# GOVT. POLYTECHNIC, NAYAGARH

## 5th SEMESTER MECHANICAL ENGINEERING(2023-24)

**SUBJECT- HYDRAULIC MACHINES &INDUSTRIAL FLUID POWER** **TOTAL PERIOD-60**

**NAME OF FACULTY : Suchismita Behera, PTGF(MECH)** **THEORY-4P/WEEK**

| Sl No. | week | Day | Topics to be covered |
|---|---|---|---|
| 1 | 1st | 1st day | Definition and classification of hydraulic turbines |
| | | 2nd day | Construction and working principle of impulse turbine |
| | | 3rd day | Velocity diagram of moving blades, work done and derivation of various efficiencies of impulse turbine |
| | | 4th day | Velocity diagram of moving blades, work done and derivation of various efficiencies of Francis turbine |
| **Sl No.** | **week** | **Day** | **Topics to be covered** |
| 2 | 2nd | 1st day | Velocity diagram of moving blades, work done and derivation of various efficiencies of Kaplan turbine |
| | | 2nd day | Distinguish between impulse turbine and reaction turbine. |
| | | 3rd day | Numerical on above |
| | | 4th day | Construction and working principle of centrifugal pumps |
| **Sl No.** | **week** | **Day** | **Topics to be covered** |
| 3 | 3rd | 1st day | Work done and derivation of various efficiencies of centrifugal pumps. |
| | | 2nd day | Describe construction & working of single acting reciprocating pump. |
| | | 3rd day | Describe construction & working of double acting reciprocating pump |
| | | 4th day | Derive the formula foe power required to drive the pump (Single acting & double acting) |
| **Sl No.** | **week** | **Day** | **Topics to be covered** |
| 4 | 4th | 1st day | Define slip. State positive & negative slip & establish relation between slip & coefficient of discharge. |
| | | 2nd day | Numerical on above |
| | | 3rd day | Elements –filter-regulator-lubrication unit of Pneumatic Control System |
| | | 4th day | Pressure control valves |
| **Sl No.** | **week** | **Day** | **Topics to be covered** |
| 5 | 5th | 1st day | Pressure relief valves |
| | | 2nd day | Pressure regulation valves |
| | | 3rd day | Direction control valves and 3/2DCV,5/2 DCV,5/3DCV |
| | | 4th day | Flow control valves |
| **Sl No.** | **week** | **Day** | **Topics to be covered** |
| 6 | 6th | 1st day | Throttle valves |
| | | 2nd day | ISO Symbols of pneumatic components |
| | | 3rd day | Direct control of single acting cylinder of Pneumatic circuits |
| | | 4th day | Direct control of single acting cylinder of Pneumatic circuits |

| Sl no. | Week | Day | Topics to be covered |
|---|---|---|---|
| 7 | 7th | 1st day | Operation of double acting cylinder |
| | | 2nd day | Operation of double acting cylinder with metering in and metering out control |
| | | 3rd day | Comparison of hydraulic and pneumatic system |
| | | 4th day | Comparison of hydraulic and pneumatic system |
| **Sl No.** | **week** | **Day** | **Topics to be covered** |
| 8 | 8th | 1st day | Direction control valves and 3/2DCV,5/2 DCV,5/3DCV |
| | | 2nd day | Numericals on Impulse turbine |
| | | 3rd day | Numericals on Francis turbine |
| | | 4th day | Numericals on Kaplan turbine |
| **Sl No.** | **week** | **Day** | **Topics to be covered** |
| 9 | 9th | 1st day | Numericals on Centrifugal pump |
| | | 2nd day | Numericals on Reciprocating pump(Single acting Reciprocating pump) |
| | | 3rd day | Numericals on Reciprocating pump(Double acting Reciprocating pump) |
| | | 4th day | Numericals on Centrifugal pump |
| **Sl No.** | **week** | **Day** | **Topics to be covered** |
| 10 | 10th | 1st day | Numericals on Centrifugal pump |
| | | 2nd day | Numericals on Reciprocating pump(Single acting Reciprocating pump) |
| | | 3rd day | Numericals on Reciprocating pump(Double acting Reciprocating pump) |
| | | 4th day | Numericals on Centrifugal pump |
| **Sl No.** | **week** | **Day** | **Topics to be covered** |
| 11 | 11th | 1st day | Numericals on Impulse turbine |
| | | 2nd day | Numericals on Francis turbine |
| | | 3rd day | Numericals on Kaplan turbine |
| | | 4th day | Numericals on Kaplan turbine |
| **Sl No.** | **week** | **Day** | **Topics to be covered** |
| 12 | 12th | 1st day | Numericals on Impulse turbine |
| | | 2nd day | Numericals on Francis turbine |
| | | 3rd day | Numericals on Kaplan turbine |
| | | 4th day | |
| **Sl No.** | **week** | **Day** | **Topics to be covered** |

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|---|---|---|---|
| 13 | 13th | 1st day | Doubt clearance and Revision |
| | | 2nd day | Doubt clearance and Revision |
| | | 3rd day | Doubt clearance and Revision |

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|---|---|---|---|
| | | 4th day | Doubt clearance and Revision |
| **Sl No.** | **week** | **Day** | **Topics to be covered** |
| 14 | 14th | 1st day | Numerical Problem solving |
| | | 2nd day | Numerical Problem solving |
| | | 3rd day | Numerical Problem solving |
| | | 4th day | Numerical Problem solving |
| **Sl No.** | **week** | **Day** | **Topics to be covered** |
| 15 | 15th | 1st day | Doubt clearance and Revision |
| | | 2nd day | Doubt clearance and Revision |
| | | 3rd day | Doubt clearance and Revision |
| | | 4th day | Doubt clearance and Revision |