

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIFTH SEMESTER B.TECH DEGREE EXAMINATION(S), MAY 2019

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) What are the potential savings through Jost's Report | (4) |
| b) What is Hertz theory and what are its assumptions | (6) |
| 2 a) What are the physico-chemical characteristics of Engineering surfaces | (5) |
| b) Write any three applications of sliding bearings | (3) |
| c) Write names of 2 leading Indian manufacturers of bearing | (2) |
| 3 a) How can we reduce the component of ploughing in lubricated contacts | (3) |
| b) Explain the methodology of measuring friction with neat sketch using Pin on Disk | (5) |
| c) Write any two situations where wear is desirable | (2) |
| 4 a) Write down any six factors affecting coefficient of friction. | (6) |
| b) What are the different types of friction? Explain | (2) |
| c) Write any two causes of friction | (2) |

PART B

Answer any three full questions, each carries 10 marks.

- | | |
|---|-----|
| 5 a) Give any 4 examples of occurrence of sliding wear in industry | (4) |
| b) What are the different stages of wear? Explain with wear regime maps | (4) |
| c) State any two assumptions of Archard's law | (2) |
| 6 a) Differentiate between scuffing, galling and seizure | (3) |
| b) Derive an equation for abrasive wear model | (5) |
| c) Differentiate between two body abrasion and three body abrasion | (2) |
| 7 a) What is the role of lubrication in wire drawing operation | (4) |
| b) Write any four considerations in selection of metal working fluid | (4) |

- c) What is viscosity index? (2)
- 8 a) Explain any four additives for developing a lubricant (4)
- b) Explain any one of the method to measure viscosity (6)

PART C

Answer any four full questions, each carries 10 marks.

- 9 a) What is the importance of adhesion in tribology (4)
- b) Write short notes on adhesion produced by surface tension (2)
- c) What are the different bearing materials used in industry?(any four) (4)
- 10 a) Write any four applications of roller bearing (4)
- b) What are the constructional features of roller bearing? (4)
- c) What is stiction? (2)
- 11 a) What is meant by adhesion index? (2)
- b) Explain any four surface interactions responsible for adhesion (4)
- c) What are the constructional features of roller bearings (4)
- 12 a) Explain any four anti corrosion properties of coating (4)
- b) Describe the chemical vapour deposition technique with the help of a sketch (6)
- 13 a) What do you meant by thermal spray process (4)
- b) Suggest any six surface coating methods to improve corrosive stability (6)
- 14 a) Explain any four physico-chemical parameters of coating (4)
- b) Write any four characteristics of electro less plating (2)
- c) Write any four different thermo chemical surface treatments (4)
