PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
M.Tech. Summer 2017 - 18 Examination

Semester: 2	**Date: 25/05/2018**
Subject Code: 03210154	**Time: 2.00 pm to 4.30 pm**
Subject Name: Solar Engineering	**Total Marks: 60**

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 A) Explain with neat sketch Solar Constant and its variation throughout the year. **(05)**

B) Differentiate between active and passive solar cooling systems related to building cooling. **(05)**

C) Calculate sunrise and sunset time on 23 March and 22 September for a surface tilted at 20˚ (degree) and facing due south. The location has a latitude 22.3˚ (degree) N and longitude 73.18˚ (degree) E. **(05)**

Take w= cos^(-1) *{-tan (∅-β)* tan δ}

Where, δ=23.45*sin☐((360(n+284))/365)

Q.2 **Answer the following questions**. (Attempt any three) (Each five mark) **(15)**

A) Explain the need of Thermal storage.

B) Explain Carnot Refrigeration cycle and COP.

C) Define Surface Azimuth angle and Declination angle with neat sketch.

D) Determine declination angle for 21st June, 22nd March, 21st Dec and 23rd September.

Q.3 A) Write names of solar radiation measuring instruments. Explain sun shine recorder with neat sketch. **(07)**

B) Explain with neat sketch the working of Trombe Wall. **(08)**

OR

B) Explain with neat sketch Thermosyphon water heating system. **(08)**

Q.4 A) Explain with neat sketch LiBr Vapor Absorption System. **(07)**

OR

B) Write difference between absorption and adsorption refrigeration. **(07)**

B) List down name of the components and draw single line diagram for a typical Industrial Drying application. **(08)**