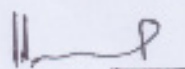
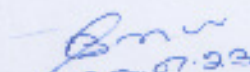


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| Discipline : MECHANICAL ENGG | Semester : 5th | Name of the Teaching Faculty:- BHABANI SANKAR SAHOO |
| Subject: DESIGN OF MACHINE ELEMENTS(TH 2) | No. of days/per week class allotted: 04 | Semester From date: 01.08.2023 To Date: 30.11.2023 No. of Weeks: 15 |
| Week | Class Day | Theory Topics |
| 1 st | 1 st | 1.0 Introduction 1.1 Introduction to Machine Design and Classify it. |
| | 2 nd | 1.2 Different mechanical engineering materials used in design with their uses and their mechanical and physical properties |
| | 3 rd | 1.2 Different mechanical engineering materials used in design with their uses and their mechanical and physical properties |
| | 4 th | 1.2 Different mechanical engineering materials used in design with their uses and their mechanical and physical properties |
| 2 nd | 1 st | 1.3 Define working stress, yield stress, ultimate stress & factor of safety |
| | 2 nd | 1.3 stress –strain curve for M.S |
| | 3 rd | 1.3 stress –strain curve for C.I. |
| | 4 th | 1.4 Modes of Failure (By elastic deflection, general yielding & fracture) |
| 3 rd | 1 st | 1.4 Modes of Failure (By elastic deflection, general yielding & fracture) |
| | 2 nd | 1.4 Modes of Failure (By elastic deflection, general yielding & fracture) |
| | 3 rd | 1.5 State the factors governing the design of machine elements |
| | 4 th | 1.6 Describe design procedure |
| 4 th | 1 st | 2.0 Design of fastening elements: 2.1 Joints and their classification. |
| | 2 nd | 2.2 State types of welded joints |
| | 3 rd | 2.3 State advantages of welded joints over other joints. |
| | 4 th | 2.4 Design of welded joints for eccentric loads |
| 5 th | 1 st | 2.4 Design of welded joints for eccentric loads |
| | 2 nd | Solve numerical on Welded Joint |
| | 3 rd | 2.5 State types of riveted joints and types of rivets. |
| | 4 th | 2.6 Describe failure of riveted joints. |
| 6 th | 1 st | 2.7 Determine strength & efficiency of riveted joints. |
| | 2 nd | Solve numerical on Riveted Joint |
| | 3 rd | 2.8 Design riveted joints for pressure vessel. |
| | 4 th | 2.9 Solve numerical on Welded Joint and Riveted Joints. |
| 7 th | 1 st | 3.Design of shafts and Keys: 3.1 State function of shafts. 3.2 State materials for shafts. |
| | 2 nd | 3.3 Design solid & hollow shafts to transmit a given power at given rpm based on a) Strength: (i) Shear stress, (ii) Combined bending tension; b) Rigidity: (i) Angle of twist, (ii) Deflection, (iii) Modulus of rigidity |


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| | 3 rd | 3.3 Design solid & hollow shafts to transmit a given power at given rpm based on a) Strength: (i) Shear stress, (ii) Combined bending tension; b) Rigidity: (i) Angle of twist, (ii) Deflection, (iii) Modulus of rigidity |
| | 4 th | 3.3 Design solid & hollow shafts to transmit a given power at given rpm based on a) Strength: (i) Shear stress, (ii) Combined bending tension; b) Rigidity: (i) Angle of twist, (ii) Deflection, (iii) Modulus of rigidity |
| 8 th | 1 st | Solve numerical on Design of Shaft |
| | 2 nd | 3.4 State standard size of shaft as per I.S. |
| | 3 rd | 3.5 State function of keys, types of keys & material of keys. |
| | 4 th | 3.6 Describe failure of key, effect of key way. |
| 9 th | 1 st | 3.7 Design rectangular sunk key considering its failure against shear & crushing. |
| | 2 nd | 3.8 Design rectangular sunk key by using empirical relation for given diameter of shaft. |
| | 3 rd | 3.9 State specification of parallel key, gib-head key, taper key as per I.S. |
| | 4 th | 3.10 Solve numerical on Design of keys. |
| 10 th | 1 st | 4.0 Design of Coupling: 4.1 Design of Shaft Coupling |
| | 2 nd | 4.2 Requirements of a good shaft coupling |
| | 3 rd | 4.3 Types of Coupling. |
| | 4 th | 4.4 Design of Sleeve or Muff-Coupling. |
| 11 th | 1 st | 4.4 Design of Sleeve or Muff-Coupling. |
| | 2 nd | 4.4 Solve simple numerical on above |
| | 3 rd | 4.5 Design of Clamp or Compression Coupling |
| | 4 th | 4.5 Design of Clamp or Compression Coupling |
| 12 th | 1 st | 4.5 Design of Clamp or Compression Coupling |
| | 2 nd | 4.6 Solve simple numerical on above |
| | 3 rd | 4.6 Solve simple numerical on above |
| | 4 th | 4.6 Solve simple numerical on above |
| 13 th | 1 st | 5.0 Design a closed coil helical spring: 5.1 Materials used for helical spring. |
| | 2 nd | 5.2 Standard size spring wire. (SWG). |
| | 3 rd | 5.3 Terms used in compression spring. |
| | 4 th | 5.4 Stress in helical spring of a circular wire. |
| 14 th | 1 st | 5.4 Stress in helical spring of a circular wire. |
| | 2 nd | Solve numerical on design of closed coil helical compression spring. |
| | 3 rd | 5.5 Deflection of helical spring of circular wire. |
| | 4 th | 5.5 Deflection of helical spring of circular wire. |
| 15 th | 1 st | Solve numerical on design of closed coil helical compression spring. |
| | 2 nd | 5.6 Surge in spring. |
| | 3 rd | 5.7 Solve numerical on design of closed coil helical compression spring. |
| | 4 th | 5.7 Solve numerical on design of closed coil helical compression spring. |

Learning Resources:

01. Machine Design by Pandya & Shah, Charotar PP
02. A Textbook of Machine Design by R.S. Khurmi & J.K. Gupta, S. Chand
03. A Textbook of Machine Design by P.C. Sharma & D.K. Agrawal, S.K. Kataria
04. Design of Machine Elements by V.B. Bhandari, TMH
05. Design Data Book by S.M.D. Jalandeen, Anuradha Publication

E. Bhabani Sankar Sahoo
25.07.22

Prepared By
ET. BHABANI SANKAR SAHOO
Lecturer In Mechanical Engg. Department
G.I.E.T (Polytechnic), Jagatpur, Cuttack

[Signature]
28/7/22
Principal
G.I.E.T (Polytechnic)
Jagatpur, Cuttack