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Total Number of Pages : 01

**B.Tech  
PME4I102**

**4<sup>th</sup> Semester Regular / Back Examination 2018-19  
BASIC MANUFACTURING PROCESS**

**BRANCH : MECH**

**Time : 3 Hours**

**Max Marks : 100**

**Q.CODE : F249**

**Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.**

**The figures in the right hand margin indicate marks.**

**Part- I**

- Q1 Only Short Answer Type Questions (Answer All-10) (2 x 10)**
- a) Why casting process is preferred than other processes?
  - b) Write down the usefulness of Chill and Chaplet?
  - c) Write down the basic concept of Directional and Progressive solidification?
  - d) Why investment casting is called "Lost Wax Process"?
  - e) Why flux is added in the welding processes?
  - f) Write down the advantages of Rightward weld technique over Leftward weld technique.
  - g) Write down the benefits of powder metallurgy product.
  - h) Write the difference between Blanking and Punching operation.
  - i) Write the sequence of operations in forging process.
  - j) Write the basic difference between open die forging and closed die forging.

**Part- II**

- Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)**
- a) Explain the basic steps required for manufacture of parts by powder metallurgy.
  - b) Explain the thin film deposition techniques in brief (minimum 3 techniques)
  - c) Explain briefly about explosive forming with advantages, disadvantages and application.
  - d) Differences between cold working and hot working processes.
  - e) Draw the schematic diagram of Mould box (gating system) and explain about different types of gating systems.
  - f) What will be the solidification time for a 1100 mm diameter and 33 mm thick casting of aluminium if the mould constant is  $2.2 \text{ sec/mm}^2$ ?
  - g) Draw the schematic diagram of Cupola and explain?
  - h) Explain about Forward and backward extrusion with their application.
  - i) Explain the term recovery, recrystallisation and grain growth.
  - j) Explain briefly various " Sheet Metal Operations".
  - k) Explain briefly about Soldering process.
  - l) Explain briefly about centrifugal casting.

**Part-III**

- Q3 Only Long Answer Type Questions (Answer Any Two out of Four)**
- a) Discuss the requirement of riser and its type? (8)
  - b) Two solid work pieces (a) sphere with radius R, (b) a cylinder with diameter equal to its height, have to be sand cast. Both work pieces have the same volume. Show that the cylindrical work pieces will solidify faster than the spherical work pieces. (8)
- Q4**
- a) Describe Investment casting with figures. (10)
  - b) Discuss various types of casting defects (minimum 3). (6)
- Q5**
- a) Describe about Resistance welding processes. (10)
  - b) Compare DCSP to DCRP. (6)
- Q6** Describe briefly about different types of forging hammers and presses? Compare press forging with drop forging? (16)