**METALLURGY DEPARTMENT**

Name of the teacher-Mrs PARASMITA BISWAL

Semester-6th -Session-2022-23

From- Dt 14.02.2023 to 31.05.2023

Subject-Theory-2(Mechanical Metallurgy)

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| **Wk no** | **Class/Day** | **Theory topics :** |
| **Week -1**  **Week -2** | Day-1 | Introduction |
| Day-2 | Dislocation, types, its basic behaviour |
| Day-1 | Role of dislocation in deformation. |
| Day-2 | dislocation in various crystals |
| Day-3 | Source of dislocation |
| **Week -3** | Day-1 | Twinning & deformation |
| Day-2 | Slip & Deformation |
| Day-3 | Discussion on elastic & plastic behaviour of metals. |
| Day-4 | Discussion on yielding criteria. |
| **Week -4** | Day-1 | Derive critically resolved shear stress. |
| Day-2 | Discussion on deformation of polycrystalline aggregates. |
| Day-3 | Doubt clearing and revision class |
| Day-4 | Class test-01 |
| **Week 5** | Day-1 | Discussion on strengthening mechanism |
| Day-2 | Discussion on the role of grain boundary in strengthening |
| Day-3 | Define Hall Petch equation its relation |
| Day-4 | Discussion on yield point phenomenon. |
| **Week -6** | Day-1 | Discussion on strain-aging |
| Day-2 | Discussion on solid solution strengthening from fine particles |
| Day-3 | Discussion on fibre strengthening |
| **Week -7** | Day-1 | Discussion on martensitic strengthening |
| Day-2 | Discussion on strain hardening |
| Day-3 | Discussion on Bauschinger ‘s effect |
| Day-4 | Revision and doubt clearing class |
| **Week -8** | Day-1 | Classification of different metal working process |
| Day-2 | Discussion on hot working and cold working of metals and alloy |
| Day-3 | State the advantages and disadvantages of hot and cold working. |
| **Week -9** | Day-1 | Discussion on the recovery phenomena |
| Day-2 | Discussion on recrystallization concept. |
| Day-3 | Discussion on grain growth concept. |
| Day-4 | Discussion on property changes during recovery , recrystallization and grain growth. |
| **Week -10** | Day-1 | Explain principles of rolling |
| Day-2 | Compare between hot rolling and cold rolling |
| Day-3 | Explain the types of roll pass-open pass and box pass. |
| Day-4 | State different types of rolling detects and their control. |
| **Week -11** | Day-1 | Explain types of forging process |
| Day-2 | Describe the properties of forged products |
| Day-3 | Explain the defects of forged products and their control. |
| Day-4 | Revision and doubt clearing class |
| **Week -12** | Day-1 | Explain the elementary principle of extrusion |
| Day-2 | Classify the defects in extruded product |
| Day-3 | Explain the manufacturing of seamless pipes |
| Day-4 | Explain the elementary principle of wire drawing |
| **Week -13** | Day-1 | Classify the defects of wire drawing |
| Day-2 | Describe the elementary concept of deep drawing |
| Day-3 | Explain different sheet metal forming - bending shearing aid blanking |
| Day-4 | Discussion on advantages and disadvantages of hot and cold working |
| **Week-14** | Day-1 | Important question discussion |
| Day-2 | Important question discussion |
| Day-3 | Doubt clearing class |
| Day-4 | Class test covering entire syllabus |