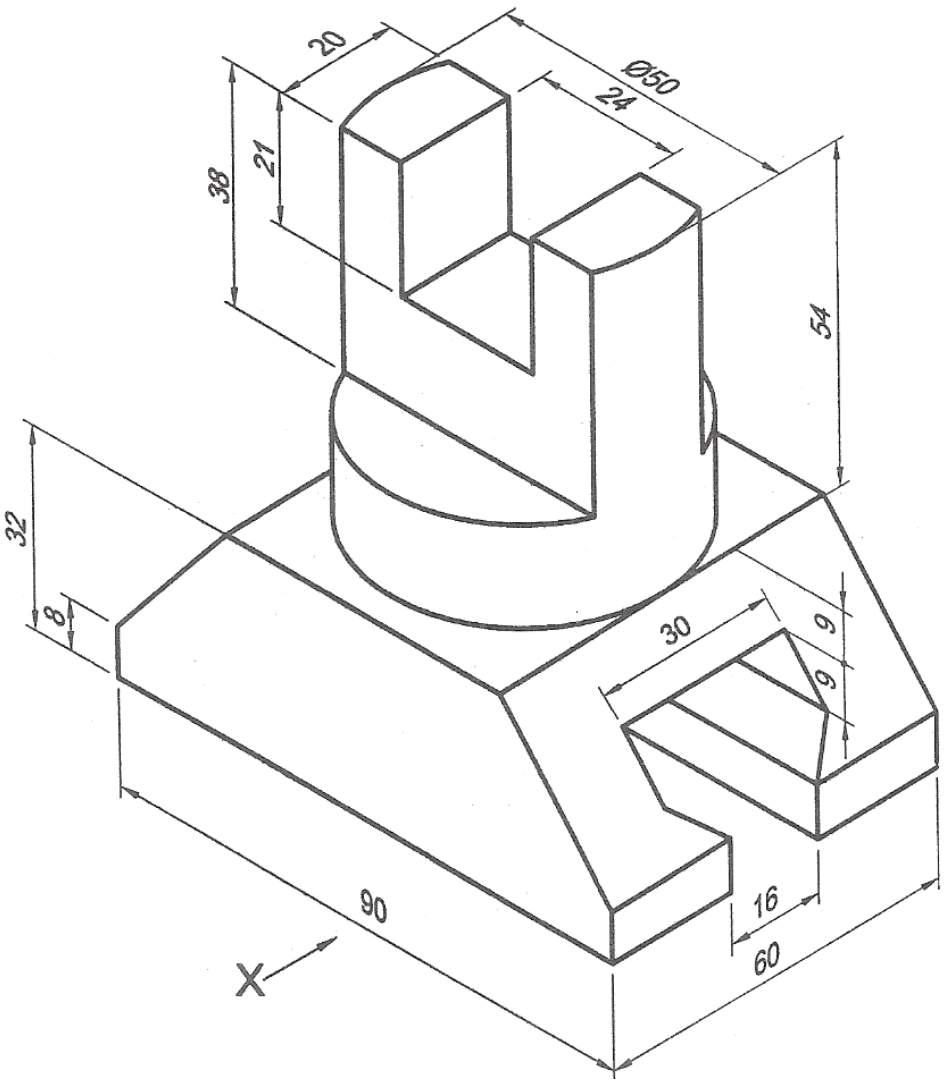
Project Sheet 1

Draw by using 1st **OR** 3rd angle method of projection i) F.V, ii) T.V. & iii) L.H.S.V



