

BUNAMFAN CLUSTER EXAMINATION – 2022

Kenya Certificate of Secondary Education

445/1 – METAL WORK – Paper 1

June 2022 - 2 ½ hours

Name.....Adm No.....

Class..... Date.....

INSTRUCTIONS

- Write your name, admission number and class in spaces provided.
- Write the date of the examination in the spaces provided
- Answer all questions in section A, Answer question 11 and any other three questions in section B in the space provided.
- ALL dimensions are in millimeters unless otherwise stated.

FOR EXAMINERS USE ONLY

Questions	Maximum score	Candidates score
1-10	40	
11	15	
12	15	
13	15	
14	15	
15	15	

1a) Define the terms **metals** and **metalwork**. (2marks)

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b) Name any four careers in the field of metalwork. (2marks)

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2a) Name the three aspects of safety. (1 ½ marks)

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b) List any five safety rules in a metal workshop. (2 ½ marks)

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3a) Metal cutting tools should be made using hard materials. Explain why and name those two metals. (2marks)

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b) Give two differences between Steel and aluminium. (2marks)

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4a) The figure shows a tool used in measuring and checking.



(i) Give the name of the tool and name the material used for making it. (2marks)

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(ii) Give two uses of the tool. (2marks)

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5 a) Why is the cutting edge of a cold chisel hardened while the end struck by a hammer tempered. (2marks)

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b) The figure below shows a tool used in cutting metals.



(i) Name the problem that the tool has, state the cause of it and explain how to correct it.

(2marks)

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6 The figure below shows a metal cutting tool.



a) Give the name of the tool and its use.

(2marks)

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b) State two reasons for notching edges of sheet metal.

(2marks)

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7 List all the steps followed in order to come up with a snap head on a rivet.

(4marks)

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8a) List four methods of applying paint.

(4marks)

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b) State two advantages of using a hacksaw over a cold chisel in cutting metals. (2marks)

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9 Give four uses of templates in metalwork.

(4marks)

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10 What care should be taken of the combination set?

(4marks)

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Section B (60marks)

Answer question 11 and any other three questions in this section

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

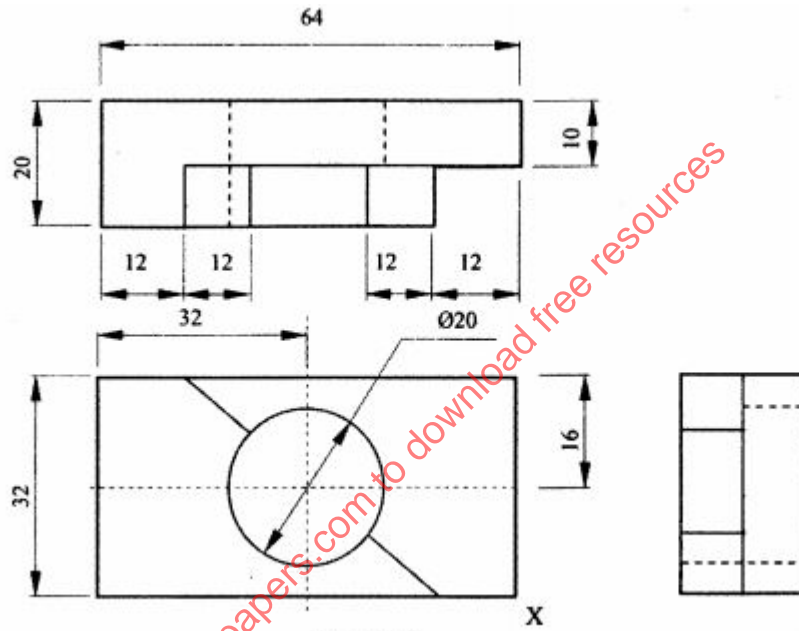


Figure 2

On the grid paper provided, draw the isometric view of the block taking X as the lowest point.

Show **three** main dimensions.

(15 marks)

12. Two mild steel plates of thickness 3mm are to be riveted using double riveted lap joint.

(a) Draw the sectional front elevation and plan of the riveted joint. (6marks)

(b) Calculate the rivet diameter

(2marks)

(c) Calculate the rivet shank projection for a snap head

(2marks)

(d) Calculate the distance between two rivets

(2marks)

(e) Use sketches to show three rivet defects

(3marks)

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13. Explain three inventories in the workshop

(3marks)

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(b) Explain the following documents as used in a workshop (3marks)

i. Invoice

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ii. Catalogue

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iii. Delivery note

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14. (a) differentiate oil blacking from bluing

(2marks)

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(b) Explain painting as a finishing process

(2marks)

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(a) Differentiate **tears** from **runs**

(2marks)

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(b) Use sketch to describe a hand drill

(4marks)

(c) State and explain four types of cold chisels

(4marks)

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(d) Differentiate morse tapered twist drill from a parallel shank twist drill

(1mark)

15 (a) Sketch a gas welding torch and:

(i) label **five** parts;

(5marks)

(ii) state **four** precautions to be observed when handling it. (3 marks)

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(b) (i) Use labelled sketches to show the three types of gas welding flames.

(3marks)

(iii) Explain how each of the flames is obtained. (3marks)

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