

Hall Ticket Number:

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Code No. : 15332 S

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD*Accredited by NAAC with A++ Grade***B.E. (E.E.E.) V-Semester Supplementary Examinations, June-2022****Power Systems-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. | Draw the flue gases flow schematic diagram of a thermal power plant. | 2 | 3 | 1 | 1,2,7 |
| 2. | Give the significance of discharge curve of a hydroelectric power plant. | 2 | 2 | 1 | 1,2,7 |
| 3. | Draw the circuit equivalent diagram of a Solar Cell. | 2 | 3 | 2 | 1,2,7 |
| 4. | List the types of Solar collectors used in solar thermal power plant. | 2 | 1 | 2 | 1,2,7 |
| 5. | Briefly describe the terms Interest and Depreciation. | 2 | 1 | 3 | 1,2,7 |
| 6. | List the methods of power factor improvement and causes for low power factor. | 2 | 1 | 3 | 1,2,7 |
| 7. | Draw the Stringing chart of an overhead transmission line. | 2 | 3 | 4 | 1,2,7 |
| 8. | List the methods for improvement of string efficiency and causes for low string efficiency. | 2 | 1 | 4 | 1,2,7 |
| 9. | Draw the schematic diagram of an interconnected distribution system. | 2 | 3 | 5 | 1,2,7 |
| 10. | List the important design considerations in distribution system? | 2 | 1 | 5 | 1,2,7 |
| Part-B (5 × 8 = 40 Marks) | | | | | |
| 11. a) | Draw the schematic diagram of a GAS power plant and describe it's working. | 4 | 2 | 1 | 1,2,7 |
| b) | Calculate power that can be developed from a hydro-electric power station having catchment area 100Sq.Km, average rainfall 120cm/annum, run-off 80%, available head 300m and overall efficiency of 75%. | 4 | 3 | 1 | 1,2,7 |
| 12. a) | With a neat sketch explain construction and working of Double basin system of Tidal power generation. | 5 | 2 | 2 | 1,2,7 |
| b) | List the parts of a horizontal axis wind turbine. | 3 | 1 | 2 | 1,2,7 |

Contd... 2

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| 13. a) | Deduce the expression of Sinking fund for determining the annual depreciation charge. | 5 | 3 | 3 | 1,2,7 |
| b) | Briefly explain about the Flat rate tariff. | 3 | 2 | 3 | 1,2,7 |
| 14. a) | Deduce the Sag expression of overhead transmission line for unequal level supports. | 5 | 3 | 4 | 1,2,7 |
| b) | In a string of 3 suspension insulator units, has self-capacitance 'C' farads, the pin to ground capacitance is '0.1C' farads. Determine the string efficiency if the maximum permissible voltage per unit is 20KV. | 3 | 3 | 4 | 1,2,7 |
| 15. a) | A 2-wire DC distributor line of 2km long and supplies loads of 100A, 150A, 200A & 50A situated 500m, 1000m, 1600m and 2000m from feeding point. Each conductor has a resistance of 0.01Ω/km. Calculate the voltage at each load point if the feeding point voltage is 300V. | 5 | 3 | 5 | 1,2,7 |
| b) | List the types of distribution systems. | 3 | 2 | 5 | 1,2,7 |
| 16. a) | Explain about the fission reaction used in the Nuclear power plant. | 4 | 2 | 1 | 1,2,7 |
| b) | Explain the I-V characteristics of a Solar Cell. | 4 | 2 | 2 | 1,2,7 |
| 17. | Answer any <i>two</i> of the following: | | | | |
| a) | A 3-phase, 5kw induction motor has a p.f of 0.75lagging. A bank of capacitors connected in delta across the supply terminals and p.f raised to 0.9lagging. Determine the KVAR rating of the Capacitors connected in each phase if the motor efficiency assumed as 100%. | 4 | 3 | 3 | 1,2,7 |
| b) | Explain the Puncture test performed on the overhead line insulators. | 4 | 2 | 4 | 1,2,7 |
| c) | Explain about the requirements of a distribution system. | 4 | 2 | 5 | 1,2,7 |

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% |

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