# ARYAN SCHOOL OF ENGINEERING & TECHNOLOGY

| Dicipline: Mechanical | Semester: 4th | Name of the Teaching Faculty: Ashish Kumar Sahoo | |
|---|---|---|---|
| Subject: Fluid Mechanics | No of Days/Week Class Allotted: 4 | Semester From date: 10.02.22 To date 18.06.22 | No.of Weeks: 15 |

| WEEK | Class Day | Theory Topics |
|---|---|---|
| 1st | 1st | Define fluid. |
| | 2nd | Description of fluid properties. |
| | 3rd | Density, Specific weight, Specific gravity. |
| | 4th | Specific volume & problems on above. |
| | 5th | |
| 2nd | 1st | Numerical problems |
| | 2nd | Defn & units of dynamic viscosity |
| | 3rd | Kinematic Viscosity. |
| | 4th | Surface tension & Capilary phenomenon. |
| | 5th | |
| 3rd | 1st | Defn & units of fluid pressure, intensity & head. |
| | 2nd | Statement of Pascals law |
| | 3rd | Concept of atmospheric pressure. |
| | 4th | Gauge pressure, Vaccum pressure & absolute pressure. |
| | 5th | |

| WEEK | Class Day | Theory Topics |
|---|---|---|
| 4th | 1st | Pressure measuring instruments. |
| | 2nd | Manometers (Simple & Differential) |
| | 3rd | Bourdon tube pressure gauge. |
| | 4th | Solve numericals on Manometer. |
| | 5th | |
| 5th | 1st | Defn of hydrostatic pressure. |
| | 2nd | total pressure & Centre of pressure on immersed bodies. |
| | 3rd | Pressure for (horizontal & vertical bodies). |
| | 4th | Solve numericals on above |
| | 5th | |
| 6th | 1st | Archmedes principle. |
| | 2nd | concept of buoyancy, metacentre & metacentric height. |
| | 3rd | Concept of flotation |
| | 4th | class test-1 (Question answer discussion) |
| | 5th | |

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| WEEK | Class Day | Theory Topics |
|---|---|---|
| 4th | 1st | Types of fluid flow. |
| | 2nd | Continuity equation. |
| | 3rd | (Statement & proof for one dimension flow) |
| | 4th | Bernoulli's theorem |
| | 5th | |
| 8th | 1st | Proof of Bernoulli's theorem. |
| | 2nd | Application & limitations of Bernoulli's theorem. |
| | 3rd | Venturimeter & pitot tube |
| | 4th | Some numericals on above. |
| | 5th | |
| 9th | 1st | Define orifice |
| | 2nd | flow through orifice. |
| | 3rd | Orifices coeff. & the relⁿ between coeff. |
| | 4th | classifications of notches & weirs. |
| | 5th | |

| WEEK | Class Day | Theory Topics |
|---|---|---|
| 10th | 1st | Discharge over a rectangular notch or weir. |
| | 2nd | Discharge over a triangular notch or weir |
| | 3rd | Some numericals on above. |
| | 4th | Revision & doubt clearing class. |
| | 5th | |
| 11th | 1st | Defn of pipe. |
| | 2nd | Loss of energy in pipes. |
| | 3rd | continue loss of energy in pipes. |
| | 4th | Head loss due to friction. |
| | 5th | |
| 12th | 1st | Darcy & Chezys formula. |
| | 2nd | Some numericals using Darcy & Chezys formula |
| | 3rd | continue numericals. |
| | 4th | Hydraulic gradient & total gradient line. |
| | 5th | |

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| WEEK | Class Day | Theory Topics |
|---|---|---|
| 13th | 1st | Quick revision & doubt clearing class. |
| | 2nd | Class test-II. Question answer discussion. |
| | 3rd | Impact of jet on fixed plate. |
| | 4th | Impact of jet on vertical flat plate (moving). |
| | 5th | |
| 14th | 1st | Defn of work done on series of vanes. |
| | 2nd | Condition for max$^{m}$ efficiency. |
| | 3rd | Some numericals on above. |
| | 4th | Impact of jet on moving curved vane. |
| | 5th | |
| 15th | 1st | velocity triangles, derivation of |
| | 2nd | work done & efficiency. |
| | 3rd | Revision of chapter. |
| | 4th | Doubt clearing class. |
| | 5th | |