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

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**End Semester Examination – Nov/Dec – 2018**

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| **Code :** | **17ME3011** | **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. | Define: Friction, Frictional force, Static friction, Kinetic friction force and stick-slip phenomena. | CO1 | 10 |
| b. | Explain the abrasive wear mechanism with neat sketch. | CO1 | 10 |
| (OR) | | | | |
| 2. |  | Name the various techniques available for modifying the surface to improve its tribological characteristics and explain the chemical vapour deposition method with a neat sketch. | CO1 | 20 |
|  |  |  |  |  |
| 3. |  | Explain the Lubrication Regimes with a neat sketch. | CO2 | 20 |
| (OR) | | | | |
| 4. |  | Explain the process of surface coatings in plasma enhanced chemical vapour deposition method with neat sketch. | CO3 | 20 |
|  |  |  |  |  |
| 5. |  | What are the properties of lubricants? Explain the different types of lubricant properties with neat sketches. | CO3 | 20 |
| (OR) | | | | |
| 6. |  | A pivoted shoe of a slider bearing has a square shape the load acting on the bearing is 15 kN. Velocity of the moving member is 5m/sec. Lubricating oil is SAE 30 and mean temperature of the oil is 70 C. The minimum oil film thickness is 0.02 mm. Take q = 1.4. Determine: i.The dimensions of the shoe, ii. Coefficient of friction, iii. Power loss due to friction. Assume that the inclination of bearing surface corresponds to the maximum load carrying capacity of the bearing. | CO3 | 20 |
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| 7. |  | Explain the process of micro structural treatments in detail with neat sketchs. | CO4 | 20 |
| (OR) | | | | |
| 8. | a. | Explain the dry sand-rubber wheel test with a neat sketch. | CO5 | 10 |
| b. | Explain the solid particle erosion test with a neat sketch. | CO5 | 10 |
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|  | | **Compulsory**: |  |  |
| 9. |  | List out Mechanical dynamic tribology and testing methods. Explain with neat sketches of pin on disc wear test and application. | CO6 | 20 |