

**GOVT. POLYTECHNIC MAYURBHANJ**

**LESSON PLAN**

| Discipline :<br><b>MECHANICAL</b> |      | Semester: 5th Sem                                       | Name of the Teaching Faculty : <b>Debashree D. Pramanik</b>  |   |
|-----------------------------------|------|---|--|---|
| Subject : <b>HM&amp;IFP</b>       |      | No. of Days /<br>per week class allotted :<br><b>04</b> | Semester From date : <b>15.09.2022</b><br>To Date : <b>21.01.2023</b>  |   |
| MONTH                             | Week | Day   | Topics   |   |
| SEPTEMBER                         | 3rd  | 4th   | <b>1.0 HYDRAULIC TURBINES</b> -Introduction about hydraulic machine  |   |
|                                   |      | 5th   | Definition and classification of hydraulic turbines  |   |
|                                   | 4th  | 2nd   | Construction and working principle of impulse turbine.   |   |
|                                   |      | 3rd   | Velocity diagram of moving blades, work done and derivation of various efficiencies of impulse turbine.                |   |
|                                   |      | 4th   | Velocity diagram of moving blades, work done and derivation of various efficiencies of Francis turbine                 |   |
|                                   | 5th  | 5th   | Velocity diagram of moving blades, work done and derivation of various efficiencies of Kaplan turbine                  |   |
|                                   |      | 2nd   | Distinguish between impulse turbine and reaction turbine   |   |
|                                   |      | 3rd   | Problem solved   |   |
|                                   |      | 4th   | Problem solved   |   |
|                                   |      | 3rd   | 5th  | Problem solved  |
|                                   |      |   | 2nd  | <b>2.0 CENTRIFUGAL PUMPS</b> -Construction and working principle of centrifugal pumps |
|                                   |      |   | 3rd  | work done and derivation of various efficiencies of centrifugal pumps                 |
| 4th                               |      |   | Problem solved   |   |
| 4th                               |      | 5th   | <b>CLASS TEST-1</b>  |   |
|                                   |      | 2nd   | <b>3.0 RECIPROCATING PUMPS</b> - Describe construction & working of single acting and double acting reciprocating pump |   |
|                                   |      | 3rd   | Describe construction & working of single acting reciprocating pump  |   |
|                                   |      | 4th   | Describe construction & working of double acting reciprocating pump  |   |
|                                   |      | 5th   | Derive the formula for power required to drive the pump (Single acting & double acting)                                |   |
|                                   |      | 2nd   | State positive & negative slip & establish relation between slip & coefficient of discharge                            |   |

|          |          |     |   |  |
|----------|----------|-----|---|--|
|          | 5th      | 3rd | Problem solved  |  |
|          |          | 4th | Problem solved  |  |
|          |          | 5th | Problem solved  |  |
| NOVEMBER | 1st      | 2nd | REVISION  |  |
|          |          | 3rd | <b>4.0 PNEUMATIC CONTROL SYSTEM</b> -Introduction to pneumatic circuit        |  |
|          |          | 4th | Elements –filter-regulator-lubrication unit                                   |  |
|          |          | 5th | Pressure control valves   |  |
|          | 2nd      | 3rd | Pressure regulation valves  |  |
|          |          | 4th | Direction control valves  |  |
|          |          | 5th | 3/2DCV,5/2 DCV,5/3DCV   |  |
|          | 3rd      | 2nd | Flow control valves   |  |
|          |          | 3rd | Throttle valves   |  |
|          |          | 4th | ISO Symbols of pneumatic components   |  |
|          |          | 5th | Pneumatic circuits  |  |
|          | 4th      | 2nd | Direct control of single acting cylinder                                      |  |
|          |          | 3rd | Operation of double acting cylinder   |  |
|          |          | 4th | Operation of double acting cylinder with metering in and metering out control |  |
|          |          | 5th | REVISION  |  |
|          | 5th      | 2nd | REVISION  |  |
|          |          | 3rd | <b>5.0 HYDRAULIC CONTROL SYSTEM</b> -Basic component of hydraulic system      |  |
|          | DECEMBER | 1st | 4th   | Hydraulic system, its merit and demerits |
|          |          |     | 5th   | Hydraulic accumulators                   |
|          |          | 2nd | 2nd   | Pressure control valves                  |
| 3rd      |          |     | Pressure relief valves  |  |
| 4th      |          |     | Pressure regulation valves and direction control valves                       |  |
| 5th      |          |     | <b>INTERNAL</b>   |  |
| 3rd      |          | 2nd | 3/2DCV,5/2 DCV,5/3DCV   |  |
|          |          | 3rd | Flow control valves   |  |

|         |     |     |   |
|---------|-----|-----|---|
|         | 3rd | 4th | Throttle valves   |
|         |     | 5th | Fluid power pumps   |
|         | 4th | 2nd | External and internal gear pumps  |
|         |     | 3rd | Vane pump   |
|         |     | 4th | Radial piston pumps   |
|         |     | 5th | ISO Symbols for hydraulic components.   |
| JANUARY | 1st | 2nd | Actuators   |
|         |     | 3rd | Hydraulic circuits  |
|         |     | 4th | Direct control of single acting cylinder                                      |
|         |     | 5th | Operation of double acting cylinder   |
|         | 2nd | 2nd | Operation of double acting cylinder with metering in and metering out control |
|         |     | 3rd | Comparison of hydraulic and pneumatic system                                  |
|         |     | 4th | REVISION  |
|         |     | 5th | REVISION  |
|         | 3rd | 2nd | Discussion of previous year question with answer                              |
|         |     | 3rd | Discussion of previous year question with answer                              |
|         |     | 4th | Discussion of previous year question with answer                              |
|         |     | 5th | <b>CLASS TEST -2</b>  |

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