

Total No. of Questions : 6]

SEAT No. :

[Total No. of Pages : 3

P192

BE/INSEM/APR-520

B.E. (Mechanical) (Semester - II)

402049(A) : TRIBOLOGY

(2015 Pattern) (Elective - III)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) Write Q1 or Q2, Q3 or Q4 and Q5 or Q6.
- 2) Neat diagrams must be drawn whenever necessary.
- 3) Figures to the right indicate full marks.
- 4) Use of electronic pocket calculator is allowed.
- 5) Assume suitable data, if necessary.

Q1) a) State the applications of Tribology in industry and discuss the Tribological problems in industry. [5]

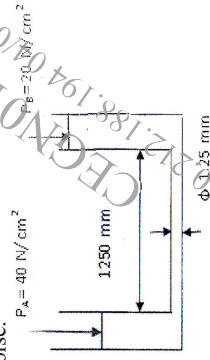
b) Define the following terms : [5]

- i) Pour point
- ii) Flash point
- iii) Oiliness
- iv) Viscosity
- v) Viscosity index

OR

Q2) a) Write a note on 'commonly used lubricants and Hazards'. [6]

b) Two Reservoirs A and B are connected by a capillary of bore 1.25 mm and length of capillary is 1250 mm. As shown in figure. Pressure in reservoir A is 40 N/cm² and that of reservoir B is 20 N/cm². Calculate the rate of flow between the reservoirs if the tanks are filled with an oil of viscosity 180 centi poise. [4]



P.T.O.

Q3) a) What do you mean stick slip friction? Write at least two examples. [5]

b) What are the types of Friction? Explain all types of friction in brief. [5]

OR

Q4) a) Explain at least five factors affecting wear rate. [5]

b) Write a note on 'Wear-Testing Methods'. [5]

Q5) a) Explain the mechanism of pressure development between two non parallel plates separated by oil film. [6]

b) Enlist the assumptions and conditions to be filled for satisfying Petroff's equation. [4]

OR

Q6) a) Write a short note on sommerfeld number. [4]

b) The following data is given for a 360° hydrodynamic bearing. [6]

- Radial Load : 5 kN,
- l/r ratio : 1,
- Bearing length : 50 mm,
- Journal Speed : 1000 rpm,
- Radial clearance : 20 microns,
- Eccentricity : 16 microns.

Calculate :

- i) The minimum oil film thickness,
- ii) The coefficient of friction,
- iii) The power lost in friction.

(Refer the dimensionless parameter chart)

BE/INSEM/APR-520

2

Table 1:

$\frac{l}{d}$	$\frac{h_0}{c}$	ϵ	S	$\left(\frac{r}{c}\right)f$	$\frac{Q}{Q_{ren,l}}$	$\frac{Q_s}{Q}$	$\frac{P_{max}}{P}$
1.0000	0.0000	1.0000	0.0000	0.0000	0.0000	1.0000	0.0000
	0.0300	0.9700	0.00474	0.5140	4.8200	0.973	6.579
	0.1000	0.9000	0.0188	1.0500	4.7400	0.919	4.048
	0.2000	0.8000	0.0466	1.7000	4.6200	0.842	3.195
	0.4000	0.6000	0.1210	3.2200	4.3300	0.680	2.409
	0.6000	0.4000	0.2640	5.7900	3.9900	0.497	2.066
	0.8000	0.2000	0.6310	12.8000	3.5900	0.280	1.890
	0.9000	0.1000	1.3300	26.4000	3.3700	0.150	1.852
	1.0000	0.0000	∞	∞	3.1420	0.0000	0.0000

210.212.188.194