



UNIVOTEC

**UNIVERSITY OF VOCATIONAL TECHNOLOGY
Faculty of Industrial & Vocational Technology**

Bachelor of Technology in Mechatronics Technology - 2015 / 2016 (B1)

Bachelor of Technology in Manufacturing Technology -2015 / 2016 (B1)

Year I – Semester - I Examination - September - 2015

Workshop Technology MF10501

Instructions:

- Answer **FIVE** QUESTIONS.
- All questions carry equal marks.
- This is a closed book examination.
- This examination accounts for 50% of module assessment. The total maximum mark attainable is 100.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it in the script.

Duration : 03 hours

- (01).** (a) Describe briefly what is mean by Occupational Safety? (4 marks)
(b) List four qualities of a safe worker (2 marks)
(c) Explain four possible Hazards in a workshop with examples (6 marks)
(d) Why cloth must not be used to remove chips? Describe briefly. (4 marks)
(e) Explain four various methods of safety in brief. (4 marks)
- (02)** (a) Name and explain three types of lathes used in machine shop. (3 marks)
(b) Describe three lathe accessories with neat sketches. (6 marks)
(c) Explain four lathe operations with neat sketches. (8 marks)
(d) State three safety precautions associated with lathe machines. (3 marks)
- (03).** (a) Describe three types of joints commonly used in welding with neat sketch. (3marks)
(b) Explain three different types of welding positions with neat sketch. (3 marks)
(c) Give three safety measures to be followed in oxy-acetylene welding. (6 marks)
(d) Give four applications of welding. (2 marks)
(e) Write short notes on:
I. Leftward gas welding technique (3 marks)
II. Rightward gas welding technique (3 marks)

- (04).** (a) Why is it important that the work piece be cooled before finish-turning? Briefly explain. (3 marks)
- (b) Describe following mechanical properties of materials. (2 marks)
- i. Brittleness (2 marks)
 - ii. Ductility (2 marks)
 - iii. Elasticity (2 marks)
 - iv. Hardness (2 marks)
- (c) Explain three other physical properties of engineering materials. (3 marks)
- (d) Explain briefly thermal conductivity and thermal expansion. (6 marks)
- (05)** (a) Draw a typical Stress-Strain diagram for Ductile Materials, and explain four important points. (6 marks)
- (b) What is meant by 'Engineering stress' and 'Engineering Strain' of a material? (4 marks)
- (c) Explain three types of high speed tool steels. (3 marks)
- (d) Give four applications of cast iron. (4 marks)
- (e) Explain three electrical properties of engineering materials. (3 marks)
- (06).** (a) Explain three purpose of heat treatment. (3 marks)
- (b) Draw a typical iron-carbon equilibrium diagram, and explain three critical points. (7marks)
- (c) Describe three heat treatment processes. (6 marks)
- (d) Describe four possible defects in heat treatment. (4marks)
- (07)** (a) Explain three different types of files with neat sketch. How are they classified? (6 marks)
- (b) Explain three different types of cutting tool with neat sketch. (6 marks)
- (c) Detach, page (04) from the paper to answer this and attach it to your answer script. Determine the reading indicated in the following diagrams. (8marks)
- (08).** (a) When the dimension is expressed as $20_{-0.025}^{+0.035}$, what is the tolerance? (5marks)
- (b) The operation of making round holes in metal pieces is known as drilling. It is done with the help of drilling machine. Write seven steps drilling operations is carried out in the work shop. (7 marks)
- (c) Gauges contained in an M88 set of slips (size in millimeters)

Blocks mm		Steps mm	Number
1.0005			1
1.001, 1.002	1.009	0.001	9
1.01, 1.02	1.49	0.01	49
0.5, 1.0, 1.5	9.5	0.5	19
10. 20, 30	100	10	10
	Total		88

To assemble 27.675mm from the above set, use gauges in the set starting with the lowest (8marks)

Detach this page to answer Question (7) and attach it to your answer script.

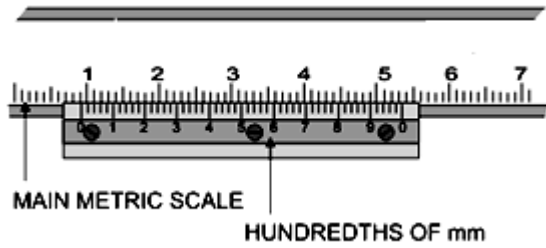


Fig. Q7(a)

ANSWER:

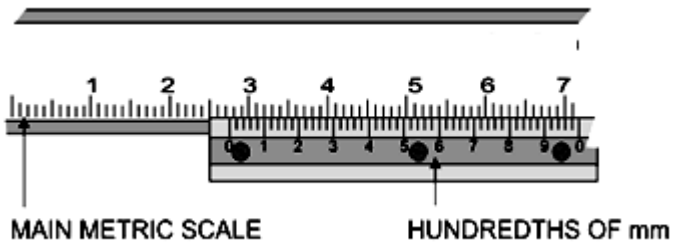


Fig. Q7(b)

ANSWER:

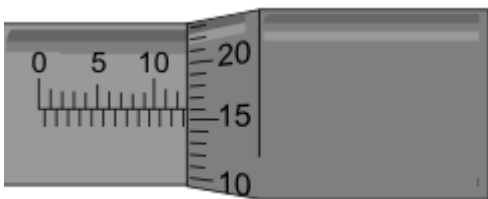


Fig. Q7(c)

ANSWER:

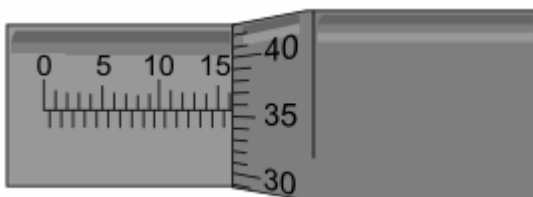


Fig. Q7(d)

ANSWER:
