

**PARUL UNIVERSITY**  
**FACULTY OF ENGINEERING & TECHNOLOGY**  
**M.Tech. Summer 2017 - 18 Examination**

**Semester: 2**  
**Subject Code: 03208151**  
**Subject Name: Theory of Metal Forming**

**Date: 18/05/2018**  
**Time: 02:00 pm to 04:30 pm**  
**Total Marks: 60**

---

**Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

- Q.1** A) Classify various metal forming processes and list end product of it with figure. (05)  
B) Differentiate Hot working and Cold working with its merits and demerits. (05)  
C) Enlist at least five mechanical properties. Explain how it affects the metal forming process. (05)
- Q.2** Answer the following questions. (Attempt any three) (Each five mark) (15)  
A) Discuss the defects with causes and remedy for the forging/ rolling/ extrusion/ wire drawing/ tube drawing/ sheet forming processes.  
B) Explain plastic deformation of metal by slip and twinning.  
C) List the advantage and disadvantage of hot and cold forging.  
D) Differentiate forward extrusion and backward extrusion with neat sketch.
- Q.3** A) Explain stress – strain relations in elastic and plastic deformation for different materials. (07)  
B) Derive plane stress condition. (08)
- OR**
- B) Derive plane strain condition. (08)
- Q.4** A) Discuss the significance of flow curve and flow stress. (07)
- OR**
- A) (a) What are assumptions made to analyze the rolling process? (07)  
(b) Explain Draw Reduction Ratio and Draw Ratio.  
B) List and explain different theories of failure for the metals in brief. (08)