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Code No. : 22213

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (E.E.E.) II Year II-Semester Main & Backlog Examinations, May-2017

Power Systems - I

Time: 3 hours

Max. Marks: 70

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

Part-A (10 × 2 = 20 Marks)

1. Why the thermal power plant efficiency low?
2. What do you understand by Beam radiation and diffuse radiation?
3. What are the main components of over head lines?
4. Define GMD and write its equation for 3-ph line.
5. What is a load duration curve?
6. What are the needs for the combined working of the power plants?
7. Classify the wind power generating stations.
8. What are the different types of supports for overhead transmission lines?
9. Write short notes on transposition of transmission lines.
10. What are the Advantages of ring mains over radial power stations?

Part-B (5 × 10 = 50 Marks)

11. a) What are the various parts & their function of a steam power station? [4]
b) At a particular site the mean monthly discharge as follows. [6]

Month	Discharge, m ³ /s	Month	Discharge, m ³ /s
January	100	July	1000
February	225	August	1200
March	300	September	900
April	600	October	600
May	750	November	400
June	800	December	200

Draw hydrograph and flow duration curve.

12. a) Write short notes on Geo-thermal power station with neat sketch. [6]
b) A domestic solar array of 100m² area generates an average of 10 KW power during an average duration of 12hr/day. The cost of the array is Rs.10,000. Calculate the unit cost of energy if the working life is 5 Years. [4]
13. a) Explain the general construction of an underground cables. [5]
b) A overhead line is supported on two poles 200 m apart having a difference in level of 10 m. the conductor diameter is 2 Cm and weight 2.3Kg/m. Find sag at lower support. Wind pressure is 57.5Kg/m² of project area factor of safety T = 4,220Kg/cm². [5]

- 14. a) Derive the expression for inductance of unsymmetrical transposed 1-Ø transmission line. [5]
- b) Calculate the capacitance of 1-Ø transmission line 35 Km long consisting of two parallel wires each 6 mm in diameter and 1.8 m apart the height of the conductor above the ground is 7.9m. [5]
- 15. a) List and explain different methods for power factor improvement. [6]
- b) A distribution T/F costs Rs.200000/- and has a useful life 20 yrs. If the salvage value is Rs.10000/- and rate of annual compound interest is 8%, calculate the amount to be saved annually for replacement of the T/F after the end of 20yrs by sinking fund method. [4]
- 16. a) Write short notes on PWR type nuclear reactor with neat sketch. [6]
- b) Write short notes on hybrid power generation. [4]
- 17. Answer any *two* of the following:
 - a) Effect of wind and ice loading on sag calculations. [5]
 - b) Define power factor, what are the causes and disadvantages of low power factor? [5]
 - c) Derive the expression for capacitance of unsymmetrical transposed 3-Ø transmission line. [5]



Month	Discharge (m ³ /s)
January	100
February	150
March	200
April	250
May	300
June	350
July	400
August	450
September	500
October	550
November	600
December	650