

Name: .....Index.....

Candidate's signature.....

Date.....

## BUNAMFAN CLUSTER EXAMINATIONS 2021

445/1

**METALWORK**

**PAPER 1**

**December 2021**

**Time: 2 ½ Hours**

### **INSTRUCTIONS TO CANDIDATES**

1. Write your name and index number in the spaces provided
2. This paper consists of two sections: **A** and **B**. Answer all questions in section **A** and in Section **B**.
3. **Answer question 11 and any other three** in the spaces provided.
4. All dimensions are in millimeters unless otherwise stated.

**For examiner's use only**

<b>Section</b>	<b>Question</b>	<b>Maximum score</b>	<b>Candidates score</b>
<b>A</b>	1-10	40	
<b>B</b>	11	15	
	12	15	
	13	15	
	14	15	
	15	15	
<b>Total score</b>			

*This paper consists of 13 printed Pages*

*Candidates should check the question paper, to ensure that all the pages are printed as indicated; and no questions are missing*

SECTION A

ANSWER ALL QUESTIONS IN THIS SECTION

1. With respect to finishing of metal surfaces ;

(a) State **two** methods of applying paint. [2 marks]

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(b) List **two** reasons for applying paint on metal articles. [2 marks]

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2. (a) List **two** uses of drift in forging. [2 marks]

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(b) State **two** precautions to be observed when twisting to avoid uneven twist. [2 marks]

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3. (a) Give **two** reasons for using hollow metals in making furniture. [2 marks]

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(b) State **four** safety precautions to be observed when grinding. [4 marks]

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4. (a) List **four** specifications of a rivet. [4 marks]

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(b) State **three** factors to consider when selecting spelter for brazing. [3 marks]

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5. (a) List **four** methods of holding work piece on a lathe machine. [4 marks]

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(b) State **two** reasons for knurling. [2 marks]

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6. (a) List **four** sources of information for related career choice in school setting. [2 marks]

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(b) State and explain three workshop records.

[3 marks]

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7. (a) Explain the purpose of annealing.

[2 marks]

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(b) Outline annealing process

[2 marks]

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8. (a) State and explain three forging tools.

[3 marks]

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(b) State **two** disadvantages of cooling a brazed joint rapidly. [2 marks]

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9. (a) State **two** advantages of forging over machining. [2 marks]

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(b) Use sketches to describe three types of tin snips. [3 marks]

10. Distinguish between:

a) Gross pay and net pay. [2 marks]

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b) Change and balance.

[2 marks]

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**SECTION B: [60 marks]**

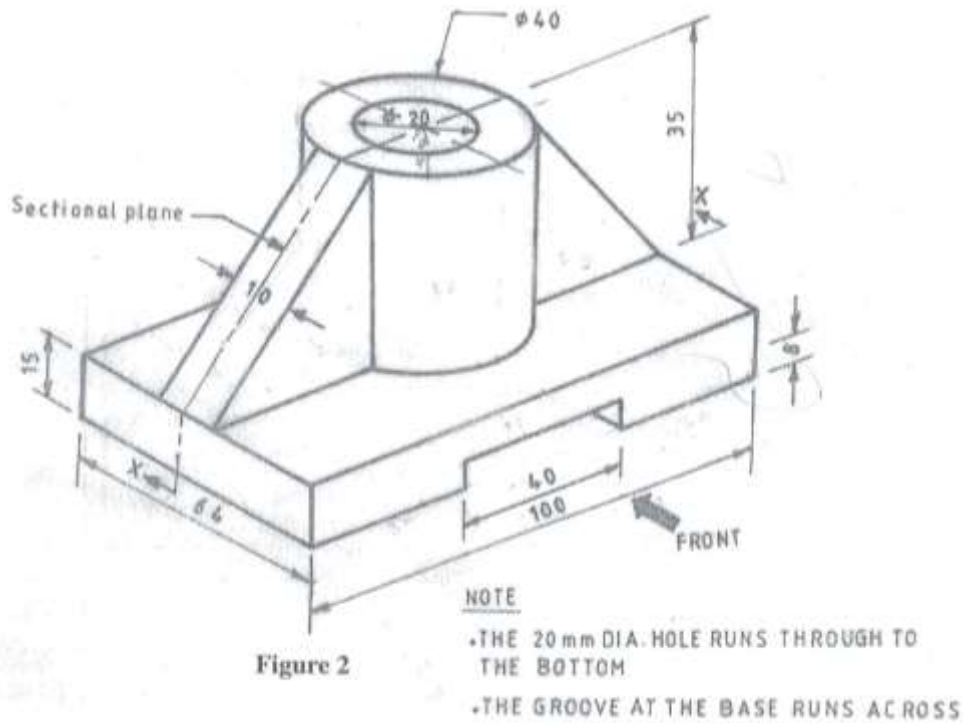
Answer **question 11** on the **A<sub>3</sub>** paper provided and **any other three** questions from this section in the spaces provided.

