



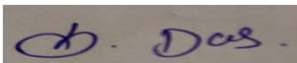
# UTKAL INSTITUTE OF ENGINEERING & TECHNOLOGY

|                                   |   |   |                |                |
|-----------------------------------|---|---|----------------|----------------|
| <b>DISCIPLINE:</b>                | <b>SEMESTER:</b>                                    |   |                |                |
| Mechanical Engineering            | 5th Sem   | <b>NAME OF THE TEACHING FACULTY:</b> Er.Snehasis Das  |                |                |
| <b>SUBJECT:</b>                   |   | Semester From Date:15/09/2022   |                |                |
| <b>DESIGN OF MACHINE ELEMENTS</b> | No of Days/Per week class allotted: 4 Class P/W(60) | To Date:22/12/2022  |                |                |
|                                   |   | No. Of Weeks: 15  |                |                |
| <b>WEEK</b>                       | <b>CLASS DAY</b>                                    | <b>THEORY TOPICS</b>  | <b>REMARKS</b> |                |
| 1 <sup>st</sup>                   | 1 <sup>st</sup>                                     | Introduction to Machine Design and Classify it  | Date           | Dean/Principal |
|                                   | 2 <sup>nd</sup>                                     | Different mechanical engineering materials used in design with their uses and their mechanical and physical properties. |                |                |
|                                   | 3 <sup>rd</sup>                                     | Define working stress, yield stress, ultimate stress & factor of safety and stress –strain curve for M.S & C.I.         |                |                |
|                                   | 4 <sup>th</sup>                                     | Modes of Failure (By elastic deflection, general yielding & fracture)   |                |                |
| 2 <sup>nd</sup>                   | 1 <sup>st</sup>                                     | Doubt clear class   |                |                |
|                                   | 2 <sup>nd</sup>                                     | State the factors governing the design of machine elements.   |                |                |
|                                   | 3 <sup>rd</sup>                                     | State the factors governing the design of machine elements.   |                |                |
|                                   | 4 <sup>th</sup>                                     | Assignment  |                |                |
|                                   | 1 <sup>st</sup>                                     | Assignment question Discussion  |                |                |

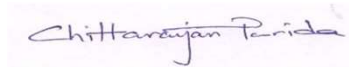
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|-----------------|-----------------|---|--|--|
| 3 <sup>rd</sup> | 2 <sup>nd</sup> | Describe design procedure   |  |  |
|                 | 3 <sup>rd</sup> | State types of welded joints  |  |  |
|                 | 4 <sup>th</sup> | State advantages of welded joints over other joints.  |  |  |
| 4 <sup>th</sup> | 1 <sup>st</sup> | Doubt Clear Class   |  |  |
|                 | 2 <sup>nd</sup> | Design of welded joints for eccentric loads.  |  |  |
|                 | 3 <sup>rd</sup> | State types of riveted joints and types of rivets.  |  |  |
|                 | 4 <sup>th</sup> | State types of riveted joints and types of rivets.  |  |  |
| 5 <sup>th</sup> | 1 <sup>st</sup> | Class Test  |  |  |
|                 | 2 <sup>nd</sup> | Describe failure of riveted joints  |  |  |
|                 | 3 <sup>rd</sup> | Describe failure of riveted joints  |  |  |
|                 | 4 <sup>th</sup> | Determine strength & efficiency of riveted joints.  |  |  |
| 6 <sup>th</sup> | 1 <sup>st</sup> | <b>Revision of Last Class</b>   |  |  |
|                 | 2 <sup>nd</sup> | Assignment  |  |  |
|                 | 3 <sup>rd</sup> | Determine strength & efficiency of riveted joints.  |  |  |
|                 | 4 <sup>th</sup> | Design riveted joints for pressure vessel.  |  |  |
| 7 <sup>th</sup> | 1 <sup>st</sup> | Doubt clear class   |  |  |
|                 | 2 <sup>nd</sup> | Revision  |  |  |
|                 | 3 <sup>rd</sup> | Solve numerical on Welded Joint and Riveted Joints.   |  |  |
|                 | 4 <sup>th</sup> | Assignment  |  |  |
| 8 <sup>th</sup> | 1 <sup>st</sup> | State function of shafts  |  |  |
|                 | 2 <sup>nd</sup> | Assignment question Discussion  |  |  |
|                 | 3 <sup>rd</sup> | State materials for shafts.   |  |  |
|                 | 4 <sup>th</sup> | Doubt Clearing Class.   |  |  |
|                 | 1 <sup>st</sup> | Design solid & hollow shafts to transmit a given power at given rpm based on a) Strength: (i) Shear stress, |  |  |