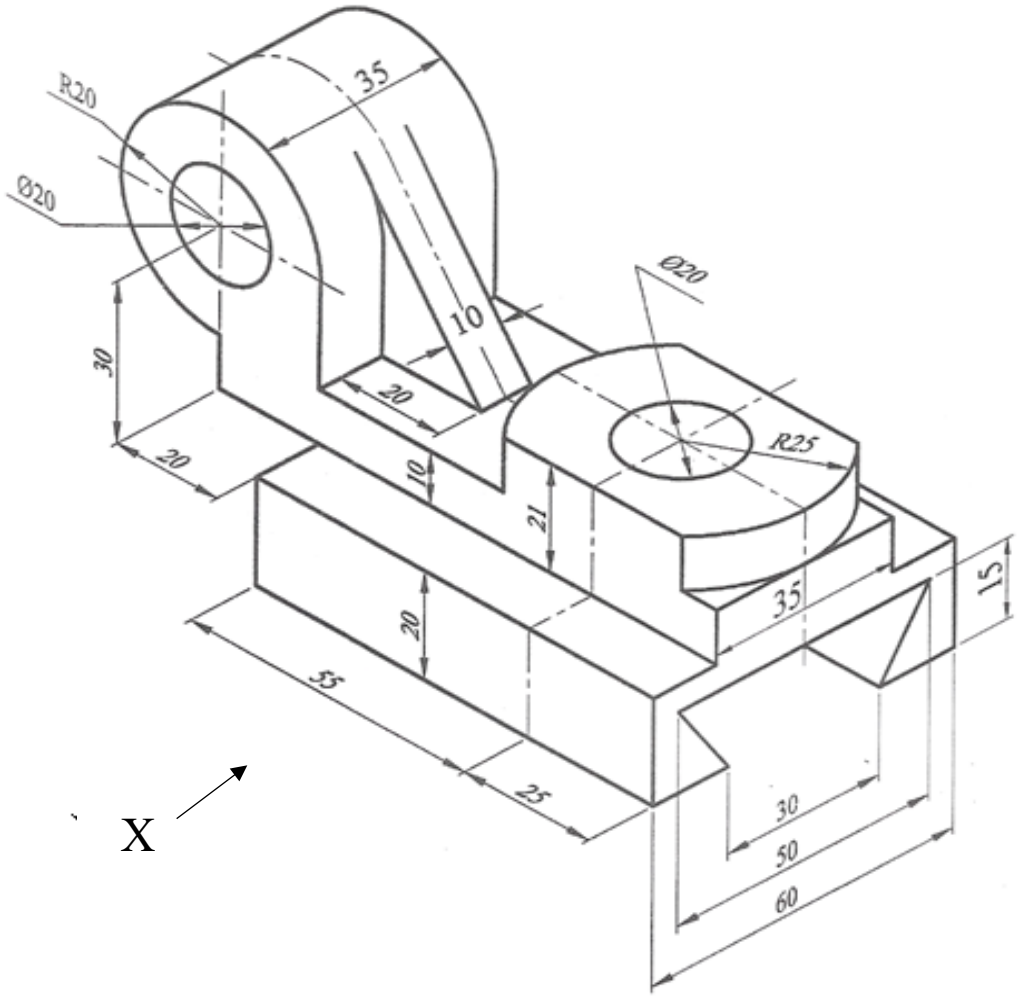
Project Sheet 2

Draw by using 1st **OR** 3rd angle method of projection i) F.V, ii) T.V. & iii) R.H.S.V