*Candidates are advised to spend not more than 25mins On question 11.*

11. Figure 2 shows a drawing isometric .Draw the following in 1<sup>st</sup> angle.

[15marks]

- a)The front elevation through cutting plane X-X
- b)The end elevation.
- c)The plan



12. a) Name **three** methods of testing the quality of gas welded joints. [1 ½ marks]

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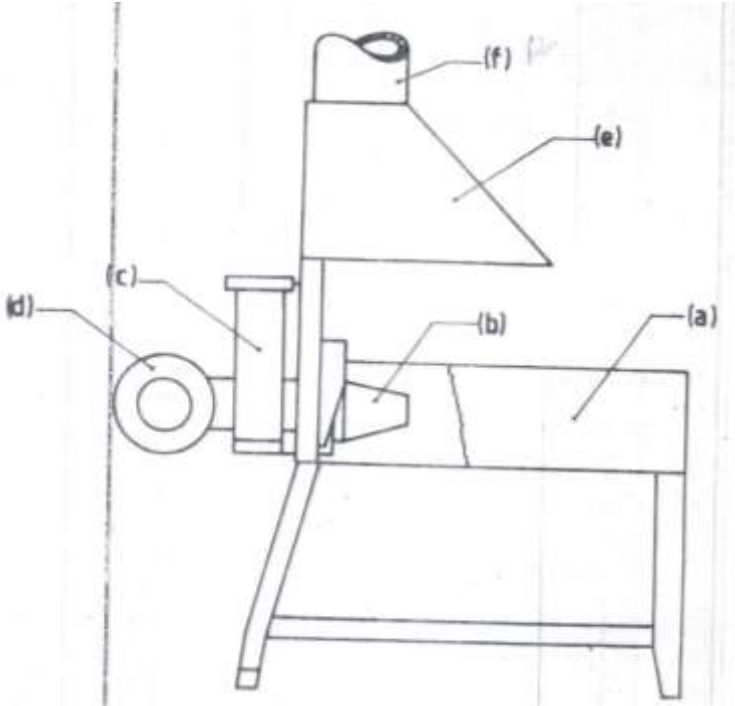
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b) Sketch the correct flame for welding brass and outline the procedure of setting the flame. [5 ½ marks]

c) Use a labeled sketch to show an appropriate technique for gas welding thick plates and give **three** reasons for using the technique. [8marks]



13. a)The figure below shows a very important equipment used in forgework.



(i) Give the name of the equipment. [1 mark]

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(ii) Name parts labeled *c*, *e* and *f*. [1 ½ marks]

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(iii) State the uses of parts *a*, *b* and *d*. [1 ½ marks]

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b) List **four** factors that would contribute to a poorly brazed joint. [4 marks]

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c) State **three** differences between gas welding and brazing. [3marks]

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d) Give **four** safety precautions to be observed when tapping a through hole. [4 marks]

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14. a) Using sketches explain the following terms as applied in limits and fits. [4 marks]

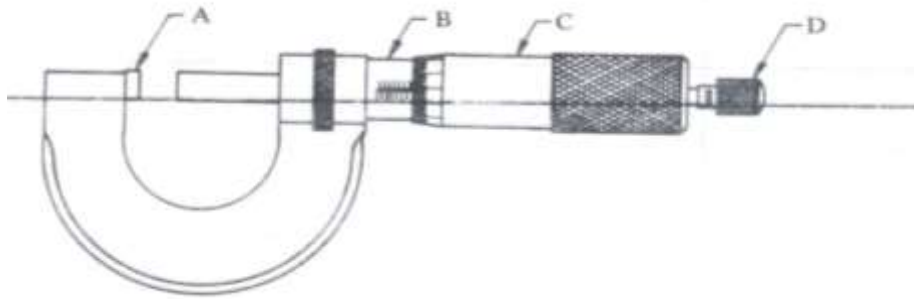
i) Nominal size

ii) Tolerance

iii) Allowance

iv) Lower limit.

b) The figure shows a precision tool used in metalwork.



i) Show how to find its accuracy.

[1 mark]

ii) Name the parts labeled *A*, *B*, *C* and *D* and give the function of each.

[4 marks]

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c) Give **two** applications of each of the three types of fits.

[3 marks]

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d) State **three** safety precautions to be observed when using the vernier calipers. [3 marks]

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15. a) Illustrate **five** operations that can be performed on a drilling machine. [5 marks]

b) With reference to cutting external threads:

(i) Name **two** types of dies used. [2 marks]

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(ii) State **two** reasons for using cutting oil. [2 marks]

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c) An M10 internal thread is to be cut in a mild steel. Given that the thread pitch is 1.5mm, determine the size of the drill to be used. [1mark]

d) Give **five** reasons why we finish metal articles. [5 marks]

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