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Paper Code : PC-ME302 Manufacturing Processes

UPID : 003492

Time Allotted : 3 Hours *Full Marks :70*

The Figures in the margin indicate full marks.
Candidate are required to give their answers in their own words as far as practicable

Group-A (Very Short Answer Type Question)

1. Answer any ten of the following : [1 x 10 = 10]

   (I) In Full moulding process, pattern material is _____

   (II) In Extrusion Process, metal undergoes _____ compression.

   (III) Crater wear always starts at some distance away from the tool tip. What is the reason behind it?

   (IV) In welding the term OCV stands for _____.

   (V) In casting _____ are provided to produce internal cavities.

   (VI) Define Atomization in the context of Powder Metallurgy.

   (VII) What are the various cutting tool materials used.

   (VIII) In a Direct Current Reverse Polarity (DCRP) electrode is connected to the _____ terminal.

   (IX) To avoid air- aspiration effect, the ideal shape of sprue is _____.

   (X) In Powder Metallurgy, _____ is the process to produce self lubricating bearing.

   (XI) Two cube are made up of same material. For one cube length on each side is 10 mm, and solidifies in 10 seconds. Another cube whose length on each side is 20 mm will solidify in how many seconds.

   (XII) For obtaining a cup of diameter 25 mm and height 15 mm by drawing, the size of the round blank should be approximately

Group-B (Short Answer Type Question)

Answer any three of the following [5 x 3 = 15]

2. Write briefly about the advantages and limitations of casting. [5]
3. Briefly differentiate between warm forming and Isothermal forming. [5]
4. With the help of a neat sketch, explain about the various elements of gating system. [5]
5. Explain Hydrostatic extrusion process. [5]
6. Discuss any five welding defects. [5]

Group-C (Long Answer Type Question)

Answer any three of the following [15 x 3 = 45]

7. (a) Explain with the help of a neat sketch about Indirect extrusion process [5]
   (b) Explain any three defects in metal drawing operation. [6]
   (c) Explain very briefly about elastic recovery or spring back in context to metal forming process. [4]
8. (a) State the conditions under which a positive rake angle is recommended. [5]
   (b) Describe nose radius in cutting tool. [5]
   (c) What is the design requirement of a Tool- force dynamometer. [5]
9. (a) Explain extrusion process with the help of a neat figure. [6]
   (b) With the help of a neat sketch, explain Hooker's method. [6]
   (c) Explain punching and blanking operation [3]
10. (a) Differentiate between orthogonal and oblique cutting. [6]
    (b) Write the relation for interconversion between ASA and ORS. [4]
    (c) What are various types of chips, explain with figure. [5]

11. (a) State the function of the following G codes. [5]

G00
G02
G17
G20
G91

(b) Explain Centreless grinding [7]

(c) Write down the difference between reaming and boring. [3]