3.7 DRAWING AND DESIGN (449)

The drawing and Design examination for 2013 was tested in two papers; paper 1(449/1) and paper 2 (449/2). Paper 1 was a theory paper which constituted 60% of the final mark while Paper 2 was a practical paper which constituted 40% of the final mark. Both papers followed the setting format as that of last year, 2012.

Candidates' Overall Performance

Table 14: Candidates' Overall performance for the Years 2008, 2009, 2010, 2011, 2012 and 2013

Year	Paper	Candidature	Max. Score	Mean Score	Standard Deviation
2008	1		60	20.42	10.51
	2		40	26.16	5.87
	Overall	**19**	**100**	**46.58**	**15.44**
2009	1		60	26.31	13.12
	2		40	20.44	7.53
	Overall	**313**	**100**	**46.75**	**18.49**
2010	1		60	27.93	12.09
	2		40	22.22	6.49
	Overall	**307**	**100**	**50.15**	**14.79**
2011	1		60	31.52	10.17
	2	**428**	40	24.17	7.00
	Overall		**100**	**55.68**	**15.21**
2012	1		60	32.61	11.67
	2	**420**	40	24.17	7.00
	Overall		**100**	**55.68**	**15.21**
2013	1		60	28.94	11.60
	2	**483**	40	27.52	6.34
	Overall		**100**	**56.45**	**16.39**

From the table above, the following observations can be made:

(i) The candidature increased from 420 in 2012 to 483 in 2013.

(ii) Both the mean and standard deviation increased from **55.68** to 56.45 and **15.21 to 16.39** respectively.

3.7.1 Drawign and Design Paper 1 (449/1)

The following analysis examines individual questions where poor performance was recorded in the paper. The questions include **3, 11, 13** and **14.**

Question 3

Name the **three** groups of metals and give **one** example in each group. (3 marks)

Weakness

Most candidates were unable to differentiate between the three groups of metals.

Advice to teachers

Teachers are advised to organize for educational trips to industries for exposure of the students to materials like metals and others.

Expected responses

- Ferrous e.g steel
- Nonferrous e.g copper, level, aluminium, silver, gold
- Alloys eg. brass, bronze solder

Question 11

Figure 6 shows parts of a mechanical component drawn in first angle projection. Assemble the parts and draw FULL SIZE, the following:

(a) sectional front elevation along the cutting plane P-P;

(b) end elevation;

(c) insert three leading dimensions.

Unspecified dimensions are left to the candidates discretion. Hidden details are not required.
(Use the A3 paper provided). (20 marks)

