**GURU TEGH BAHADUR INSTITUTE OF TECHNOLOGY**

**G-8 AREA, RAJOURI GARDEN, NEW DELHI**

**B.Tech. (Common to all Branches) Semester: Ist**

 **Course: Manufacturing Process Subject Code: ES119**

**Credit: 4**

**Period: 4**

**Assignment:Unit 1**

Q. 1.1) Explain the following terms:

a) Manufacturing Processes

b) Engineering materials

Q. 1.2) What are the major classification of basic manufacturing processes?

Q.1. 3) Why are materials and design important to manufacturing processes?

Q.1.4) Briefly differentiate between: Production and productivity

Q. 1.5) Discuss briefly the importance of manufacturing in 21st Century in India.

Q. 1.6) What is manufacturing? How will you classify manufacturing processes.Give suitable example of products being made by manufacturing processes.

Q. 1.7) What is casting processes. Describe the capabilities of the casting process in terms of size an1.d shape of the product.

Q. 1.8) Describe the various kinds of patterns and allowances in use. What are the allowances provided, when making a pattern, how do the patterns differ from the casting.

Q. 1.9) Explain (a) Patterns, (b) Flask, (c) Core (d) Mould cavity (e) Casting.

Q. 1.10) Name the various elements of a gating system and describe briefly about the function of gating system.

Q. 1.11) Write short notes on Riser, Chaplets, Chills, and Core.

Q. 1.12) Explain in brief:

(a) Shell Molding (b) Gravity die casting and Pressure die casting

Q.1.13) Explain True centrifugal casting, Semi centrifugal casting, Centrifuging casting

Q. 1.14) What are the common defects found in castings. What causes them and what measures can be taken to avoid defects from occurring.

**Assignment: Unit 2**

Q. 2.1) Explain the principle of fusion welding process with diagram and write its applications and limitations.

Q. 2.2) Explain the principle of gas welding process with diagram and write its applications and limitations.

Q. 2.3) Explain the principle of :

(a). TIG(tungsten inert gas),

(b). MIG(metal inert gas),

(c). SAW (submerged arc welding)

Q. 2.3) Explain the principle of resistance welding process with diagram and write its applications and limitations.

Q.2.4 Explain the principle of electroslag welding process, and write its applications and limitations.

Q. 2.5) Write types of filler material and flux material used in different welding process.

Q. 2.6) Explain the types of welding defects in different welding process and reason, and what type of precaution use to remove welding defects.

Q. 2.7) Explain the types of defects in welding process.

Q.2.8) Briefly Explain:

(a). Polarity:

(b). Arc length/Arc Voltage

(c). Arc blow

(d). use of Step Down transformer in arc welding machine

**Assignment: Unit 3**

Q. 3.1)What is forging?What are different types of forgings?

Q. 3.2)Explain in detail the basic operations of forgings?

Q. 3.3)Explain in detail the operations of hot forgings with advantages and limitations?

Q. 3.4)Explain in detail the operations of cold forgingswith advantages and limitations?

Q. 3.5)What is drop forging?

Q. 3.6) Explain the open die forging and closed die forging?

Q. 3.7) Describe the different types of forging defects?

Q. 3.8) What is the rolling process? Explain the hot and cold rolling processes.

Q. 3.9)Explain the different types of extrusion processes and wire drawing and tube drawing processes?

Q. 3.10)Write short notes on:(a) Punching (b) Piercing(c) Blanking (d) Slitting(e) Bending and

(f) Lancing.

**Assignment: Unit 4**

Q. 4.1)What do you understand by powder metallurgy? What are the main stages of powder

metallurgy process?

Q. 4.2)Explain the objectives of powder compaction and list important products of powder metallurgy.

Q. 4.3)Describe briefly the methods by which powders suitable for powder metallurgy can be

produced. Also enumerate the main characteristics of metal powder.

Q. 4.4)Describe the atomization process of making powder in detail.

Q. 4.5)Describe the process of blending, compacting and sintering in detail.

Q. 4.6)List the advantages, dis-advantages and applications of powder metallurgy process.

Q. 4.7) Explain the different type of plastics with example.

Q. 4.8) What is molding process? Explain Injection molding and Extrusion molding.

Q. 4.9) Explain blow molding and vacuum forming.

Q. 4.10)Explain rotational molding and compression molding.

**Textbooks:**

1. Manufacturing Technology: Foundry, Forming and Welding Volume 1, P. N Rao, , McGrawHill, 5e, 2018.

2. Elements of Workshop Technology Vol. 1 and 2 by Hajra Choudhury, Media Promoters Pvt Ltd., 2008.

**References:**

1. Manufacturing Processes for Engineering Materials, by Serope Kalpajian and Steven R. Schmid, Pearson Education, 5e, 2014.

2. Fundamentals of Modern Manufacturing: Materials, Processes, and Systems by Mikell P. Groover, John Wiley and Sons, 4e, 2010.

3. Production Technology by R.K.Jain and S.C. Gupta, Khanna Publishers. 16th Edition, 2001.