GITAM (Deemed to be University)
GST/GSS/GSB/GSHSS Degree Examination
III Semester
MECH2201 : SOLAR ENERGY

Time: 2 Hours   **Max. Marks: 30**

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Instruction: All parts of the unit must be answered in one place only.

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Section - A

1.   **Answer all questions**   (5x1=05)

a.   What is the role of solar radiation?

b.   What is the main advantage of third-generation solar cells?

c.   In which solar application is a paraboloid dish reflector commonly used?

d.   What energy source does a solar water pumping system use?

e.   What is a discount rate in solar PV?

Section - B

Answer the following   (5x5=25)

UNIT - I

2.   Explain the relationship between standard time and solar time using equation of time.

OR

3.   Explain the key angles (e.g., solar declination, solar altitude, and azimuth) involved in solar energy calculations. How do these angles influence solar energy collection?

UNIT - II

4.   Explain the difference between a solar cell, a solar module, and a solar array. How are these components connected and used in practical solar energy systems?

OR

5.   Discuss the key advantages of solar energy systems in terms of sustainability, cost, and energy independence.

UNIT - III

6.   Compare different types of stationary collectors, such as flat plate collectors (FPC) and evacuated tube collectors (ETC), in terms of efficiency, cost, and applications.

OR

7.   What is the function of solar thermal?

UNIT - IV

8.   What are the different types of PV systems?

OR

9.   What is Maximum Power Point Tracking (MPPT), and why is it critical in PV systems?

UNIT - V

10. Discuss how net present value (NPV) and internal rate of return (IRR) are used in this analysis.

OR

11. What are the various factors involved in life cycle analysis of solar power plant?