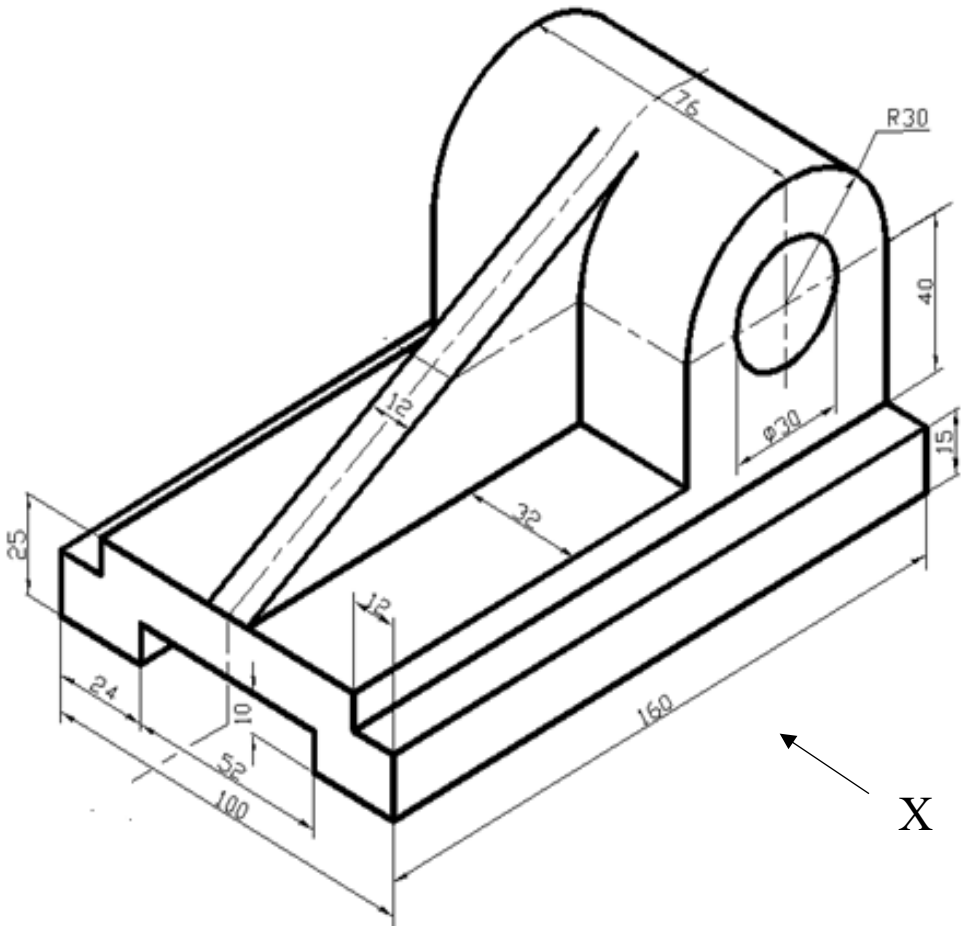
Project Sheet 3

Draw by using 1st **OR** 3rd angle method of projection i) F.V, ii) T.V. & iii) L.H.S.V



