

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

Fifth Semester B.Tech Degree Regular and Supplementary Examination December 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) Write a short note on Jost's report.                                   | (4)   |
|   | b) Differentiate between conforming and non-conforming contact.           | (2)   |
|   | c) Explain the topography of engineering surface with neat sketch.        | (4)   |
| 2 | a) Write the advantages and disadvantages of cylindrical roller bearings. | (4)   |
|   | b) Write any three applications of sliding bearings.                      | (3)   |
|   | c) Explain are the historical developments of tribology.                  | (3)   |
| 3 | a) List out two situations where wear is<br>i)Desirable ii)Undesirable    | (4)   |
|   | b) State and explain the Bowden Tabor's theory of Friction.               | (6)   |
| 4 | a) Write short notes on<br>i)Friction of metals ii)Friction of ceramics   | (5)   |
|   | b) State Amonton's laws of friction.                                      | (5)   |

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

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|---|--|------|
| 5 | a) Explain the mechanism behind adhesive wear.                                       | (5)  |
|   | b) Derive an equation for abrasive wear model.                                       | (5)  |
| 6 | What are the different methods used for wear measurement. Explain any three.         | (10) |
| 7 | a) Explain the role of lubricant in rolling and forging.                             | (6)  |
|   | b) What is Newtonian and non-Newtonian fluid?  | (4)  |
| 8 | a) Write any five additives for developing a good lubricant. Explain them in detail. | (5)  |
|   | b) Explain what is boundary lubrication.   | (5)  |

**PART C**

***Answer any four full questions, each carries 10 marks.***

- 9 a) What is adhesion and adhesive index? (4)  
b) Write short notes on adhesive coefficient of friction? (2)  
c) Explain adhesion produced by surface tension. (4)
- 10 a) Differentiate ball bearing and roller bearings. (4)  
b) Write any four bearing materials used in industry. (4)  
c) Write any two applications of roller bearings. (2)
- 11 Differentiate between sliding and rolling contact bearings. (10)
- 12 a) Describe Chemical Vapour Deposition with a neat sketch. (5)  
b) Explain any three geometrical parameters of coating. (3)  
c) What is transformation hardening? (2)
- 13 a) What is electro plating? (2)  
b) Explain thermo chemical treatments. (5)  
c) Write any three advantages and disadvantages of electro plating method. (3)
- 14 a) Explain Surface melting. (3)  
b) Write any four characteristics of electro less plating. (4)  
c) What are the different properties and parameters of coating? (3)

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