



PROGRAM : NATIONAL DIPLOMA
ENGINEERING : MECHANICAL & INDUSTRIAL

SUBJECT : MECHANICAL MANUFACTURING ENGINEERING II

CODE : IMV2211

Main Examination

DATE : 23-11-2019

DURATION : 8:30 AM – 11:30 AM

TOTAL MARKS : 100

ASSESSOR : Prof. Kapil Gupta

MODERATOR : Mr. Dombo Tshiembe

NUMBER OF PAGES : 3 PAGES

INSTRUCTIONS:

A Calculator of any make or model is permitted

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.
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QUESTION 1

[20]

- 1a.** Sketch any four weld joints. [4]
- 1b.** What is a polymer material? What are its various types? [4]
- 1c.** Define the following terms: [12]
- (i) Die and Punch
 - (ii) Riser
 - (iii) Fluxes
 - (iv) Forging
 - (v) Foundry
 - (vi) Mould
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QUESTION 2

[20]

- 2a.** Classify casting processes. With the help of sketch explain the working principle of shell moulding. [10]
- 2b.** In the casting of steel under certain mold conditions, the mold constant in Chvorinov's rule is known to be 4.0 min/cm^2 , based on previous experience. The casting is a flat plate whose length = 40 cm, width = 12 cm, and thickness = 2 cm. Determine how long it will take for the casting to solidify. [6]
- 2c.** What is the difference in gas welding and arc welding? [4]
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QUESTION 3

[20]

- 3a.** Define the following sheet metal operations: [6]
- (i) Embossing
 - (ii) Spinning
 - (iii) Bending
- 3b.** Sketch three high, four high, and cluster rolling mill configurations. [6]
- 3c.** Briefly discuss the various parts of a cupola furnace with the help of sketch. [8]

QUESTION 4

[20]

- 4a.** What is a pattern in casting and moulding? What are various pattern materials? [3]
- 4b.** Differentiate between open-die forging and closed-die forging operations. [4]
- 4c.** Describe various steps of investment casting techniques with the help of sketch. [9]
- 4d.** What are various arc welding positions? [4]
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QUESTION 5

[20]

- 5a.** What is die casting? What are its various applications? [3]
- 5b.** How pipes are joined by friction welding? [6]
- 5c.** Explain the powder metallurgy terms pressing and sintering. [6]
- 5d.** Sketch various powder particle shapes? [5]

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