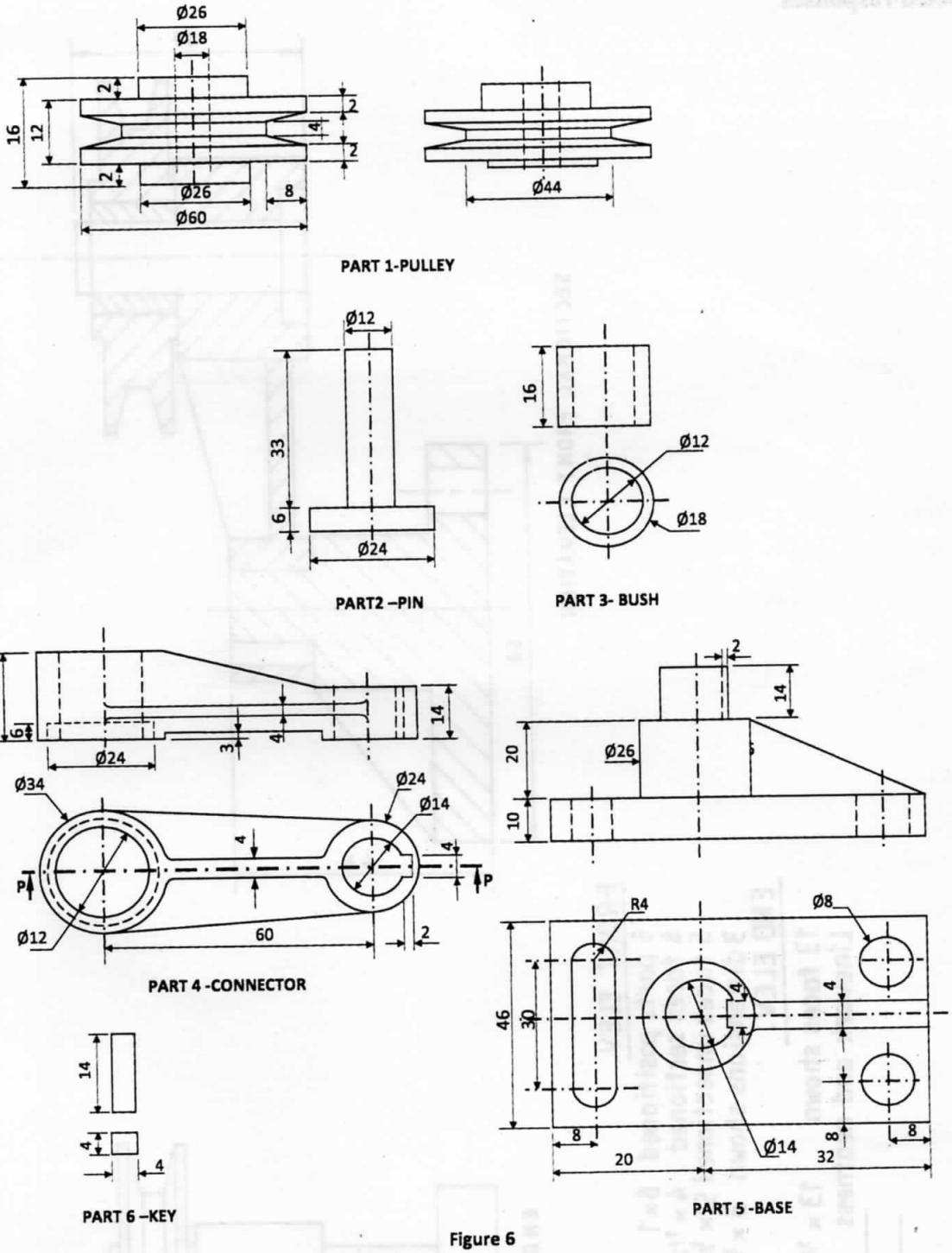


Figure 6

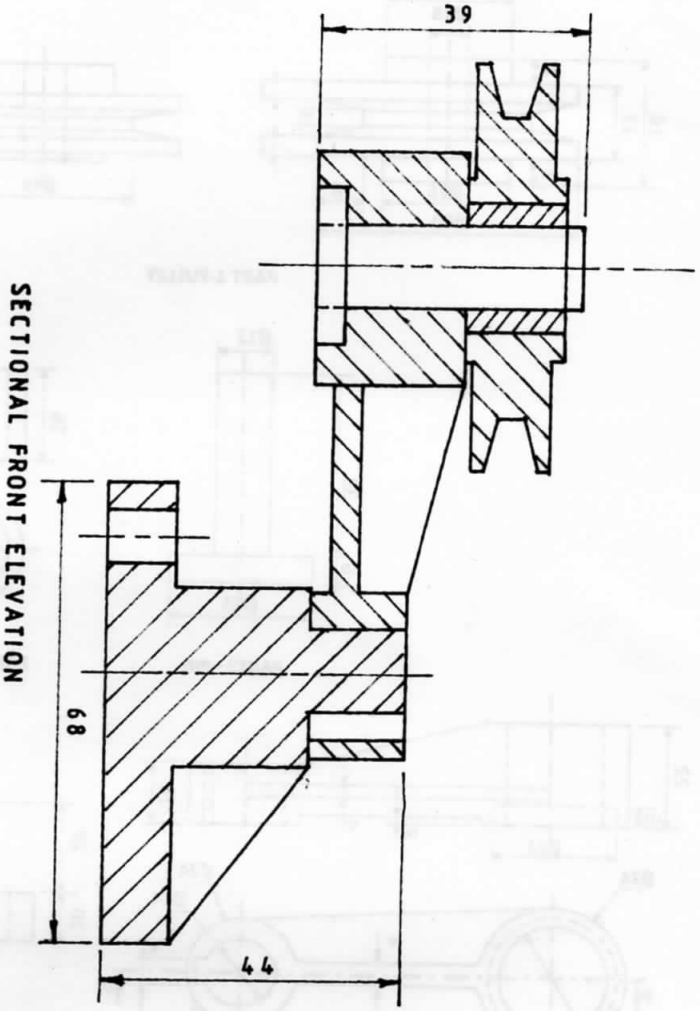
Weakness

Most candidates were not able to assemble the parts and draw the views stated.

