

Hall Ticket Number:

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Code No. : 13154 S (A) N

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD
 Accredited by NAAC with A++ Grade

B.E. III-Semester Supplementary Examinations, August-2023
Non-Conventional Energy Sources (OE-I)

Time: 3 hours

Max. Marks: 60

Note: Answer all questions from Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

| Q. No. | Stem of the question | M | L | CO | PO |
|----------------------------------|---|---|---|----|---------|
| 1. | Define the photovoltaic effect | 2 | 1 | 1 | 1,2,3,4 |
| 2. | What is the total installed electrical power generation capacity of India? | 2 | 1 | 1 | 1,2,3,4 |
| 3. | List out the applications of wind energy | 2 | 2 | 2 | 1,2,3,4 |
| 4. | Explain the function of anemometer | 2 | 2 | 2 | 1,2,3,4 |
| 5. | Classify the biomass resources | 2 | 2 | 3 | 1,2,3,4 |
| 6. | Differentiate solid oxide fuel cell with molten carbonate fuel cell | 2 | 4 | 3 | 1,2,3,4 |
| 7. | What is the minimum tidal range for the working of a tidal plant? | 2 | 2 | 4 | 1,2,3,4 |
| 8. | List out the applications of geothermal energy | 2 | 3 | 4 | 1,2,3,4 |
| 9. | Draw the I-V characteristics of solar cell under different illumination levels and investigate them | 2 | 4 | 1 | 1,2,3,4 |
| 10. | How would you compute the power extracted from the wind? | 2 | 4 | 2 | 1,2,3,4 |
| Part-B (5 × 8 = 40 Marks) | | | | | |
| 11. a) | Demonstrate the renewable energy for rural applications | 4 | 3 | 1 | 1,2,3,4 |
| b) | Investigate how can you maximise the performance of solar photovoltaic panel? | 4 | 4 | 1 | 1,2,3,4 |
| 12. a) | Illustrate the nature of the wind | 4 | 3 | 2 | 1,2,3,4 |
| b) | Draw the diagram of the waste recovery management scheme and illustrate it | 4 | 4 | 2 | 1,2,3,4 |
| 13. a) | Explain the alkaline fuel cell with a neat sketch | 4 | 2 | 3 | 1,2,3,4 |
| b) | Explain the proton exchange membrane fuel cell with a neat diagram | 4 | 2 | 3 | 1,2,3,4 |
| 14. a) | With a neat diagram explain the principles of tidal power generation | 4 | 2 | 4 | 1,2,3,4 |
| b) | Discuss the liquid dominated geothermal plant with a neat diagram | 4 | 2 | 4 | 1,2,3,4 |

Contd... 2

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|--------|---|---|---|---|---------|
| 15. a) | Explain the I-V characteristic diagram of solar photovoltaic cell with the help of neat diagram | 4 | 2 | 1 | 1,2,3,4 |
| b) | Illustrate the key issues of waste to energy | 4 | 3 | 2 | 1,2,3,4 |
| 16. a) | Summarize the advantages and disadvantages of biomass energy | 4 | 2 | 3 | 1,2,3,4 |
| b) | Describe the vapour dominated geothermal plant with a neat diagram | 4 | 1 | 4 | 1,2,3,4 |
| 17. | Answer any <i>two</i> of the following: | | | | |
| a) | Illustrate solar PV cell, module, panel, and array and compare them with neat diagrams | 4 | 3 | 1 | 1,2,3,4 |
| b) | List out the basic components of wind energy conversion system and explain each with a neat diagram | 4 | 1 | 2 | 1,2,3,4 |
| c) | Describe the advantages and disadvantages of fuel cells | 4 | 1 | 3 | 1,2,3,4 |

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

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|------|-------------------------------|-----|
| i) | Blooms Taxonomy Level - 1 | 20% |
| ii) | Blooms Taxonomy Level - 2 | 40% |
| iii) | Blooms Taxonomy Level - 3 & 4 | 40% |
