UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2017

Program: Int. B.Tech. – ET+IPR   Semester – V

Subject (Course): Solar Energy Technology   Max. Marks   : 100
Course Code   :   ETEG 304   Duration   : 3 Hrs
No. of page/s: 2

Section A   [4 marks x 5 = 20]

Q.1) (CO3)   With the help of diagram explain the underground aquifer storage concept.

Q.2) (CO5)   With the help of block diagram, explain the operations of stand-alone SPV system.

Q.3) (CO4)   Compare the relative merits and demerits of LiBr-water and aqua-ammonia vapour absorption cooling system.

Q.4) (CO2)   For a parabolic collector of length 2 m, the angle of acceptance is $15°$. Find the concentration ratio of collector.

Q.5) (CO4)   With the help of schematic diagram, explain the working of distributed collectors solar thermal electric power plant.

Section B   [10 marks x 4 = 40]

Q.6) (CO5)   A 120V, 60 Hz AC motor is to be operated by day from a solar cell array and by night from the 120 V public utilities. A DC to AC converter is available that changes the array DC output into a 120 V, 60 Hz AC with 90% efficiency independent of a load phase angle while the running motor has a DC resistance of $300\,\Omega$ and an inductance of 0.3 H. How much power output must the array provide?

Q.7) (CO5)   Draw and explain an equivalent circuit of a practical solar PV cell.