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W—114—2018

FACULTY OF SCIENCE

B.Sc. (Third Year) (Fifth Semester) EXAMINATION

OCTOBER/NOVEMBER, 2018

(CBCS Pattern)

PHYSICS

Paper XIII

(B. Solar Energy) (DSEP—I)

(Wednesday, 24-10-2018)

Time : 10.00 a.m. to 12.00 noon

Time—2 Hours

Maximum Marks—40

N.B. :— (i) All questions are compulsory.

(ii) All questions carry equal marks.

(iii) Use of non-programmable calculator is allowed.

(iv) Figures to the right indicate full marks.

1. Attempt any *four* of the following : 8

(i) What is meant by spectral distribution ?

(ii) State the working principle of solar cell.

(iii) State Plank's law.

(iv) Draw the block diagram of stand alone solar photovoltaic system.

(v) Give the working principle of solar water heater.

(vi) State the different generations of solar cells.

2. Attempt any *two* of the following : 8

(a) Discuss on extra-terrestrial radiation and its variation over a year.

(b) Give the details of silicon solar cell structure.

(c) Describe the components of solar water heating system.

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3. Attempt any *one* of the following : 8
- (a) Discuss on the solar cell-solar array in detail.
 - (b) Discuss on different loss mechanisms in flat plate collector.
4. Attempt any *two* of the following : 8
- (a) What are the collectors used for solar thermal conversion.
 - (b) Draw the block diagram of grid connected solar photovoltaic system and describe each block.
 - (c) Discuss on energy balance equation and efficiency of flat plate collector.
5. Attempt any *one* of the following : 8
- (a) Describe the concentrators used for solar thermal conversion.
 - (b) Describe on the construction details of flat plate collector.