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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) For a split pattern, perfect alignment is achieved by the help of _____ pins.

(II) Define Cold working process.

(III) What is chip reduction co-efficient ?

(IV) Define weld puddle.

(V) _____ is the replica of the object to be manufactured with some modifications.

(VI) In one setting of rolls in a 3-high rolling mill, how many reduction in thickness can be acheived.

(VII) The following tool signature is specified for a single-point cutting tool in the American system: **11 14 7 6 15 18 3**
What does angle 14 represent ?

(VIII) In a Gas welding set up, Acetylene cylinder colour is _____.

(IX) Define Tandem Drawing.

(X) Camber is provided on rolls to get _____ thickness of plate in rolling process.

(XI) In a metal cutting operation, rake angle is 15° and the shear angle is 25°. What is the value of friction angle?

(XII) In thermit welding Aluminium oxide acts as _____.

Group-B (Short Answer Type Question)

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

2. Explain the Pressure versus time graph for Resistance welding. [5]

3. Explain about any five properties which moulding sand should possess. [5]

4. Explain briefly about Slitting, Perforating, Notching, Trimming and Shaving in context to sheet metal operation. [5]

5. Draw Merchant circle and explain its various parameters. [5]

6. In a single point turning operation of steel with a cemented carbide tool, Taylor's tool life exponent is 0.25. If the cutting speed is halved, the tool life will increase by how many times. [5]

Group-C (Long Answer Type Question)

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

7. (a) Describe the complete step by step process of Hot chamber pressure die casting with a neat sketch. [8]
   (b) Explain why casting is preferred over other manufacturing process. [4]
   (c) Define parts of a mould flask supported by a neat figure. [3]

8. (a) Explain the different types of Rolling mills. Also, draw neat sketches where ever needed. [6]
   (b) State the difference between Hot Working and Cold Working Process. [5]
   (c) Very briefly explain the various metal forming process. [4]

9. (a) State the difference between up milling and down milling. [8]
   (b) Explain grinding wheel signature. [7]

10. (a) Explain the process and equipment of Oxy – Acetylene gas welding with the help of a neat sketch. [8]
    (b) Explain thermit welding, and also draw a neat sketch. [7]

11. (a) Explain arc welding with a neat sketch. [5]
    (b) How can you specify an electrode? [8]
    (c) How does penetration vary for DCSP and DCRP welding? [2]