


GOVERNMENT POLYTECHNIC JAJPUR


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Discipline: Metallurgy	Semester: 6th	Name of the Teaching faculty: Er. Ashok kumar mishra
Subject: Mechanical metallurgy	No of Days/Week class alloted: 4	from Date:14.02.2023 To Date: 23.5.2023 No of weeks: 15
Week	Class Day	Topics
1st	1 st	introduction
	2 nd	Dislocation and its types
	3 rd	Dislocation behaviour
	4 th	Dislocation role in deformation
2nd	1 st	Dislocation in various crystals
	2 nd	Sources of dislocation
	3 rd	Twinning and deformation
	4 th	Slip and deformation
3rd	1 st	Explain elastic behaviour of metals
	2 nd	Explain plastic behaviour of metals
	3 rd	Explain yielding criteria
	4 th	Explain yielding criteria
4th	1 st	Derive critically resolved shear stress
	2 nd	Class test
	3 rd	Explain deformation of polycrystalline aggregates
	4 th	Explain deformation of polycrystalline aggregates
5th	1 st	Discussion regarding strengthening mechanism
	2 nd	The role of grain boundary in strengthening mechanism
	3 rd	Define Hall-petch equation
	4 th	Describe yield point phenomenon
6th	1 st	Explain strain aging
	2 nd	Explain solid solution strengthening from fine particles
	3 rd	Describe fiber strengthening
	4 th	Describe martensetic strengthening
7th	1 st	Explain strain hardening
	2 nd	Describe bauschingers effect
	3 rd	Classify different metal working process
	4 th	Classify different metal working process
8th	1 st	Explain hot working of metals
	2 nd	Explain cold working of metals
	3 rd	Advantages of cold and hot working


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	4 th	Disadvantages of cold and hot working
9th	1 st	Explain annealing and its importance
	2 nd	Recovery
	3 rd	Recrystallization
	4 th	Grain growth
10th	1 st	How it is affect different properties
	2 nd	Explain principle of rolling
	3 rd	Forces involved in rolling
	4 th	Compare between hot rolling and cold rolling
11th	1 st	Explain type of roll open pass and box pass pass
	2 nd	State different types of rolling defects and their controls
	3 rd	Rolling defect
	4 th	Remedies of rolling defect
12th	1 st	Explain types forging process
	2 nd	Open die forging and closed die forging
	3 rd	Equipment used for forging and properties of forging product
	4 th	Defects in forging and remedies
13th	1 st	Explain the elementary principle of extrusion
	2 nd	Direct and indirect extrusion
	3 rd	Direct and indirect extrusion
	4 th	Defects in extruded product
14th	1 st	Manufacturing of seam less pipe
	2 nd	Elementary principle of wire drawing
	3 rd	Internal examination
	4 th	Wire drawing equipment and defects
15th	1 st	Concept of deep drawing
	2 nd	Bending, Shearing and blanking
	3 rd	Class test
	4 th	Bending, Shearing and blanking


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