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| **IMS ENGINEERING COLLEGE** | IMSEC/QF/48 |
| **FORMATS** | Page 1 of 1 |
| Issue No: 02 |
| **Tutorials/ Assignments/ Quizzes** | Issue Date: 1 May 2010 |

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| **Subject Name:** Machine Design | **Subject Code: NME-501** | **Max Marks:** 10 |

1. A pair of wheels of a railway wagon carries a load of 50 kN on each axle box,acting at a distance of 100 mm outside the wheel base. The gauge of the rails is 1.4 m. Find thediameter of the axle between the wheels, if the stress is not to exceed 100 MPa.
2. A solid circular shaft is subjected to a bending moment of 3000 N-m and atorque of 10 000 N-m. The shaft is made of 45 C 8 steel having ultimate tensile stress of 700 MPa anda ultimate shear stress of 500 MPa. Assuming a factor of safety as 6, determine the diameter of theshaft.
3. What is ASME code for shaft design?
4. On what basis shafts are designed? Explain briefly.