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Code No. : 42421 A

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (Mech. Engg.) IV Year II-Semester Main Examinations, May-2019

Power Plant Engineering

Time: 3 hours

Max. Marks: 70

*Note: i) Answer ALL questions in Part-A and any FIVE from Part-B
 ii) Graph Sheet may be used wherever required.*

Q.No.	Stem of the question	M	L	CO	PO
Part-A (10 × 2 = 20 Marks)					
1.	Identify the grades of coal on the basis of heating value.	2	3	1	1
2.	List the four circuits required for the operation of a thermal power plant.	2	1	1	1
3.	What are the methods for firing of solid fuels? Choose a method for large rating modern power plants.	2	3	2	1
4.	What are four steps involved in the operation of Electrostatic precipitator?	2	1	2	1
5.	Distinguish between storage and pondage.	2	4	3	1
6.	Explain the purpose of a Surge tank in a hydro power plant.	2	2	3	1
7.	Explain the function of moderator in Nuclear Power plant. List the desirable properties of moderator.	2	2	4	1
8.	List the materials used for shielding in nuclear power plants.	2	1	4	1
9.	List the elements of Operating Cost of any power plant.	2	1	5	1
10.	List the pollutants from Thermal Power plants.	2	1	5	1
Part-B (5 × 10 = 50 Marks)					
11. a)	Classify and explain briefly the major sources of energy.	5	2	1	1
b)	What are the requirements of a good coal handling system?	5	1	1	1
12. a)	Identify the advantages and disadvantages of Pulverized fuel firing system in thermal power plants.	4	3	2	1
b)	Explain the term "Draught" in the context of Thermal Power plant. Classify the various types of draught? Identify the advantages and disadvantages of Chimney draught.	6	4	2	1
13. a)	Name the types of dams used for hydro power plants. Explain the advantages and disadvantages of earth fill dams.	5	2	3	1
b)	At a particular site, the mean discharge (in millions of m ³) of a river in 12 months from January to December is respectively 70, 50, 40, 20, 5, 100, 155, 205, 210, 100, 90, 80. Build a hydrograph and estimate the mean flow.	5	4	3	2
14. a)	With the help of a neat diagram, explain the working of Gas Cooled reactor.	5	2	4	1
b)	Categorize the advantages and disadvantages of a nuclear power plant.	5	4	4	1
15. a)	The original value of the equipment is Rs. 250,000 and its salvage value at the end of its useful life of 25 years is Rs. 25,000. Estimate the value of the equipment at the end of 10 years of its use by using (i) straight-line depreciation and (ii) Sinking fund depreciation when it is compounded annually at 9%.	5	4	5	11
b)	Define Load Curve, Load Duration Curve, Load Factor and Demand Factor. Indicate your recommendation for Load factor.	5	1	5	1

16. a) Explain the advantages and disadvantages of belt conveyers in coal handling.	5	2	1	1
b) Explain the air and gas circuit of a thermal power plant.	5	2	2	1
17. Answer any <i>two</i> of the following:				
a) What are the uses and short comings of Flow Duration Curve in Hydro power plants?	5	1	3	1
b) Give a brief account of nuclear waste disposal.	5	2	4	7
c) Explain Fixed costs for setting up a Thermal Power plant.	5	2	5	11

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

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	62.1%
2	Knowledge on application and analysis (Level-3 & 4)	27.4%
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	10.5%

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