Project Sheet 4

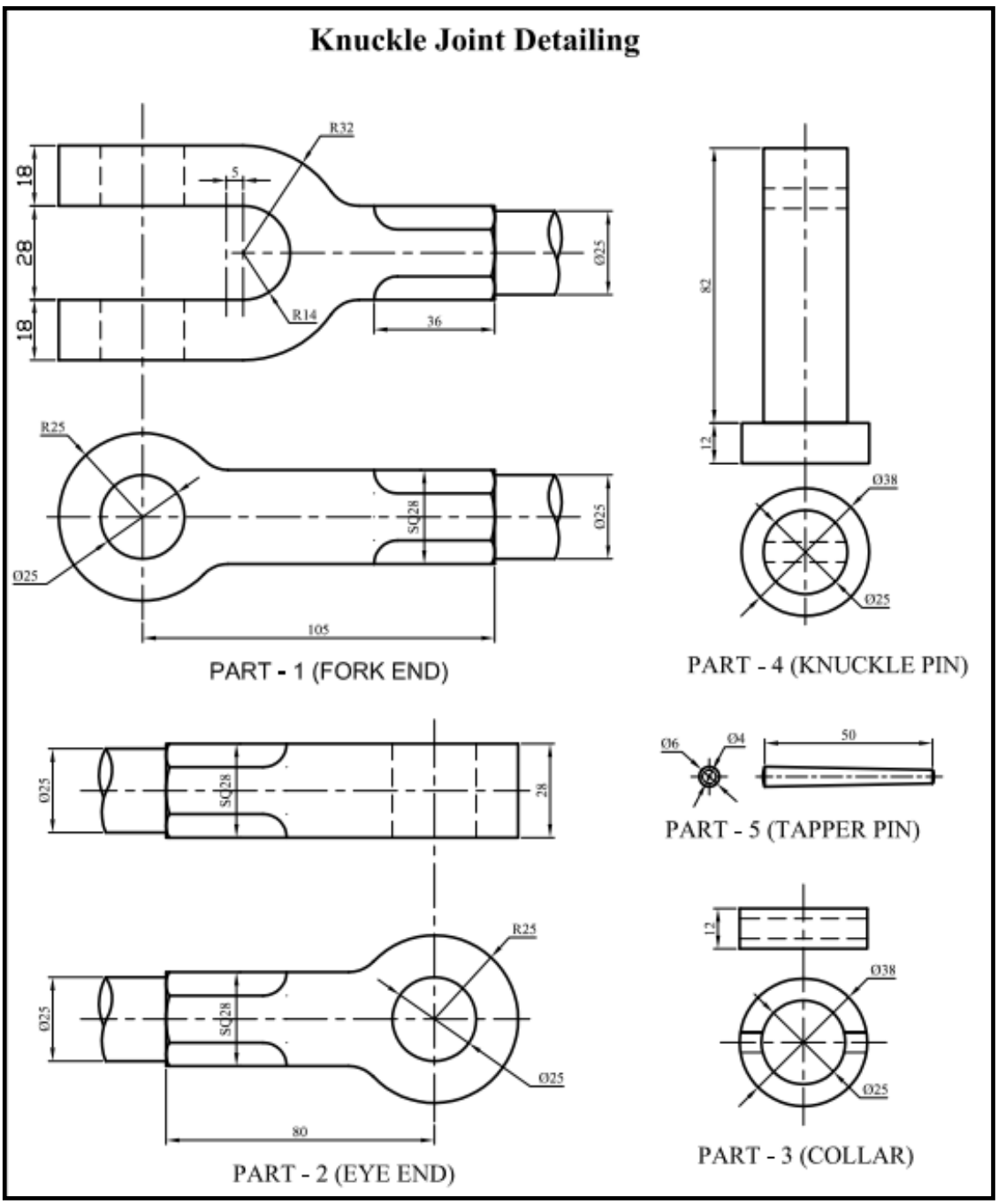
Draw by using 1st **OR** 3rd angle method of projection i) F.V, ii) T.V. & iii) L.H.S.V