|                  |                 |   |  |  |
|------------------|-----------------|---|--|--|
| 9 <sup>th</sup>  | 2 <sup>nd</sup> | (ii) Combined bending tension;<br>b) Rigidity: (i) Angle of twist, (ii) Deflection, (iii) Modulus of rigidity |  |  |
|                  | 3 <sup>rd</sup> | Revision Class  |  |  |
|                  | 4 <sup>th</sup> | State standard size of shaft as per I.S.  |  |  |
| 10 <sup>th</sup> | 1 <sup>st</sup> | Solve numerical problem.  |  |  |
|                  | 2 <sup>nd</sup> | Internal Question Discussion  |  |  |
|                  | 3 <sup>rd</sup> | State function of keys, types of keys & material of keys  |  |  |
|                  | 4 <sup>th</sup> | State function of keys, types of keys & material of keys  |  |  |
| 11 <sup>th</sup> | 1 <sup>st</sup> | Doubt Clear Class   |  |  |
|                  | 2 <sup>nd</sup> | Describe failure of key, effect of key way  |  |  |
|                  | 3 <sup>rd</sup> | Class Test  |  |  |
|                  | 4 <sup>th</sup> | Design rectangular sunk key considering its failure against shear & crushing.                                 |  |  |
| 12 <sup>th</sup> | 1 <sup>st</sup> | Doubt Clear Class   |  |  |
|                  | 2 <sup>nd</sup> | Design rectangular sunk key by using empirical relation for given diameter of shaft                           |  |  |
|                  | 3 <sup>rd</sup> | State specification of parallel key, gib-head key, taper key as per I.S.                                      |  |  |
|                  | 4 <sup>th</sup> | Solve numerical on Design of Shaft and keys.  |  |  |
| 13 <sup>th</sup> | 1 <sup>st</sup> | Solve numerical on Design of Shaft and keys.  |  |  |
|                  | 2 <sup>nd</sup> | Design of Shaft Coupling  |  |  |
|                  | 3 <sup>rd</sup> | Requirements of a good shaft coupling, Types of Coupling.   |  |  |
|                  | 4 <sup>th</sup> | Class Test  |  |  |
| 14 <sup>th</sup> | 1 <sup>st</sup> | Design of Sleeve or Muff-Coupling.  |  |  |
|                  | 2 <sup>nd</sup> | Design of Sleeve or Muff-Coupling.  |  |  |

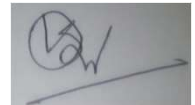
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| 14               | 3 <sup>rd</sup> | Design of Clamp or Compression Coupling                                       |  |  |
|                  | 4 <sup>th</sup> | Solve simple numerical on above.  |  |  |
| 15 <sup>th</sup> | 1 <sup>st</sup> | Materials used for helical spring. , Standard size spring wire. (SWG)         |  |  |
|                  | 2 <sup>nd</sup> | Terms used in compression spring, Stress in helical spring of a circular wire |  |  |
|                  | 3 <sup>rd</sup> | Deflection of helical spring of circular wire, Surge in spring.               |  |  |
|                  | 4 <sup>th</sup> | Solve numerical on design of closed coil helical compression spring           |  |  |



**HOD**



**DEAN**



**PRINCIPAL**