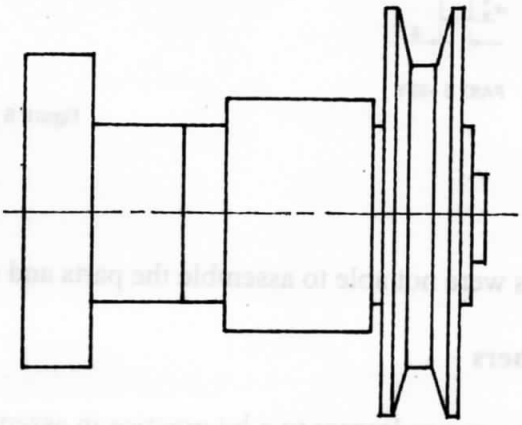
Advice to teachers

Teachers need to expose learner to a lot practice in assembly drawing by giving them assignments to do both in class and take away.

Expected responses



SECTIONAL FRONT ELEVATION



END ELEVATION

FRONT ELEV.

6 parts positioned	6 × 1	6	= 6
4 faces sectioned	4 × ½	=	2
5 faces unsectioned	5 × ½	=	2½
3 dimensions shown	3 × ½	=	1½

END ELEV.

13 faces shown	13 × ½	= 6½
Linework and neatness		= 1½
		= 20 marks

Question 13

Figure 8 shows an inclined plan of a block and its front elevation.

