

Orissa School of Mining Engineering Keonjhar
Department of Mechanical Engineering
Lesson Plan w.e.f 01.10.2021- 18.01.2022

Subject: Mechanical operations in mine (MOM)			
Discipline: Mining Engineering		Name of the Faculty: Barun kumar barik	
Course Code:	TH-4	Semester:	3RD
Total Periods:	60	Examination:	2021(Winter)
Theory Periods:	4P/W	Class Test:	20
Maximum Marks:	100	End Semester Examination:	80



WEEK	CLASS DAY	THEORY TOPICS
1 st	1 st	UNIT 1: STRENGTH OF MATERIALS AND POWER TRANSMISSIONS: Define elasticity, Hook's law, limit of proportionality, Young's Modulus, factor of safety, lateral strain and Poisson's ratio.
	2 nd	Explain stress- strain curve for ductile materials.
	3 rd	Explain the effect of axial load on bar of uniform section and variable section.
	4 th	Numerical solve
2 nd	1 st	Define bending moment and shear force
	2 nd	State types of beam and loading.
	3 rd	explain shear force and diagram and bending moment diagram for: 1. cantilever with concentrated loading.
	4 th	Numerical solve
3 rd	1 st	2. cantilever with U.D.L over whole span
	2 nd	Numerical solve

	3rd	3.simply supported beam with concentrated loading.
	4th	4.simply supported beam with U.D.I over whole span.
4th	1st	Numerical solve
	2nd	Numerical solve
	3rd	state bending formula, Define section modulus, Find out section modulus for beam section of simple cases.
	4th	Numerical solve
5th	1st	Define torsion and state its effect, state application of torsion formula.
	2nd	explain working of : 1.shaft coupling such as hydraulic and magnetic couplings.
	3rd	2. belt, chain and rope drive
	4th	3. simple and compound gear train
6th	1st	4. torque converter, state function of flywheel and governors.
	2nd	explain working of watt governor
	3rd	working of porter governor
	4th	working of proel governor
7th	1st	Revision of unit 1
		UNIT 2: ELEMENTS OF HYDRAULIC:- state various fluid properties, define pressure of fluid and pressure head
	2nd	define pressure of fluid and pressure head
	3rd	state and explain workinf principle of various pressure measuring device such as Piezometer tube.
	4th	state and explain continuity equation.
8th	1st	Numerical solve
	2nd	Numerical solve
	3rd	state and explain Bernoulli's theorem.
	4th	Numerical solve
9th	1st	Numerical solve
	2nd	explain working of venturimeter.
	3rd	Numerical solve
	4th	Numerical solve
10th	1st	Define and classify orifices. State the formula for discharge for rectangular orifices.
	2nd	Numerical solve

	3rd	define and differentiate between orifice and notch.classify notches.
	4th	state the formula for discharge through notches.
11th	1st	Numerical solve
	2nd	state and explain law of fluid friction. State and explain loss of head due to friction (Darcy weisbach foemula)
	3rd	explain Hydraulic gradient and energy gradient.
	4th	Numerical solve
12th	1st	revision of unit 2
	2nd	UNIT 4: INTERNAL COMBUSTION ENGINES:- Explain various air cycles utilized in IC engines such as 1. OTTO cycle
	3rd	2. Diesel cycle.
	4th	Explain working principle of 2 stroke and 4 stroke petrol and diesel engines.
13th	1st	Define IHP, BHP and mechanical efficiency of I/C engine
	2nd	state various application of I/C engines in Mining field.
	3rd	numerical solve on otto and disel cycle
	4th	Revision of unit 4
14th	1st	UNIT 3: COMPRESSED AIR:- explain introduction of compressed air as a power,
	2nd	classify compressor and state working principle.
	3rd	state the various methods of transmission and storage of compressed air.
	4th	state and explainthe advantages of use of compressed air in mines.
15th	1st	explain the working principle of pneumatic machines.
	2nd	numerical solve.
	3rd	PREVIOUS YEAR QUESTION DISCUSSION
	4th	PREVIOUS YEAR QUESTION DISCUSSION