ITL 705
Major 2006
Part B

Time 1 hr **Total marks 50**

Note- Part A & B should be attempted on different answer sheets. Q1 should be attempted on Q paper & submitted.

Q1-Fill in the blanks.(17)

i) Fatty oils are .....with traces of.....which is responsible for their capacity to cling to the metallic surfaces. (2)

ii) In SAE classification of lubricants .....grades are for.....&.... for ..... Higher the number, ... is the kinematic viscosity in the group. (2.5)

iii) Modern IC engines demand MG oils with VI .....which is achieved by .....&..... (1.5)

iv) In general, higher the H bonding, ...is the specific heat of oils. (1)

v) In electroplating method, substrate is made .....& the solution contains the cations of Ms / Mc (tick correct answer). The post coating treatment is known as ..... & is required to avoid possibility of..... (3)

vi) The most effective method to get abrasive wear resistanee on the surface is..... (1)

vii) In calorizing process, ...is diffused into steel for inereasing ..... & ..... (1.5)

viii) The process of .....leads to highest increase in hardness. (1)

ix) Shot peening results in inerease in strength of ductile crystalline material as a result of....., ... and ..... (3)

x) In diffusion process heated steel component is exposed to appropriate medium so that ..... (2)

Q2- Describe about following additives in oils

a) Detergents and mechanism- **(6)**

b) Anti-oxidants, their funetion, two major mechanisms & one example. **(6)**

Q3-a) Describe in brief, types of friction materials, their ideal performance features (both lining & disc/drum materials) **(2 +5+2)**

b) Friction material is expected to have moderate friction coefficient, wear and thermal conductivity. Explain **(3)**

Q4- What is difference between CVD and PVD processes? Explain in brief about CVD process citing examples for coating nitrides, oxides and carbides on a selected metallic substrate. **(2+4+3)**