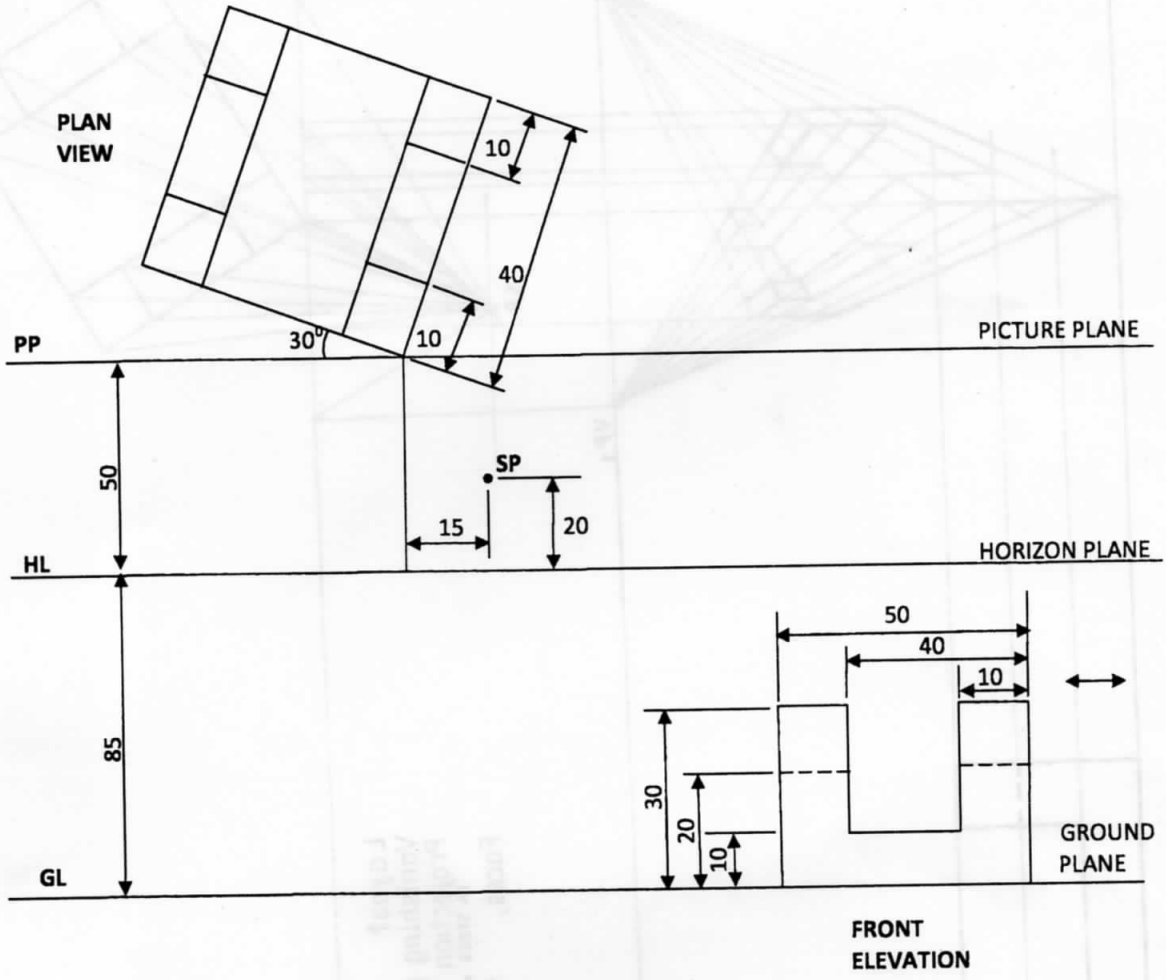


Figure 8

Copy the given layout and draw the two point perspective of the block showing all construction details. (15 marks)

