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Total Number of Pages : 2

B.TECH

4<sup>th</sup> Semester Regular Examination-April-May 2019**BMEPC4030 BASIC MANUFACTURING PROCESS**

(Regulations 2017) Common to MECH ENGG.

Time : 3 Hours

Maximum : 100 Marks

Answer ALL Questions

The figures in the right hand margin indicate marks.

**PART – A: (Multiple Choice Questions) 10 x 2=20 Mark****Q.1. Answer ALL Questions.**

- a Which of the following is not included in forming and shaping process?  
a) rolling b) forging c) sheet forming d) broaching
- b Which of the following is a fusion welding process?  
a) arc welding b) forge welding c) resistance welding d) all of the above
- c Steel washers are manufactured using which of these processes?  
a) sand casting b) shell casting c) presswork d) turning
- d Which of these processes is used for manufacturing of bi-metal pipes?  
a) sand casting b) turning c) forging d) centrifugal casting
- e Which of the following is the type of temporary joining process?  
a) brazing b) mechanical joining c) both a and b d) none of the above
- f In a three piece pattern moulding arrangement, what keeps the alignment between the two parts of the pattern?  
a) cope b) drag c) dowel pins d) cheek
- g The heat generated (H) in resistance welding is expressed by  
a)  $I^2Rt$  b)  $IR^2t$  c)  $IRt^2$  d)  $2IRT$
- h Which of the following metal forming processes performs squeezing out of material through a hole?  
a) forging b) rolling c) extrusion d) none of the above
- i Hot working process is the plastic deformation of metal which is carried out:  
a) at temperature below the recrystallization temperature  
b) at temperature above the recrystallization temperature  
c) at temperature equals to boiling point of water  
d) none of the above
- j Process of forming metal powder by directing molten metal through an orifice after which it is break into small particle using high pressure fluid is known as:  
a) Atomization b) Reduction c) Crushing d) Electrolysis

**PART – B: (Short Answer Questions) 10x2=20 Marks****Q.2. Answer ALL questions**

- a Describe different types of pattern allowance.
- b Describe in brief about investment casting.
- c What are the uses of chaplets and chills during molding process?
- d Differentiate between brazing and soldering.
- e Explain about electro slag welding.
- f In an arc welding process, the voltage and current are 25 V and 300 A respectively. The arc heat transfer efficiency is 0.85 and welding speed is 8 mm/sec. Calculate the net heat input (in J/mm).
- g Differentiate between extrusion and wire drawing.
- h The thickness of a metallic sheet is reduced from an initial value of 16 mm to a final value 10 mm in one single pass rolling with a pair of cylindrical rollers each of diameter 400 mm. Calculate the true strain.
- i Explain about compaction and sintering processes.
- j Differentiate between thermosetting plastics and thermoplastics.

**PART – C: (Long Answer Questions) 4x15=60 Marks****Answer ALL questions****Q.3**

- a Explain in details about gating systems. 15 Marks  
b Explain about the process of centrifugal casting.

**OR**

- c Explain about the precision investment casting processes. 15 Marks  
d What are the defects found in castings and their remedies?

**Q.4**

- a Describe in details about electron beam welding. 15 Marks  
b Give a brief note on the defects observed during welding process.

**OR**

- c Describe in details about friction welding 15 Marks  
d Explain about different types resistance welding with their applications.

**Q.5**

- a Describe rolling and what are the types of rolling? 15 Marks  
b What is the difference between direct and indirect extrusion? Write some extrusion defects.

**OR**

- c Write short note on the following:  
i) upsetting  
ii) spinning  
iii) trimming  
iv) coining 15 Marks  
d Differentiate between back ward and forward extrusion.

**Q.6**

- a Explain different steps involved in the powder metallurgy process. 15 Marks  
b What are the different types of powder production technology, explain in details?

**OR**

- c Explain different properties of plastics. Describe in details about thermosetting plastics. 15 Marks  
d Differentiate between PVD and CVD coating.

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