



PROGRAM : NATIONAL DIPLOMA
ENGINEERING: MECHANICAL
ENGINEERING: INDUSTRIAL

SUBJECT : MECHANICAL MANUFACTURING
ENGINEERING I

CODE : IMV 1111

DATE : WINTER EXAMINATION 2015
12 JUNE 2015

DURATION : (X-PAPER) 8:30-11:30

WEIGHT : 50 : 50

TOTAL MARKS : 150 (140 marks = 100%)

EXAMINER : F. TEKWEME

MODERATOR : MD MUKHAWANA 2089

NUMBER OF PAGES : 4

INSTRUCTIONS:

- 1) ALL SKETCHES MUST BE DONE WITH DRAWING INSTRUMENTS. MARKS WILL BE DEDUCTED FOR UNTIDY WORK.
- 2) STUDENTS MUST SUPPLY OWN DRAWING EQUIPMENT.
- 3) ANSWER ALL THE QUESTIONS.

QUESTION 1

1.1 State a definition for the following properties of metals:

- a) Hardness (2)
- b) Brittleness (2)
- c) Malleability (2)
- d) Compressive strength (2)
- e) Ductility (2)

1.2 In point form, describe the processes of tempering and annealing. (4)

1.3 Draw up the table as shown, stating two properties and one use of each alloy steel

Material	Properties	Use
Manganese steel		
Nickel steel		
Stainless steel		

(9)

1.4 Name 10 considerations to be taken into account before any clamping is to take place.

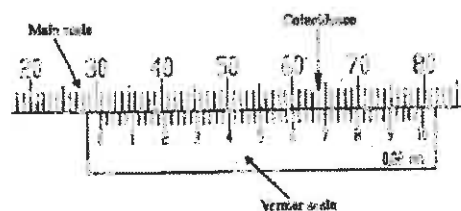
(10)

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QUESTION 2

2.1 State what the following readings are as measured with a Vernier caliper

a)



(3)

b)



(3)

QUESTION 2 (Continued)

2.2 Produce a neat drawing to indicate the following readings on an external micrometer:

- a) 3,68 mm (3)
 b) 22,35 mm (3)

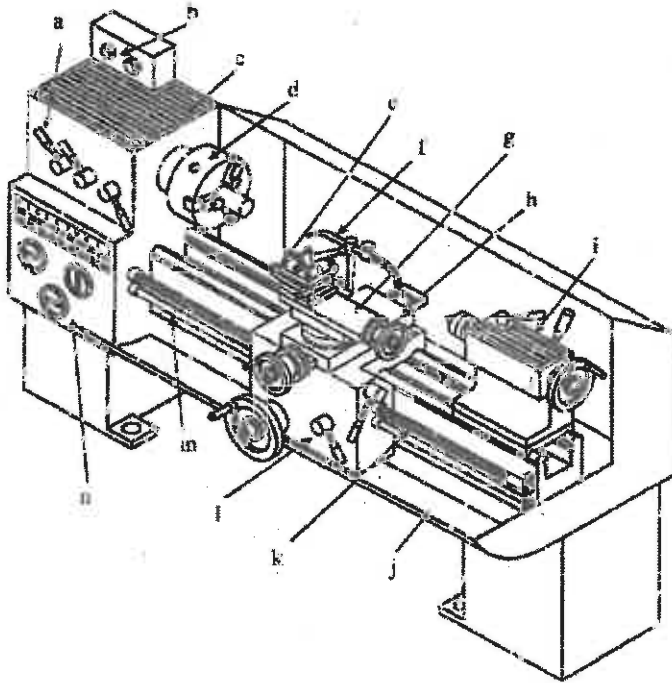
2.3 Name 3 types of grinding wheel dressers along with their uses. (6)

2.4 Name 5 types of cutting tools used on a centre lathe for different cutting operations and state a use for each. (10)

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QUESTION 3

3.1 Label the centre lathe pictured below.



(14)

3.2 Give 6 advantages and 4 disadvantages as regards the use of independent four-jaw chuck. (10)

3.3 Name three types of lathe beds according to which centre lathes are classified. (3)

3.4 Make a labeled sketch showing screw thread terminology. (12)

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QUESTION 4

- 4.1 State 10 health and safety points pertaining to the milling machine. (10)
- 4.2 State 5 advantages and 5 disadvantages of using a driving plate on a centre lathe. (10)
- 4.3 Name 5 types of drilling machines. (5)
- 4.4 State 4 advantages and 2 disadvantages of soluble cutting oils over neat cutting oils. (6)

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QUESTION 5

- 5.1 Name 4 types of spanners. (4)
- 5.2 State 5 points regarding the care of files. (5)
- 5.3 Name 4 types of scrapers and state a use for each. (8)
- 5.2 Name 2 types of machine screws. (2)

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TOTAL MARKS AVAILABLE = 150 (140MARKS = 100%)