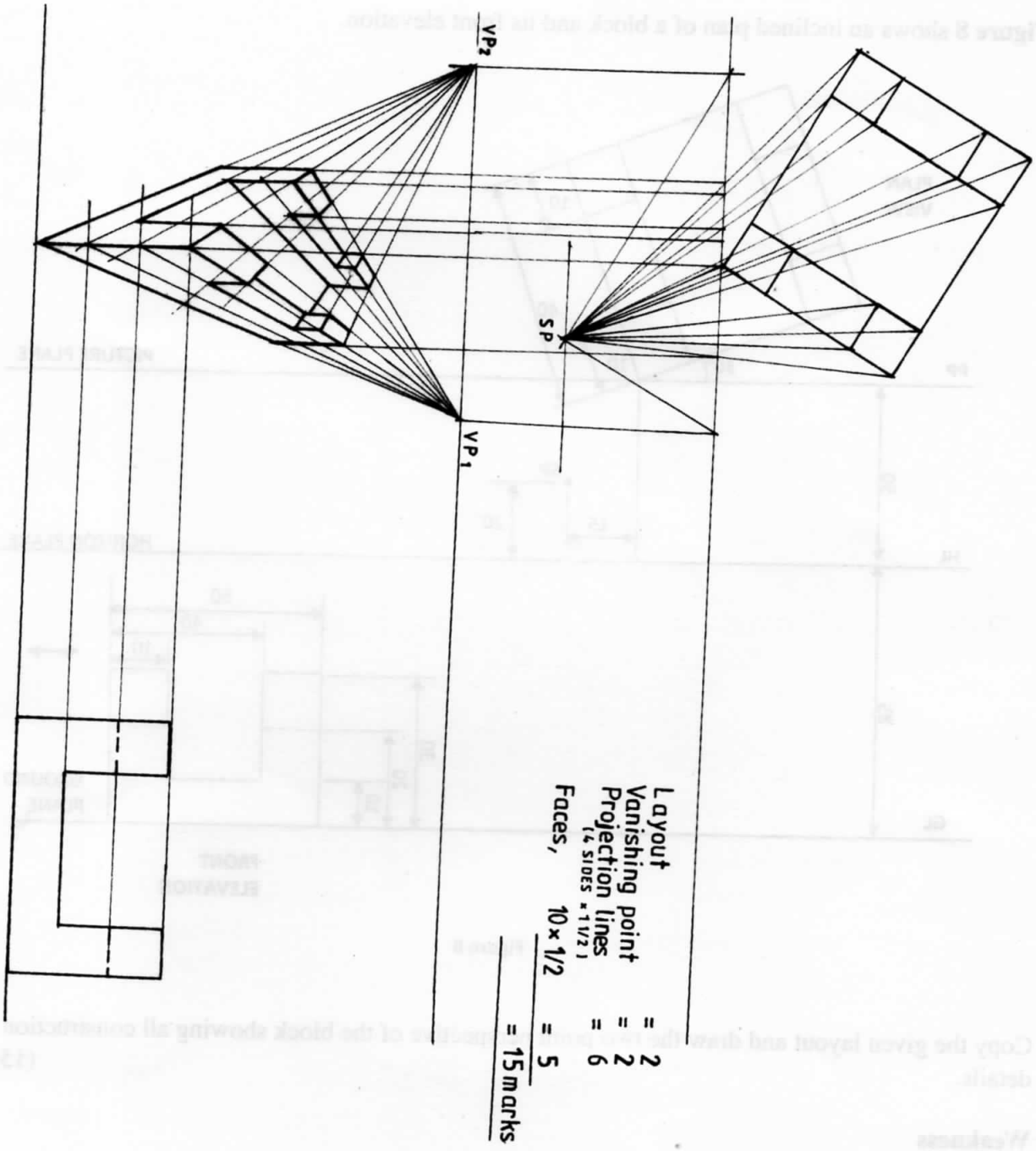
Weakness

Some candidates did not use the stations indicated on the drawing thus affecting the vanishing point.

Advice to teachers

Teachers are advised to give students more practice in perspective drawing.

Expected responses



Question 14

Figure 9 shows two intersecting square tubes A and B drawn in 1st angle projection.

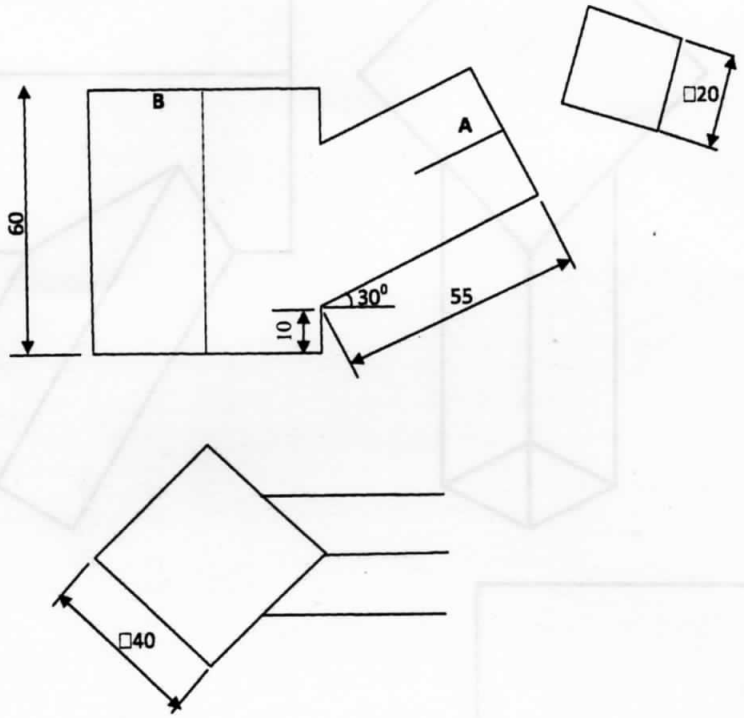


Figure 9

(a) copy the figure and complete:

(i) the front elevation
(ii) the plan.

