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Total Number of Pages : 01

B.Tech.  
PCMT4204

4<sup>th</sup> Semester Back Examination 2017-18

**MATERIALS PROCESSING**

**BRANCH : METTA, MME**

**Time : 3 Hours**

**Max Marks : 70**

**Q.CODE : C1112**

**Answer Question No.1 which is compulsory and any five from the rest.**

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

**Answer all parts of a question at a place.**

**Q1 Answer the following questions : (2 x 10)**

- a) What you mean by pattern? List various types of pattern.
- b) Explain Chvorinov's rule.
- c) Draw the cooling curves of alloy & pure metal.
- d) Why tapered sprue is more suitable than a straight sprue?
- e) Define weldability.
- f) What are the functions of riser in the casting?
- g) Describe the difference between brazing and soldering.
- h) Name the types of electrodes used for welding processes.
- i) Explain the principle of arc welding?
- j) Write down the advantages of powder metallurgy process.

**Q2 a) Discuss different types of pattern allowances in detail with suitable diagram. (5)**  
**b) Describe the operation of cupola furnace for melting cast iron. (5)**

**Q3 a) Explain the elements of gating system & their functions with sketches. (5)**  
**b) Describe the different properties of moulding materials. (5)**

**Q4 a) Write down the different types of arc welding processes? Discuss the advantages and disadvantages over resistance welding processes. (5)**  
**b) In a given welding operation the power source is at 22v and 300amps. If the welding speed is 6mm/s and transfer and melting efficiency are 0.8 and 0.3. Calculate the heat input. (5)**

**Q5 a) What is Liquid phase sintering? What are the stages of liquid phase sintering? Explain the mechanism of liquid phase sintering. (5)**  
**b) Explain the Hot Isostatic Pressing (HIP) process of compaction of metal powders with the help of a suitable diagram. (5)**

**Q6 a) Explain briefly the different casting defects & their remedies. (5)**  
**b) Write down the different methods of production of metallic powder? Discuss the characteristics of metallic powders. (5)**

**Q7 a) Briefly explain the powder metallurgy process with a suitable block diagram. (5)**  
**b) Describe the types of flames obtained in an oxy-acetylene welding with figure. (5)**

**Q8 Write short notes on any TWO : (5 x 2)**

- a) Centrifugal casting
- b) Precision Investment casting
- c) Submerged Arc Welding
- d) Application of powder metallurgy