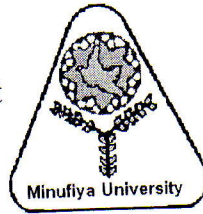


Menoufia University
Faculty of Engineering Shebin El-Kom
Mech. Power Engineering Department
First Semester Examination 2017/2018
Date of Exam.: 17/1/2018



Subject: Lubrication Engineering
Code: : MPE 528
Year: Higher Diploma
Time Allowed: Three hours
Total Marks: 100 Marks

Allowed tables and Charts (None)

Answer the following Questions: "Assume the missing data "

Question (1) (28 Marks)

- a- What is the meaning and the main concepts of friction, lubrication and lubricant? (6 Marks)
- b- Write the how which of following statement is false or true and comment on your answers: (12 Marks)
- (1) Where surface interaction continues to exert a significant effect, the viscosity of the lubricant becomes the more important property.
 - (2) In the mixed region of lubrication, lubricant viscosity is not the only significant factor.
 - (3) The frictional properties of dry metals will be very greatly affected by the presence of surface films on the metals.
 - (4) Paraffinic oils have high pour points because of the asphaltic components they contain.
 - (5) Paraffinic oils have higher viscosity index than naphthenic oils.
 - (6) The electrical conductivity of oil increases with the rise in its temperature.
 - (7) The pour point of oil decreases with the increase in its wax content.
 - (8) The high viscosity oils having a large tendency to form foam.
- c- What is the main idea of the hydrodynamic lubrication and its main characteristics? Use illustrations. (10 Marks)

Question (2) (28 Marks)

- a- What are the regimes of lubrication due to the load increase on contact surfaces? (10 Marks)
- b- What is the meaning of hydrodynamic lubrication and its performance? (10 Marks)
- c- Explain the function of lubricants to dampen shock? (8 Marks)

Question (3) (22 Marks)

- a- Describe using illustration the hydrostatic bearing and its main types and its characteristics? (10 Marks)
- b- Show how the lubrication can be used to cool bearing and shaft? (12 Marks)

Question (4) (22 Marks)

- a- What are the principle functions of lubricants? (10 Marks)
- b- What are the desirable properties of solid lubricant film to friction and wear reduction? (12 Marks)

With my best wishes and successful

Dr./ Essam M. Wahba