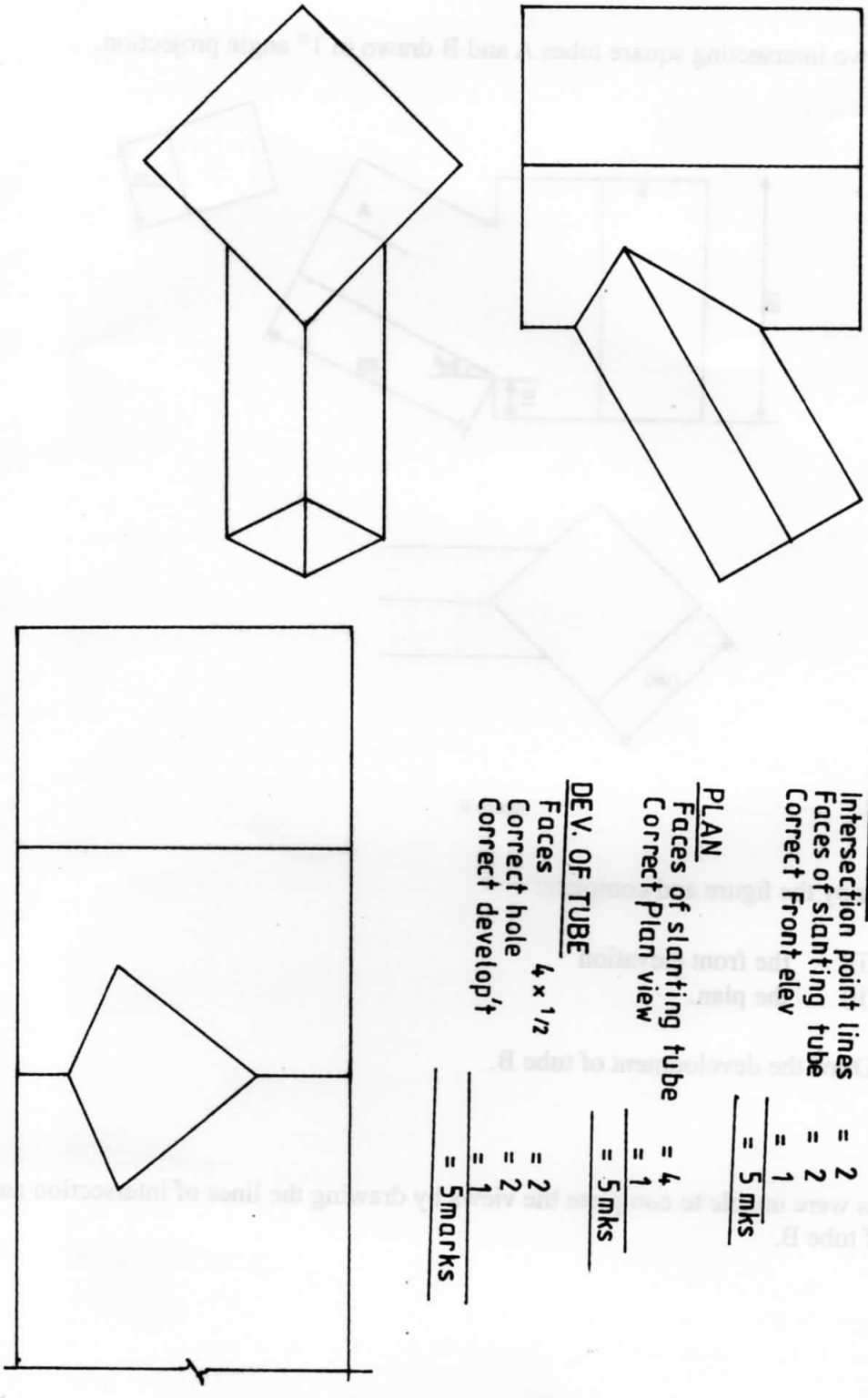
(b) Draw the development of tube B.

(15 marks)

Weakness

Most candidates were unable to complete the views by drawing the lines of intersection and also the development of tube B.

Expected response



FRONT ELEV.
Intersection point lines = 2
Faces of slanting tube = 2
Correct Front elev = 1
= 5 mks

PLAN
Faces of slanting tube = 4
Correct Plan view = 1
= 5mks

DEV. OF TUBE
Faces 4 x 1/2 = 2
Correct hole = 2
Correct develop't = 1
= 5marks

Advice to teachers

Teachers are advised to give learners more practice in drawing the lines of intersection and development.

3.7.2 Drawing and Design Paper 2 (449/2)

This paper is always composed of one design question which must be attempted by all the candidates. In the year 2013, the question required the candidates to design a suitable table for a physically challenged person considering the following:

- It should be easily moved from one position to another.
- It should be adjustable to comfortable heights.
- The working top should be adjustable to any desired angle of inclination.
- It should have an extended top that is collapsible.
- It should have provision for placement of light stationery like pencils, pens, pins, erasers and rulers.

In their responses, the candidates were expected to present rough sketches of two possible designs. In the second requirement, the candidates were to select one of the two possible designs and refine it into an exploded pictorial drawing. The third requirement called for the candidates to make detailed sketches of suitable mechanisms to cater for each features cited.

Advice to Teachers

(i) Give the students a lot of practice in sketching exploded views and presenting various ideas in drawing form.

(ii) Candidates also need sufficient exposure to various designs in order to develop the desired concepts.

(iii) Teachers should insist on neatness, line work and proportionality in all the drawing assignments given to their students.

(iv) Teachers should also ensure that the entire syllabus is covered including topics like materials and methods of joining different parts of objects.