	Utech
Name:	
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Invigilator's Signature :	

CS/B.TECH(EIE)/SEM-8/EI-801A/2012 2012

POWER PLANT INSTRUMENTATION

Time Allotted: 3 Hours Full Marks: 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP - A

(Multiple Choice Type Questions)

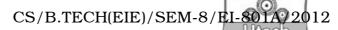
1.	Choose the correct	alternatives	for any	ı ten	of the	follow	ing	:
]	10 × 1	= 1	0

- i) Steam is an important medium of producing
 - a) Mechanical energy
- b) Thermal energy
- c) Solar energy
- d) Nuclear energy.
- ii) Steam power plant basically works on
 - a) Dual cycle
- b) Otto cycle
- c) Rankine cycle
- d) None of these.
- iii) ESP is used to control
 - a) CO in air
- b) CO_2 in air
- c) spm in air
- d) SO_x and NO_x in air
- e) None of these.

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iv) Power plant simulation software is						
	a)	Simulink	b)	MATLAB		
	c)	ProSim	d)	LABVIEW.		
v)		n three element feedwater control which one of the ollowing is considered as a feedforward Signal?				
	a)	Stem flow	b)	Feedwater flow		
	c)	Drum level	d)	Boiler drum pressure.		
vi)	Eco	Economiser is placed				
	a)	Before boiler drum	b)	After boiler drum		
	c)	Before BFP	d)	After condenser.		
vii)	The amount of excess air for the combustion of coal around					
	a)	5%	b)	10%		
	c)	15%	d)	20%		
	e)	none of these.				
viii)	Whi	Which power plant is economical?				
	a)	Thermal	b)	Nuclear		
	c)	Hydraulic	d)	Gas power.		
ix)	Superheater is used in boiler for					
	a)	Water heating	b)	Economizing		
	c)	Dryness of steam	d)	None of these.		
x)	What is the advantage of a modulating burner control					
	a)	Inexpensive				
	b)	Simple				
	c) Able to tolerate the large and fluctuating loads					
	d)	All of these.				



- xi) For suction of the flue gas we used
 - a) ID fan

- b) FD fan
- c) none of these
- d) all of these.
- xii) Attemperator unit is used to control
 - a) Flow

- b) Pressure
- c) Temperature
- d) Level.

GROUP - B

(Short Answer Type Questions)

Answer any three of the following.

 $3 \times 5 = 15$

- 2. Write a short note on the boiler drum level. What type of instrument is used normally?
- 3. Write the function of the economizer and the air pre-heater.
- 4. Explain the Hydropower generation scheme.
- 5. What is Excess air ? How does it affect the combustion of coal in a steam power plant. 1+4
- 6. Compare Impulse and Reaction turbines used in a power generation plant.

GROUP - C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

- 7. a) Describe the various steps involved in Coal Handling Plant (CHP) with suitable diagrams.
 - b) Describe the pressure distribution system for balanced system. 5
- 8. Draw the block diagram of a generalized DAS and explain the function of different parts. 5 + 10

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- 9. a) What are the components affecting the boiler drum water level?
 - b) With a neat sketch, explain 3-element drum level control system.
- 10. Explain the different components of nuclear power plant and safety instrumentation. 8 + 7
- 11. Write short notes on any *three* of the following: 3×5
 - a) Air pollution measurement and control.
 - b) ESP.
 - c) Air-fuel ratio control of a furnace.
 - d) Furnace draught control.
 - e) Efficiency of thermal power plant.
 - f) Sodium Analyser.

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