SECTION B - ASSEMBLY DRAWINGS

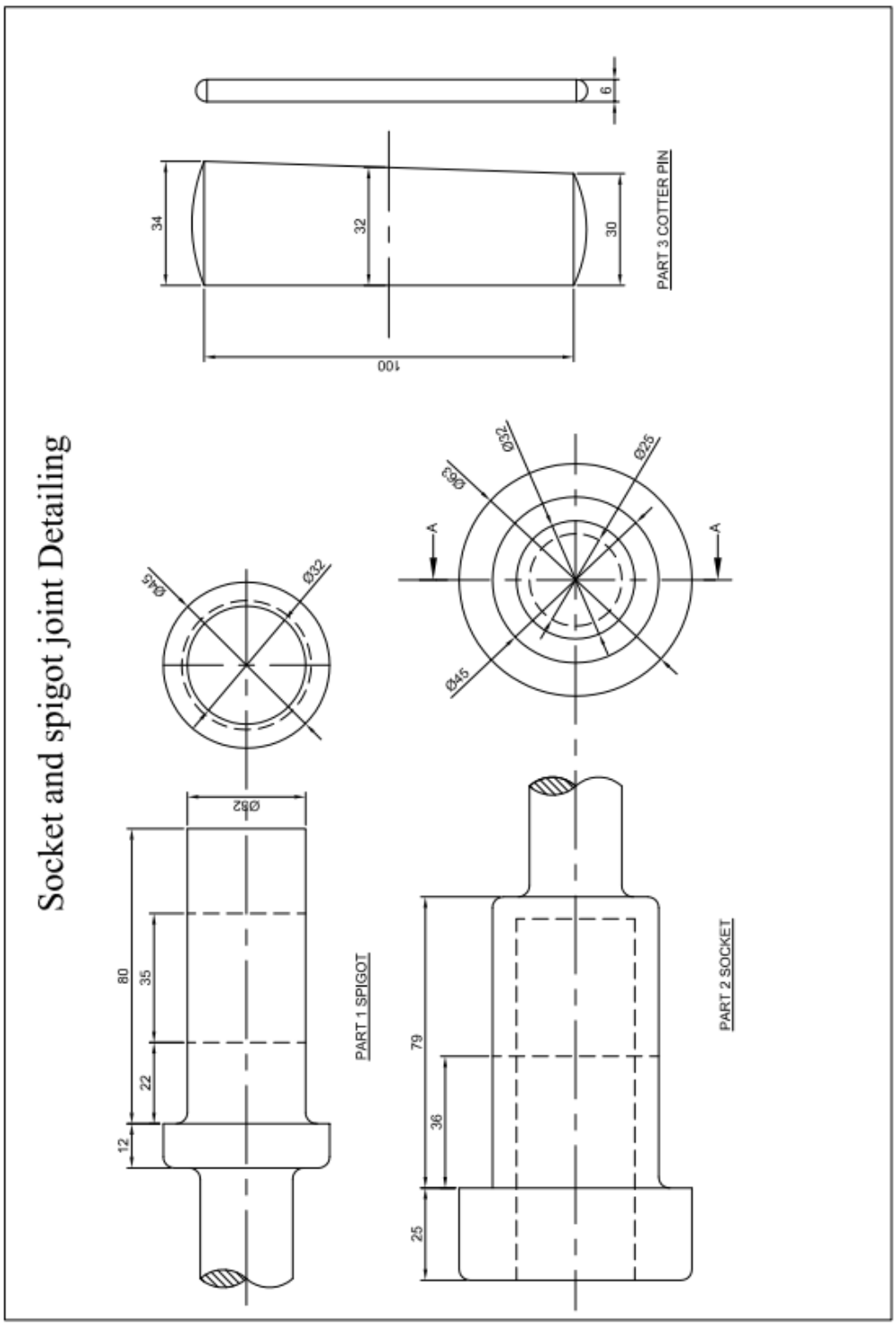
Project Sheet 1

Draw full sectional F.V & T.V of the following details of machine Parts. (omitting all hidden details)



