

Candidate's Examination Number.....

**SMZ**

**ZANZIBAR EXAMINATIONS COUNCIL**

**FORM THREE ENTRANCE EXAMINATION**

**052**

**FITTING AND TURNING**

**TIME: 2:30 HOURS**

**WEDNESDAY 30<sup>TH</sup> DECEMBER 2020 A.M**

**INSTRUCTIONS TO CANDIDATES**

1. This paper consists of THREE (3) sections A, B and C.
2. Answer ALL questions in section A, B and C.
3. Write your examination number on every page of this booklet.
4. Write all answers in the space provided.
5. Use a blue or black pen in writing. Diagrams must be in pencil.
6. Calculators, cellular phones and unauthorized materials are not allowed in the examination room.

	<b>FOR EXAMINER'S USE ONLY</b>				
QUESTION NUMBER	MARKS	SIGNATURE	QUESTION NUMBER	MARKS	SIGNATURE
1			8		
2			9		
3			10		
4			11		
5			12		
6			13		
7					
<b>TOTAL</b>					

This paper consists of 12 printed pages

**SECTION A: (10 Marks)**

**Attempt ALL questions from this section.**

1. Choose the correct answer and write its letter in the table provided below.
  - i) Before you start any machine in a workshop you should know
    - A. its functions
    - B. Where to stop it
    - C. Who is responsible
    - D. Its tools
    - E. Its name
  - ii) Precision tools must be handled with care because they are
    - A. Very brittle
    - B. Expensive
    - C. Heavy
    - D. Very soft
    - E. Very light
  - iii) An accurate measurement of length may be done by using
    - A. Rule
    - B. Divider
    - C. Square
    - D. Depth gauge
    - E. Micrometer
  - iv) Calipers should be held
    - A. Lightly when measuring
    - B. Tightly when measuring
    - C. Strongly when measuring
    - D. Firmly when measuring
    - E. Loosely when measuring
  - v) Before you test micrometer ensure that
    - A. You stand firm
    - B. Micrometer is open
    - C. Both faces are clean
    - D. One face is clean
    - E. The bench is clean
  - vi) A prick punch is a
    - A. Measuring tool
    - B. Layout tool
    - C. Cutting tool
    - D. Lathe tool
    - E. Hand tool
  - vii) V-blocks are used for
    - A. Supporting round work pieces or drilling
    - B. Clamping work piece
    - C. Lifting work piece
    - D. Testing work pieces
    - E. Testing round bars

- viii) Lathe chick is made from  
 A. Aluminum                      B. Cast iron                      C. Wrought iron  
 D. Stainless steel                      E. Carbon
- ix) Which one of the following operations can be done on drilling machine?  
 A. Turning                      B. Reaming                      C. Knurching  
 D. Chasing                      E. Forging
- x) A pilot hole is drilled  
 A. Before intended hole                      B. After intended hole  
 C. Before and after intended hole                      D. When work is finished  
 E. Aside intended hole

**Answers**

i	ii	iii	iv	v	vi	vii	viii	ix	x

**SECTION B: (45 Marks)**

**Attempt ALL questions from this section.**

2. a) Briefly explain two (2) applications of vernier height gauge.

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- b) State the uses of tap and die in a mechanical workshop.

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3. a) Identify three (3) types of drills that can be used for drilling thin materials.

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b) Mention four (4) main parts of drilling machine.

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4. a) Distinguish between power saw blade and hand hack saw.

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b) Why drill may produce an oversize hole?

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5. Calculate the cutting speed when drilling hole of 20mm diameter using a drilling machine rotating at 500 rev/min.

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6. Sketch the following file surfaces.

a) Double cut

b) Single cut

c) Roof cut

7. a) Draw a neat diagram of centre punch.

b) State the application of centre punch.

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8. a) List down any three (3) shapes of files.

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b) Identify two (2) advantages of using radial drilling machine.

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9. a) Briefly explain three (3) factors that determine the cutting speed and feed in a machine processes.

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b) Briefly explain the application of the following tools.

i) Try- square

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ii) Straight edge

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10. a) List down any two (2) metals that require a lubricant when drilled.

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- b) State one (1) metal that can be drilled dry.

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- c) Identify any two (2) characteristics of a good cutting fluid.

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**SECTION C: (45 Marks)**

**Attempt ALL questions from this section.**

11. a) Distinguish between three jaw chuck and four jaw chuck.  
b) Why drill sleeve or drill socket are important in the drill machine?

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[illegible]

- i) Cutting speed

- [illegible]



b) A hole of 30mm diameter and spindle speed 658rev/min and the suggested feed is 1.3mm/rev, determine

i) Cutting speed

ii) Feed speed

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c) Why is shank important in a twist drill?

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13. A 35mm diameter drill bit is used to drill a hole 63mm deep. The suggested feed is 1.25mm/rev and cutting speed is 40m/min. Assuming the tool approach and tool over travel is 5mm. Determine
- Number of revolution the spindle revolves in a minute.
  - The feed speed.
  - The cutting time.
  - The rate of material removed in  $\text{mm}^3$  per minute.

i) Number of revolution the spindle revolves in a minute.

ii) The feed speed.

iii) The cutting time.

iv) The rate of material removed in  $\text{mm}^3$  per minute.

[illegible]

[illegible]

[illegible]

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