ADAMAS UNIVERSITY PURSUE EXCELLENCE	**ADAMAS UNIVERSITY** **END-SEMESTER EXAMINATION : MAY 2021** (Academic Session: 2020 – 21)		
Name of the Program: (Example: B. Sc./BBA/MA/B.Tech.)	B.Tech	**Semester:** (I/III/ V/ VII/IX)	VI
Paper Title :	ELECTIVE-III (SOLAR ENERGY ENGINEERING)	**Paper Code:**	EEE43118
Maximum Marks :	**40**	**Time duration:**	3 hrs
Total No of questions:	8	**Total No of Pages:**	2
(Any other information for the student may be mentioned here)	1. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam. 2. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page. 3. Assumptions made if any, should be stated clearly at the beginning of your answer.		

Answer all the Groups

Group A

Answer all the questions of the following $5 \times 1 = 5$

1. a) Which process is responsible for production of energy in the sun?
b) In extra-terrestrial radiation, what is the approximate percentage content of infra-red component?
c) What is the payback period of an ordinary passive solar water heater?
d) What is the main principle of solar pond?
e) What is a solar cell?

GROUP –B

Answer *any three* of the following $3 \times 5 = 15$

2. What are the disadvantages of solar energy? What are the indirect forms of solar energy?

3. Define solar irradiance, solar constant, extra-terrestrial and terrestrial radiation. What is the standard value of solar constant?

4. Discuss the principle of a solar collector. How can collector coating be used to improve the performance of a collector?

5. What are major advantages and disadvantages of a solar PV system?

GROUP –C

Answer *any two* of the following $2 \times 10 = 20$

6. Define beam, diffused and global radiation. Derive an expression for total radiation on an inclined surface. Show that a horizontal surface receives no ground-reflected radiation.

7. What are the advantages and disadvantages of concentrating collectors over flat plate types of solar collectors? With the help of a schematic diagram explain the working of solar water heating.

8. Describe the principle of solar photovoltaic energy conversion. What are direct and indirect gap materials?
