

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION)**

**CLASS: M.Sc.  
BRANCH: ENVIRONMENTAL SCIENCE AND MANAGEMENT**

**SEMESTER : III  
SESSION : MO/2025**

**SUBJECT: ES520 RENEWABLE ENERGY RESOURCES**

**TIME: 3 Hours**

**FULL MARKS: 50**

**INSTRUCTIONS:**

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
  2. Attempt all questions.
  3. The missing data, if any, may be assumed suitably.
  4. Before attempting the question paper, be sure that you have got the correct question paper.
  5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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		CO	BL
Q.1(a)	Explain the potential of renewable energy sources in India.	[5]	1 2
Q.1(b)	Classify the new non-conventional energy sources.	[5]	1 2
Q.2(a)	Examine the essential subsystems utilised in a solar energy plant.	[5]	2 4
Q.2(b)	Illustrate the energy balance in flat-plate type solar collectors	[5]	2 4
Q.3(a)	Explain electricity generation in horizontal-axis wind turbines.	[5]	3 2
Q.3(b)	Identify the problems that may adversely affect a site's suitability for the installation of wind turbines for generating energy.	[5]	3 3
Q.4(a)	Compare the different sources of geothermal energy.	[5]	4 4
Q.4(b)	Give an outline of the ocean thermal energy conversion process.	[5]	4 4
Q.5(a)	Distinguish between pyrolysis and incineration as processes for energy recovery from urban waste.	[5]	5 4
Q.5(b)	Justify that landfills can be effectively used for electricity generation.	[5]	5 5

:24/11/2025:::E