FACULTY OF ENGINEERING AND TECHNOLOGY

S.E.(EEP/EEE/EE)Examination – Dec-2014

Electrical Power Generation & its Economics (Revised)

[Time: THREE *Hours*]   [Max. Marks: 80]

"Please check whether you have got the right question paper."

N.B
1) Question no 1 & Q. no 6are compulsory.
2) Attempt any two questions from remaining four questions from each section.
3) Assume suitable data if necessary.
4) Figures to the right indicate full marks.

SECTION A

Q.1	Solve any five questions:	10
	a) Write the types of boilers.	
	b) Draw any main part of thermal power plant.	
	c) Write the draught systems.	
	d) Draw sketch of penstock.	
	e) Write the function of nuclear reactor.	
	f) Write main components of diesel power plant.	
	g) Write the function of electro static precipitator?	
	h) What is meant by storage and poundage in hydro power plant?	
Q.2	a) Draw the general layout of a thermal power plant.	05
	b) A small generation plant of 100KW capacity uses gas of calorific value of $4000KJ/m^3$. The overall efficiency of the plant is 20%. Determine the volume of gas required per hour when the plant is running at full load condition.	05
	c) What are the major advantages of coal beneficiation?	05
Q.3	a) Draw the line diagram of pneumatic ash handling system.	05
	b) Write the advantages and limitations of chimney draught.	05
	c) Write short note on selection of coal for thermal power plant.	05
Q.4	a) Explain the nuclear reaction in nuclear power plant.	05
	b) What are the factors considered while selecting site selection of nuclear power plant?	05
	c) Explain what you understand from choice and characteristics of diesel power plant.	05
Q.5	a) Explain water hammer in brief.	05
	b) Write short note on hydroelectric generator.	05
	c) The mean monthly discharge for 12 months at a particular site of a river is given below.	05

Month	Discharge in methanol m^3/ month	Month	Discharge in menthol of m^3 /month
A	500	O	2000
M	200	N	1500
J	1500	D	1500
I	2500	J	1000
A	3000	F	800
S	2000	M	600

Draw the hydrograph for the given discharge and find the average monthly flow take 30 days in month.

SECTION B

Q.6		Solve any five Questions.	10
	a)	Draw the input operational characteristics of thermal plants.	
	b)	Define incremental fuel rate curve of thermal power plant.	
	c)	Enlist the types of MHD generators.	
	d)	What is meant by ZERO ENERGY HOUSE?	
	e)	What is meant by base load plant?	
	f)	What are the forms of geothermal energy?	
	g)	List the methods used for finding out the depreciation cost.	
	h)	Draw the sketch of incremental fuel cost curve.	
Q.7	a)	Write short note on open cycle gas turbine plant.	05
	b)	What are the applications of a gas turbine plant?	05
	c)	What are the methods for improving thermal efficiency of gas turbine plant?	05
Q.8	a)	Explain the comparison of all power plants.	05
	b)	Discuss the basic requirements of peak load plants.	05
	c)	Describe in brief cost of electrical energy.	05
Q.9	a)	The input output characteristic of a 70mw thermal power station is I= $5 \times 10^6(10 + 8L + 0.4L^2)$ where I is in KJ/m and α is in MW. Find the load at which the plant runs at maximum efficiency.	05
			05
	b)	Write the advantages of tidal power plant.	05
	c)	Draw the neat sketch of wind power station.	
Q.10	a)	Explain base load and peak load plants.	05
	b)	Write short note on choice of size and number of generator units.	05
	c)	Write the production of solar energy for sunrays and its diagram.	05