
Answer Part A and Part B on separate answer book

Part A - Marks 50

1. (a) Suggest bearing materials for following applications giving proper reasoning. 10
 - (i) Ball bearing – service temperature 300 °C, acidic (corrosive) environment
 - (ii) Sliding bearing – Tri metal type with Cu- alloy base (identify different layers of tri metal bearing justifying the role of each of them).
- (b) Give characteristics of PTFE as a bearing material.
2. (a) What are the guiding principles for selecting counterfacing materials to minimize adhesive wear? Explain. Give appropriate examples to illustrate your answer. 12
- (b) What kind of materials would you suggest for application involving erosive wear where abrasive particles are falling with low velocity (a) at an angle of 10° (b) at an angle of 90°
3. In context of abrasive wear resistance answer the following questions. 13
 - (a) What is the most desirable matrix for plain carbon steels?
 - (b) What is the most desirable matrix for alloy steels?
 - (c) What are the hardness requirements with respect to hardness of abrasive?
 - (d) What should be the characteristics of second phase particles (carbides etc) with respect to abrasive?
 - (e) What are the additional (property) requirements in case of Gouging wear?
4. Give approximate composition and properties of the following materials 15
 - (i) 7000 series Al-alloy (ii) Al- bronze (iii) α - β brass (iv) En-24 steel
 - (v) 316 stainless steel