

Code: AE1T2

I B.Tech-I Semester – Regular Examinations-February 2014

**ENGINEERING CHEMISTRY-I
(FOR AERONAUTICAL ENGINEERING)**

Duration: 3 hours

Marks: 5x14=70

Answer any FIVE questions. All questions carry equal marks

- 1 a) Explain the working principle of refrigeration with flow diagram. 6 M
- b) State and explain Carnot's cycle. 8 M
- 2 a) Write short note on 6 M
- i) Flash & fire point
 - ii) Precipitation number
 - iii) Neutralization number
- b) Explain thick film and thin film mechanisms of Lubrication. 8 M
- 3 a) Write the preparation, structure and uses of the following: 8 M
- i) Buna-N
 - ii) Buna-S
 - iii) Polyurethane
- b) Discuss the process of vulcanization of rubber. 6 M

- 4 a) What is the criteria of a good refractory? Mention each type of refractory with example. 7 M
- b) What are ceramics and how are they classified? Discuss their engineering application. 7 M
- 5 a) What are abrasives? Give examples. Explain Moh's scale of hardness. 6 M
- b) Discuss the physical factors influencing adhesive action. 8 M
- 6 a) Write short notes on 8 M
- i) Octane number
 - ii) Thermal Cracking
 - iii) Reforming
- b) Describe the fractional distillation of the crude oil. 6 M
- 7 a) Explain the phase diagram of an one component system with neat sketch. 7 M
- b) State phase rule. Discuss the applications of phase rule-II water system. 7 M
- 8 a) Write the composition, properties and uses of following alloys: 6 M
- i) Brass
 - ii) Nichrome
- b) Discuss briefly the manufacture of alloys and state their uses. 8 M