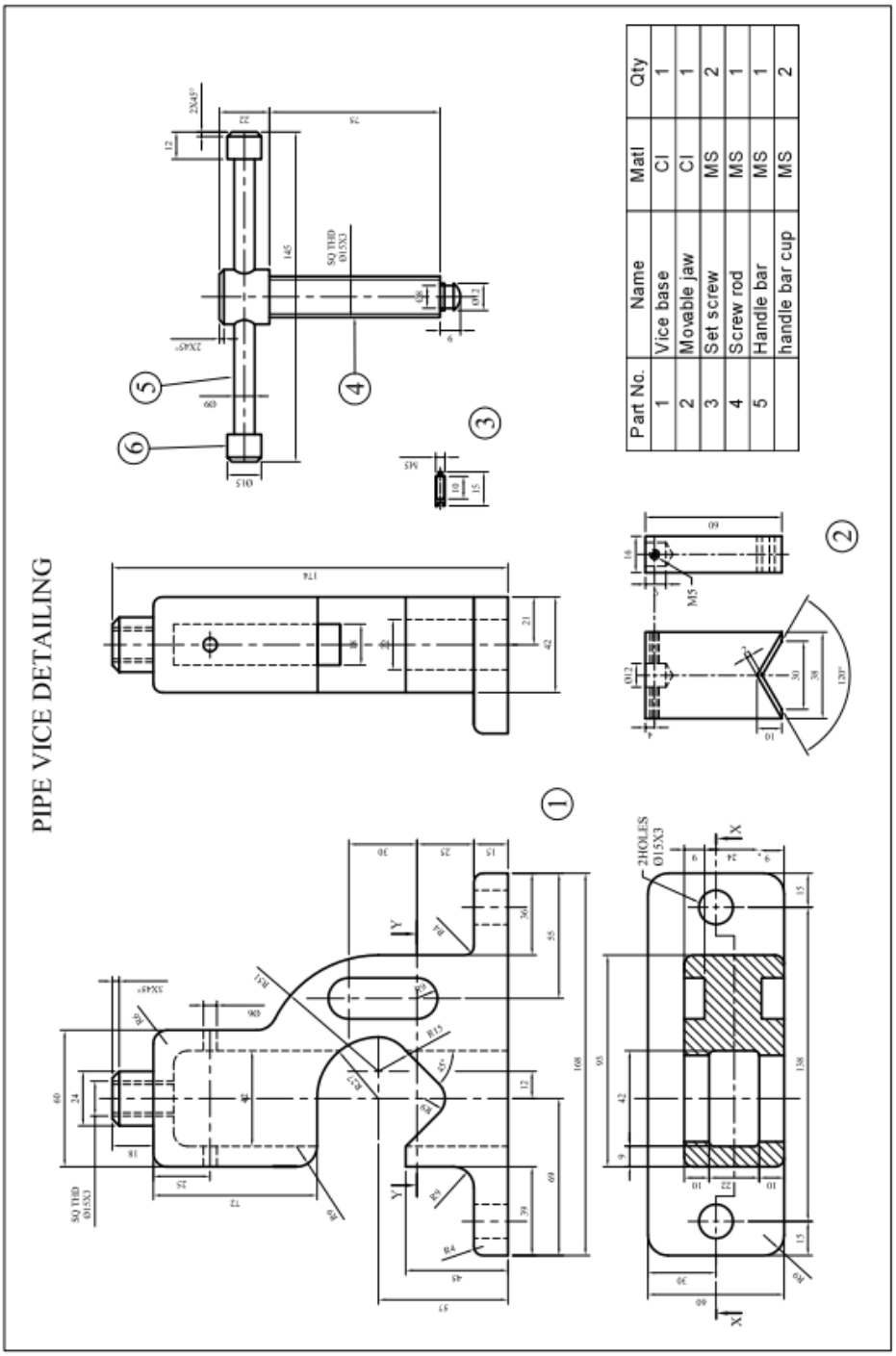
Project Sheet 2

Draw full sectional F.V. & T.V. of the following details of machine Parts. (omitting all hidden details)



