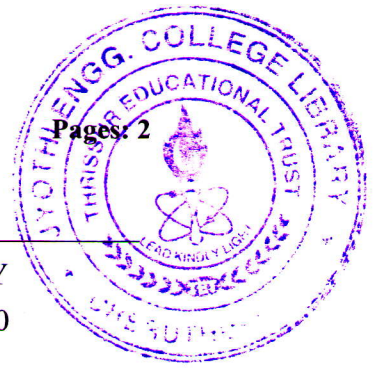


Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
Fifth semester B.Tech degree examinations (S) September 2020



Course Code: ME369
Course Name: TRIBOLOGY

Max. Marks: 100

Duration: 3 Hours

PART A*Answer any three full questions, each carries 10 marks.*

- | | | Marks |
|---|--|-------|
| 1 | a) Define Elastic half spheres. | (2) |
| | b) Explain the characteristics of surface layers. | (5) |
| | c) Compare rolling contact bearing over sliding contact bearing. | (3) |
| 2 | a) List one use of each bearings of following type:
i) Thrust ball bearings ii) needle roller bearing | (2) |
| | b) Explain the classification of bearing based on the applied load. | (4) |
| | c) Differentiate between chemisorption and physisorption | (4) |
| 3 | a) List out any three methods of measuring friction and explain any one method in detail | (7) |
| | b) What are the exceptions of Amonton's law of friction. | (3) |
| 4 | a) Write short notes on Friction of polymers | (4) |
| | b) Explain Bowden Tabor's theory of friction. | (4) |
| | c) Explain junction growth phenomenon. | (2) |

PART B*Answer any three full questions, each carries 10 marks.*

- | | | |
|---|--|-----|
| 5 | a) Explain different types of wear commonly occurring in industry | (5) |
| | b) Derive an expression for quantifying specific wear with assumptions | (5) |
| 6 | a) Differentiate between two body abrasion and three body abrasion | (4) |
| | b) Identify three occurrence of sliding wear in industry. | (3) |
| | c) Differentiate between mild wear and severe wear | (3) |
| 7 | a) List out any two methods to measure viscosity and explain any one method in detail. | (4) |
| | b) Explain with examples six additives of lubricant. | (6) |
| 8 | a) Write short notes on lubrication in extrusion process. | (6) |

- b) Differentiate between Newtonian and non-Newtonian fluid. (4)

PART C

Answer any four full questions, each carries 10 marks.

- 9 a) Recognize the role of surface tension in adhesion. (4)
b) List any six bearing materials and write short notes about them. (6)
- 10 a) Explain the importance of adhesion in tribology. (4)
b) Explain Stiction. (4)
c) Define coefficient of adhesion (2)
- 11 a) Enlist any two different types of roller bearings and explain the constructional features of a typical roller bearing. (6)
b) Explain the lubrication regimes using stribeck curve (4)
- 12 a) Write short notes on i) Surface melting ii) Fusion Processes (6)
b) Explain the thermal spray process. (4)
- 13 a) Explain physical vapour deposition method with its applications. (6)
b) Explain electroplating method. (4)
- 14 a) Suggest any two methods of coating to acidic environments. (2)
b) Write short notes on microstructural treatments. (4)
c) Describe the hard facing coating technique with the help of a sketch. (4)
