Code.No: RR312404 | RR | SET-1

III B.TECH – I SEM EXAMINATIONS, NOVEMBER - 2010
DESIGN OF MACHINE ELEMENTS
(AUTOMOBILE ENGINEERING)

Time: 3hours **Max.Marks:80**

Answer any FIVE questions
All questions carry equal marks
- - -

1. Define the term interchangability and explain hole basis & shaft basis system as they apply to different fits. [16]

2. A wrought iron bar, 30 m diameter, 2.5 m long transmits a shock energy of 110N-m. Find the maximum instantaneous stress and elongation. Take E= 200 N/m^2 [16]

3.a) Explain the following terms:
   i) Endurance limit
   ii) Size factor
   iii) Surface finish factor
   iv) Notch sensitivity.

   b) A 50 mm diameter shaft is made from carbon steel having ultimate tensile strength of 630 MPa. It is subjected to a torque which fluctuates between 2000 N-m to 800 N-m. Using Soderberg method, calculate the factor of safety. Assume suitable values for any other data needed. [8+8]

4. Show with neat sketches the various ways in which a riveted joint may fail. [16]

5. An eye bolt is to be used for lifting a load of 50kN. Find the nominal diameter of the bolt if the tensile stress is not to exceed 100 MPa. Assume coarse threads. [16]

6. What is the difference between a cotter and key? Why a single taper is provide in cotter and nut on both sides? Discuss the advantages and limitations of cotter joint. [16]

7. Differentiate between torsional rigidity design and lateral rigidity design of shafts. [16]

8. What are the factors to be investigated while selecting a coupling? State the difference between coupling & clutch? [16]

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Code.No: RR312404 | RR | SET-2

III B.TECH – I SEM EXAMINATIONS, NOVEMBER - 2010
DESIGN OF MACHINE ELEMENTS
(AUTOMOBILE ENGINEERING)

Time: 3hours **Max.Marks:80**

Answer any FIVE questions
All questions carry equal marks

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1.a) Explain the following terms:
i) Endurance limit
ii) Size factor
iii) Surface finish factor
iv) Notch sensitivity.

b) A 50 mm diameter shaft is made from carbon steel having ultimate tensile strength of 630 MPa. It is subjected to a torque which fluctuates between 2000 N-m to 800 N-m. Using Soderberg method, calculate the factor of safety. Assume suitable values for any other data needed. [8+8]

2. Show with neat sketches the various ways in which a riveted joint may fail. [16]

3. An eye bolt is to be used for lifting a load of 50kN. Find the nominal diameter of the bolt if the tensile stress is not to exceed 100 MPa. Assume coarse threads. [16]

4. What is the difference between a cotter and key? Why a single taper is provide in cotter and nut on both sides? Discuss the advantages and limitations of cotter joint. [16]

5. Differentiate between torsional rigidity design and lateral rigidity design of shafts. [16]

6. What are the factors to be investigated while selecting a coupling? State the difference between coupling & clutch? [16]

7. Define the term interchangability and explain hole basis & shaft basis system as they apply to different fits. [16]

8. A wrought iron bar, 30 m diameter, 2.5 m long transmits a shock energy of 110N-m. Find the maximum instantaneous stress and elongation. Take E= 200 N/m^2 [16]

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Code.No: RR312404 | RR | SET-3

III B.TECH – I SEM EXAMINATIONS, NOVEMBER - 2010
DESIGN OF MACHINE ELEMENTS
(AUTOMOBILE ENGINEERING)

Time: 3hours **Max.Marks:80**

Answer any FIVE questions
All questions carry equal marks
- - -

1. An eye bolt is to be used for lifting a load of 50kN. Find the nominal diameter of the bolt if the tensile stress is not to exceed 100 MPa. Assume coarse threads. [16]

2. What is the difference between a cotter and key? Why a single taper is provide in cotter and nut on both sides? Discuss the advantages and limitations of cotter joint. [16]

3. Differentiate between torsional rigidity design and lateral rigidity design of shafts. [16]

4. What are the factors to be investigated while selecting a coupling? State the difference between coupling & clutch? [16]

5. Define the term interchangability and explain hole basis & shaft basis system as they apply to different fits. [16]

6. A wrought iron bar, 30 m diameter, 2.5 m long transmits a shock energy of 110N-m. Find the maximum instantaneous stress and elongation. Take E= 200 N/m^2 [16]

7.a) Explain the following terms:
   i) Endurance limit
   ii) Size factor
   iii) Surface finish factor
   iv) Notch sensitivity.

   b) A 50 mm diameter shaft is made from carbon steel having ultimate tensile strength of 630 MPa. It is subjected to a torque which fluctuates between 2000 N-m to 800 N-m. Using Soderberg method, calculate the factor of safety. Assume suitable values for any other data needed. [8+8]

8. Show with neat sketches the various ways in which a riveted joint may fail. [16]

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Code.No: RR312404 | RR | SET-4

III B.TECH – I SEM EXAMINATIONS, NOVEMBER - 2010
DESIGN OF MACHINE ELEMENTS
(AUTOMOBILE ENGINEERING)

Time: 3hours **Max.Marks:80**

Answer any FIVE questions
All questions carry equal marks
- - -

1. Differentiate between torsional rigidity design and lateral rigidity design of shafts. [16]

2. What are the factors to be investigated while selecting a coupling? State the difference between coupling & clutch? [16]

3. Define the term interchangability and explain hole basis & shaft basis system as they apply to different fits. [16]

4. A wrought iron bar, 30 m diameter, 2.5 m long transmits a shock energy of 110N-m. Find the maximum instantaneous stress and elongation. Take E= 200 N/m^2 [16]

5.a) Explain the following terms:
   i) Endurance limit
   ii) Size factor
   iii) Surface finish factor
   iv) Notch sensitivity.

   b) A 50 mm diameter shaft is made from carbon steel having ultimate tensile strength of 630 MPa. It is subjected to a torque which fluctuates between 2000 N-m to 800 N-m. Using Soderberg method, calculate the factor of safety. Assume suitable values for any other data needed. [8+8]

6. Show with neat sketches the various ways in which a riveted joint may fail. [16]

7. An eye bolt is to be used for lifting a load of 50kN. Find the nominal diameter of the bolt if the tensile stress is not to exceed 100 MPa. Assume coarse threads. [16]

8. What is the difference between a cotter and key? Why a single taper is provide in cotter and nut on both sides? Discuss the advantages and limitations of cotter joint. [16]

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