# VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD
*Accredited by NAAC with A++ Grade*
### B.E. (E.E.E) III-Semester Supplementary Examinations, July-2022
## Power System-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 fission chain reaction schematic diagram. | 2 | 3 | 1 | 1,2,7 |
| 2. | Give the significance of mass curve of a hydroelectric power plant. | 2 | 2 | 1 | 1,2,7 |
| 3. | Draw the schematic diagram of Solar flat plate collector. | 2 | 3 | 2 | 1,2,7 |
| 4. | List the types of different Wind turbines according to their axis. | 2 | 1 | 2 | 1,2,7 |
| 5. | Briefly describe the term Semi-fixed cost in Economics of power generation. | 2 | 1 | 3 | 1,2,7 |
| 6. | Give the dis-advantages for having low power factor. | 2 | 1 | 3 | 1,2,7 |
| 7. | Draw the line profile of an overhead transmission line. | 2 | 3 | 4 | 1,2,7 |
| 8. | List the different types of performance tests done on insulators. | 2 | 1 | 4 | 1,2,7 |
| 9. | Draw the schematic diagram of Ring main distribution system. | 2 | 3 | 5 | 1,2,7 |
| 10. | On which factors the design of a distributor depends? | 2 | 1 | 5 | 1,2,7 |

### Part-B (5 × 8 = 40 Marks)

| Q. No. | Stem of the question | M | L | CO | PO |
|---|---|---|---|---|---|
| 11. a) | How can we obtain fissile materials from the fertile materials? | 4 | 2 | 1 | 1,2,7 |
| b) | 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%. Calculate power that can be developed in KW. | 4 | 3 | 1 | 1,2,7 |
| 12. a) | With a neat sketch explain construction and working of Single basin system of Tidal power generation. | 5 | 2 | 2 | 1,2,7 |
| b) | Give at least 6 main components of Horizontal Axis Wind Turbine. | 3 | 1 | 2 | 1,2,7 |
| 13. a) | Deduce the expression for Diminishing value method for determining the annual depreciation charge. | 5 | 3 | 3 | 1,2,7 |
| b) | Briefly explain about the Block rate tariff. | 3 | 2 | 3 | 1,2,7 |

| | | | M | L | CO | PO |
|---|---|---|---|---|---|---|
| 14. | a) | Deduce the Sag expression of overhead transmission line for equal level supports. | 5 | 3 | 4 | 1,2,7 |
| | b) | Explain the causes for failure of insulators in overhead transmission lines. | 3 | 3 | 4 | 1,2,7 |
| 15. | a) | A distributor line of DC of 2km long, having the feeding point voltage is 300V. Supplies loads of 100A, 150A, 200A & 50A situated 500m, 1000m, 1600m and 2000m from feeding point. Each conductor has a resistance of $0.01\Omega$/km. Calculate the voltage at each load point. | 5 | 3 | 5 | 1,2,7 |
| | b) | Give the advantages and disadvantages of Interconnected distributor system. | 3 | 2 | 5 | 1,2,7 |
| 16. | a) | Explain about pumped storage hydroelectric power plant with neat sketch. | 4 | 2 | 1 | 1,2,7 |
| | b) | With a neat sketch explain working of Ocean thermal Energy Conversion power plant. | 4 | 3 | 2 | 1,2,7 |
| 17. | | Answer any *two* 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 Porosity test performed on the overhead line insulators. | 4 | 2 | 4 | 1,2,7 |
| | c) | Explain about the AC distributor fed at one End with concentrated load and load p.f. referred to the far end voltage. | 4 | 2 | 5 | 1,2,7 |

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

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

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