

GOVT. POLYTECHNIC, NAYAGARH

3rd SEMESTER MECHANICAL ENGINEERING (2022-23)

SUBJECT- STRENGTH OF MATERIAL

TOTAL PERIOD-60

THEORY-4P/WEEK

NAME OF FACULTY: Ramya Rashmi Rout,PTGF(MECH)

| Sl No. | week | Day | Topics to be covered |
|---------------|-----------------|---------------------|---|
| 1 | 1 st | 1 st day | Simple stress & strain |
| | | 2 nd day | Types of load, stresses & strains, (Axial and tangential) Hooke's law, Young's modulus, bulk modulus, modulus of rigidity, Poisson's ratio, derive the relation between three elastic constants |
| | | 3 rd day | Principle of super position, stresses in composite section. |
| | | 4 th day | Temperature stress, determine the temperature stress in composite bar (single core) |
| Sl No. | week | Day | Topics to be covered |
| 2 | 2 nd | 1 st day | Strain energy and resilience, Stress due to gradually applied, suddenly applied and impact load |
| | | 2 nd day | Simple problems on above. |
| | | 3 rd day | Thin cylinder and spherical shell under internal pressure |
| | | 4 th day | Definition of hoop and longitudinal stress, strain |
| Sl No. | week | Day | Topics to be covered |
| 3 | 3 rd | 1 st day | Computation of the change in length, diameter and volume |
| | | 2 nd day | Determination of normal stress, shear stress and resultant stress on oblique plane |
| | | 3 rd day | Location of principal plane and computation of principal stress |
| | | 4 th day | Location of principal plane and computation of principal stress and Maximum shear stress using Mohr's circle |
| Sl No. | week | Day | Topics to be covered |
| 4 | 4 th | 1 st day | Types of beam and load |
| | | 2 nd day | Concepts of Shear force and bending moment |
| | | 3 rd day | Shear Force and Bending moment diagram and its salient features illustration in cantilever beam, simply supported beam and over hanging beam under point load and uniformly distributed load |
| | | 4 th day | Numerical on above |
| Sl No. | week | Day | Topics to be covered |
| 5 | 5 th | 1 st day | Shear Force and Bending moment diagram and its salient features illustration in cantilever beam, simply supported beam and over hanging beam under point load and uniformly distributed load |
| | | 2 nd day | Numerical on above |

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| | | 3 rd day | Theory of simple bending |
| | | 4 th day | Simple problems solving |
| Sl No. | week | Day | Topics to be covered |
| 6 | 6 th | 1 st day | Bending equation, Moment of resistance, Section modulus & neutral axis |
| | | 2 nd day | Combined direct & bending stresses |
| | | 3 rd day | Define column |
| | | 4 th day | Axial load, Eccentric load on column, |
| Sl No. | week | Day | Topics to be covered |
| 7 | 7 th | 1 st day | Direct stresses, Bending stresses, |
| | | 2 nd day | Maximum & Minimum stresses |
| | | 3 rd day | Numerical problems on above |
| | | 4 th day | Numerical problems on above |
| Sl No. | week | Day | Topics to be covered |
| 8 | 8 th | 1 st day | Columns with various end conditions |
| | | 2 nd day | Columns with various end conditions |
| | | 3 rd day | Direct stresses, Bending stresses, |
| | | 4 th day | Numerical problems on above |
| Sl No. | week | Day | Topics to be covered |
| 9 | 9 th | 1 st day | Torsion |
| | | 2 nd day | Assumption of pure torsion |
| | | 3 rd day | The torsion equation for solid and hollow circular shaft |
| | | 4 th day | Comparison between solid and hollow shaft subjected to pure torsion |
| Sl No. | week | Day | Topics to be covered |
| 10 | 10 th | 1 st day | The torsion equation for solid and hollow circular shaft |
| | | 2 nd day | Numerical problems on above |
| | | 3 rd day | Numerical problems on above |
| | | 4 th day | Numerical problems on above |
| Sl No. | week | Day | Topics to be covered |
| 11 | 11 th | 1 st day | Numerical problems on above |
| | | 2 nd day | Numerical problems on above |
| | | 3 rd day | Numerical problems on above |
| | | 4 th day | Numerical problems on above |

| Sl No. | week | Day | Topics to be covered |
|--------|------------------|---------------------|------------------------------|
| 12 | 12 th | 1 st day | Numerical problems on above |
| | | 2 nd day | Numerical problems on above |
| | | 3 rd day | Numerical problems on above |
| | | 4 th day | |
| Sl No. | week | Day | Topics to be covered |
| 13 | 13 th | 1 st day | Numerical problems on above |
| | | 2 nd day | Numerical problems on above |
| | | 3 rd day | Numerical problems on above |
| | | 4 th day | Numerical problems on above |
| Sl No. | week | Day | Topics to be covered |
| 14 | 14 th | 1 st day | Numerical problems on above |
| | | 2 nd day | Numerical problems on above |
| | | 3 rd day | Numerical problems on above |
| | | 4 th day | Numerical problems on above |
| Sl No. | week | Day | Topics to be covered |
| 15 | 15 th | 1 st day | Numericals problem solving |
| | | 2 nd day | Numericals problem solving |
| | | 3 rd day | Doubt clearance and Revision |
| | | 4 th day | Doubt clearance and Revision |

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