UNIVERSITY OF JOHANNESBURG

[2019]

PROGRAM	:	BEngTech Industrial Engineering
SUBJECT	:	**Mechanical Manufacturing Engineering 1B**
CODE	:	**MANMIB1**
		Main Examination
DATE	:	15 November 2019
TIME	:	8:30 AM – 11:30 AM
DURATION	:	3 hrs
TOTAL MARKS	:	100

ASSESSOR	:	Prof. KAPIL GUPTA
MODERATOR	:	Mr. Doctor Mukhawana
NUMBER OF PAGES	:	3 PAGES

INSTRUCTIONS:

None

REQUIREMENTS:

NIL

INSTRUCTIONS TO STUDENTS

1. Read the questions carefully.
2. All questions are compulsory.
3. Show all calculations.
4. Number your answers strictly according to the questions.
5. Make use of sketches wherever required.

QUESTION 1 **[20]**

1a. Define the term 'manufacturing' and shed light on its technological and economical perspectives. [8]

1b. Write a detailed classification of manufacturing processes. [8]

1c. Write a short note on global trends in manufacturing. [4]

QUESTION 2 **[20]**

2a. What are three basic metal cutting operations? Briefly discuss their working principles and applications. [10]

2b. What is machinability? Enlist some common cutting tool materials. [5]

2c. Classify engineering materials. Why and how their testing is done? [5]

QUESTION 3 **[20]**

3a. Write short notes on the following operations: [12]

(i) Rolling
(ii) Edge bending
(iii) Ultrasonic welding

3b. What is the difference in wire and bar drawing? Explain the working principle of wire drawing process with the help of a neat sketch. [8]

QUESTION 4 **[20]**

4a. The defects produced in casting significantly affect its quality. Sketch and define four general defects may occur in casting. [8]

4b. What is an expandable mold type casting process? Describe various steps of lost wax casting (also known as investment casting) with the help of sketches. [12]

QUESTION 5 **[20]**

5a. What is Powder Metallurgy? Sketch any four shapes of powder particles. [6]

5b. How cup-shaped products are made by sheet metal operations? Explain. [6]

5c. Differentiate between welding and weldability. Explain the working principle of oxy-acetylene welding. [8]

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