

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
M.Tech., Summer 2017 - 18 Examination

Semester: 2
Subject Code: 03217154
Subject Name: Advanced Machine Design-II

Date: 25/05/2018
Time: 02:00 pm to 04:30 pm
Total Marks: 60

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

- Q.1** A) Explain in detail the role of “Ethics in Engineering Design”. (05)
- B) A thin cylindrical pressure vessel of 500 mm diameter is subjected to an internal pressure of 2 N/mm². If the thickness of the vessel is 20 mm, find the hoop stress, longitudinal stress and the maximum shear stress. (05)
- C) Describe the concept of “Product Life Cycle” in detail, using suitable case study. (05)
- Q.2 Answer the following questions.** (Attempt any three) (Each five mark) (15)
- A) What are intellectual property rights? How the protection of intellectual property can be ensured?
- B) Explain the impact of Whistle Blowing in any organization.
- C) A closed ended cast Iron cylinder of 200 mm inside diameter is to carry an internal pressure of 18 MPa. Determine the wall thickness by means of Lamé’s and maximum shear stress equations. Which result would you use?
- D) Explain the “Gear Rating”. Also show the procedure of gear rating calculation.
- Q.3** A) Derive an expression with analysis for stress variation in rotation for thin Metallic disc. (07)
- B) A pipe of 300 mm internal diameter is subjected to an internal pressure of 1.25 MPa and is to be joined by a circular flange joint. Calculate the pipe thickness by taking the permissible tensile stress in the pipe to be 20 MPa and corrosion allowance as 9 mm. Also calculate the size of flanges for 8 no. of bolts having bolt size as M39 ×4. Take permissible bending stress in flanges to be 20 MPa. (08)

OR

- B) A thin uniform steel disc of diameter 500 mm is rotating about its axis at 3000 rpm. Calculate the maximum principal stress and maximum in plane shear stress in the disc. Draw the circumferential stress and radial stress distribution along the radius of the thin disc. (08)
- Q.4** A) Explain basic principles of Materials handling equipments. Also briefly mention the design considerations for plate girders. (07)

OR

- A) Elaborate the concept of dynamic design for Aircraft or Automobiles. (07)
- B) What are the selection criteria for the use of appropriate Lubricant? Define Hydrodynamic and Hydrostatic lubrication with suitable example. (08)