19.0 METAL WORK (445)

The 2011 KCSE examinations for Metalwork consisted of two papers namely Paper 1 (theory) and Paper 2 (Practical Project). The theory was worth 60% while practical was worth 40% of the final mark.

19.1 CANDIDATES GENERAL PERFORMANCE

The table below shows candidates' overall performance for the period 2005,2008, 2009,2010 and 2011.

Table 30: candidates' overall performance for the period 2005,2008, 2009,2010 and 2011.

Year	Paper	Candidature	Maximum Score	Mean Score	Standard Deviation
2005	1		60	23.40	9.60
	2		40	34.90	3.24
	Overall	**311**	**100**	**57.74**	**12.00**
2008	1		60	23.62	6.96
	2		40	35.62	4.57
	Overall	**89**	**100**	**59.24**	**9.38**
2009	1		60	25.38	9.09
	2		40	35.34	3.38
	Overall	**231**	**100**	**58.74**	**13.32**
2010	1		60	22.60	9.09
	2		40	15.25	4.32
	Overall	**222**	**100**	**37.70**	**12.58**
2011	1		60	30.92	9.55
	2	**170**	40	20.65	4.29
	Overall		**100**	**51.57**	**12.43**

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

The mean score for the year 2011 imperoved compared to the means for year 2010. This is an indication that there was notable improvement in the performance for both papers.

There is consistenet drop in the candidature for thelast three years.

19.2 Paper 1 (445/1)

The questions which were reported to have been poorly responded thave been analysed with a view to pointing out candidates' weaknesses and propose suggestions on some remedial measures that would be taken in order to improve performance in future. The questions for discussions include 1(b), 6, (a), 11 and 14 (b)

Question 1(b)

State the minimum entry requirement for each of the following courses:

(i) artisan;
(ii) diploma;
(iii) craft. (1 ½ marks)

Candidates were expected to state the minimum entry requirement for courses at artisan, craft and diploma level.

Weaknesses

Many candidates did not attempt this question a sign that they did not know the answer.

Comment

Teachers are advised to cover the whole syllabus including the topic on career information adequately.

Expected Responses

i) Artisan level- Minimum entry requirement is KCPE certificate
ii) Craft level – Minimum entry requirement is D+ in KCSE or a certificate in the relevant artisan course
iii) Diploma – Minimum entry requirement is C- in KCSE or a certificate in the relevant craft course.

Question 6

(a) State **two** advantages of a leg vice over engineer's vice. (2 marks)

Candidates were expected to give the advantages of a leg vice over an engineer's vie.

Weaknesses

Most candidates thought that because the leg vice is used in forge work, it is not the leg vice which the question expected them to address.

Comment

Teachers are advised to explain to the students that as much as the vice is used in forge work, it name is a leg vice and that it is used in forge work due to its rigidity in withstanding heavy blows and not because of the hot work.

Expected Responses

a) LEG VICE
Enhanced rigidity hence withstands heavy blows
Capable of opening more hence holds wider work piece
Withstands very high temperatures

Question 11

Figure 2 shows orthographic views of a machined block drawn in third angle projection.

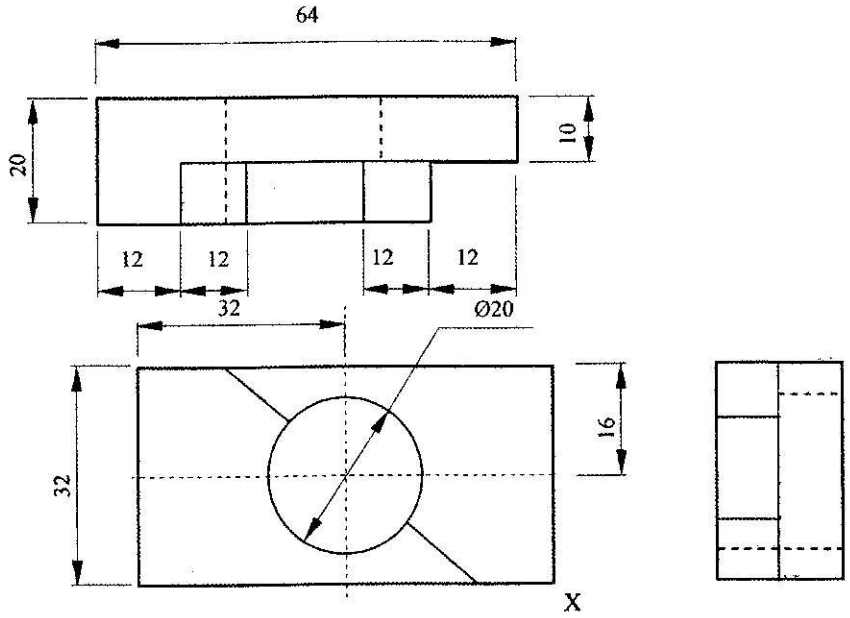


Figure 2

On the grid paper provided, draw the isometric view of the block taking X as the lowest point. Show **three** leading dimensions. (15 marks)

Candidates were expected to make an isometric drawing after interpreting the given drawings in orthographic projection

Weaknesses

A good number of candidates did not attempt this question which is a clear indication that they were unable to interpret the given orthographic projection and come up the isometric drawing.

Advice

Teacher are advised to emphasis the interpretation from orthographic projection to isometric and give students a lot of questions which will give them adequate practice.

Question 14 (b)

Outline the procedure of sweating as applied to soft soldering and name all the tools and materials required in each step. (8 marks)

Candidates were expected to outline the procedure of sweating as applied in soldering.

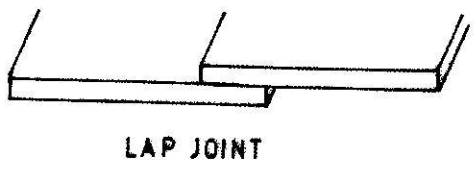
Weaknesses

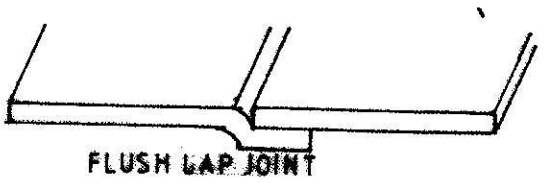
Most candidates did not attempt this question meaning that they were not conversant with that term.

Advice

Teachers are advised to emphasis the soldering procedures mentioning the entire step as outlined in the syllabus.

Expected Responses





Sketch 2 x 1 = 2

(b) PROCEDURE:

- Clean the surface to be soldered, with abrasive cloth
- Clean the soldering bit with a file
- Tin the soldering bit
  - heat the soldering bit until it is brown
  - apply flux to the point
  - add solder to the point
- Tin the surfaces separately i.e. apply flux
  - heat
  - apply solder
- Put the surfaces to be joined together and press firmly.
- Heat the joint using any suitable heat source e.g. soldering iron, Gas torch or blow lamp etc; until the solder melts.
- Let the joint cool while still applying pressure.
- Clean the joint to remove any excess flux.

19.3 Paper 1 (445/2)

The 2011 Metalwork Paper 2 tested candidates in the following skills:

- Cutting using hand tools
- Filing
- Turning on the lathe
- Threading on the lathe
- Arc welding
- Riveting
- Bending
- Drilling

Weaknesses

- Teachers should let learners develop speed in their practical work.
- The use of unfamiliar tools and equipment during examinations should be
- avoided. Learners should be exposed to the tools in during their training to avoid
- the issue of them seeing them for the first time in the exam.
- Teachers should teach holistically by ensuring that they cover all the details as they appear in the syllabus.