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



**End Semester Examination – Nov/Dec - 2017**

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| **Code :** | **14ME3027** | **Duration :** | **3hrs** |
| **Sub. Name :** | **INDUSTRIAL TRIBOLOGY** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | State the difference between sliding Friction and Rolling Friction. Explain sliding Friction with application. | CO1 | 10 |
| b. | Define ‘Tribology’? Explain the importance and history of ‘tribology’ in industry. | CO1 | 10 |
| (OR) | | | | |
| 2. |  | Name the various techniques available for modifying the surface to improve its tribological characteristics and explain the Physical vapour deposition method with a neat sketch. | CO3 | 20 |
|  |  |  |  |  |
| 3. |  | What are solid lubricants? Explain the solid lubricants by enumerating suitable examples? | CO3 | 20 |
| (OR) | | | | |
| 4. |  | List out types of wear and explain their mechanism. | CO1 | 20 |
|  |  |  |  |  |
| 5. |  | Explain the process of thermo chemical treatments in detail. | CO3 | 20 |
| (OR) | | | | |
| 6. |  | Explain the process of surface coatings in Hard facing method with neat sketch. | CO3 | 20 |
|  |  |  |  |  |
| 7. |  | The diameter of the ball is 12.7mm, three equal balls rest on a smooth horizontal surface touching one another. A further ball of same size is placed on top of these three balls to form a pyramid and the three lower balls are now held together by an encircling string. Initially in the absences of the top ball there will be no tension in the string. Determine the tensile force T in the string if the weight of the each ball is 8.4 grams and all the balls are perfectly smooth. | CO2 | 20 |
| (OR) | | | | |
| 8. | a. | Explain the wet sand rubber wheel test with a neat sketch. | CO3 | 10 |
|  | b. | Explain the drum wear test with a neat sketch. | CO3 | 10 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. |  | List out Mechanical dynamic tribology and testing methods. Explain with neat sketches of slurry abrasivity test and application. | CO3 | 20 |

ALL THE BEST