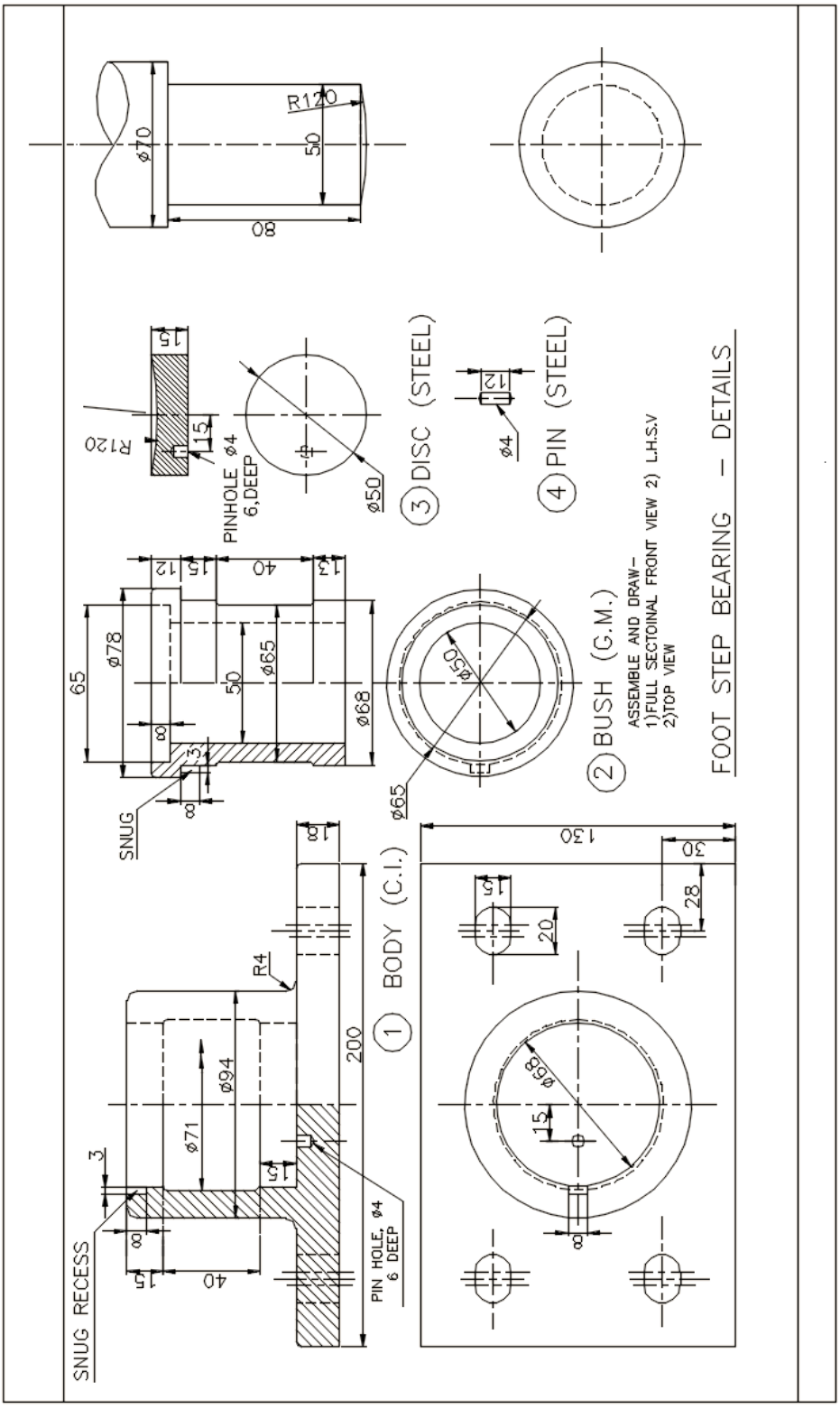
Project Sheet 3

Draw full sectional F.V & T.V of the following details of machine Parts. (omitting all hidden details)



Project Sheet 4

Draw full sectional F.V & T.V of the following details of machine Parts. (omitting all hidden details)



SAMPLE TABLE FOR PROJECT WORK

S. No.	Unique Identification Number (Unique ID) of the candidate	PROJECT SHEETS (Total 3 sheets of 5 marks each)				TOTAL MARKS
		A	B	C	D	
		Teacher	Visiting Examiner	Average Marks (A + B ÷ 2)	Viva-Voce by Visiting Examiner on all three project sheets	(C + D)
		15 Marks	15 Marks	15 Marks	5 Marks	20 Marks
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

*For breakup of the 5 Marks (for each project sheet) to be awarded separately by the Teacher and the Visiting Examiner, please refer to the table giving the criteria for mark allocation for *each* project.

NOTE: VIVA-VOCE of 5 Marks on the Project Sheets is to be conducted only by the Visiting Examiner and should be based on the Project Sheets only.