



End Semester Examination – Nov/Dec – 2016

Code : **14EI2024**
Sub. Name : **Power Plant Instrumentation**

Semester : **2016-17 ODD**
Duration : **3hrs**
Max. marks : **100**

ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)

Q. No.	Sub Div.	Questions	Course Outcome	Marks
1.	a.	Explain the block diagram of nuclear energy generation system	CO1	15
	b.	List the parameters measured in wind energy system.	CO1	5
(OR)				
2.	a.	Discuss in detail about the process involved in thermal power generation.	CO1	10
	b.	Mention the merits of solar power generating system based on cost, safety, and pollution.	CO2	4
	c.	Write short notes on the objectives of instrumentation in power plants.	CO1	6
3.	a.	With a neat sketch explain the hydro electric power generation system.	CO1	10
	b.	Design and explain in detail about the thermal and electrical control room present in a thermal power plant.	CO3	10
(OR)				
4.	a.	Draw P&I diagram for flow transmitter orifice type and Final Control Element.	CO3	2
	b.	Identify the significance of condensation pot in flow measurement system with suitable diagram.	CO2	6
	c.	Design a V/I converter used in process industries.	CO3	12
5.	a.	Feed water flow to the boiler is measured with orifice plate sensor designed to give the maximum differential pressure of 10m for 120 T/hr water flow. The differential pressure transmitter is used for converting the differential pressure to a 4-20mA dc linear signal. A square root extractor circuit is introduced to convert the current signal to a voltage signal (1-5 V) linear to flow rate. Design measurement system for the above problem and give the calibration chart for calibrating the transmitter along with square root extractor.	CO3	14
	b.	Explain the working of potential transformer.	CO1	6
(OR)				
6.	a.	Suggest and explain a suitable instrument for conductivity measurement of feed water.	CO2	6
	b.	Explain the pollution gas monitoring system using Infrared Flue Gas Analyzer.	CO1	10
	c.	A Coal conveyor system moves at a speed of 450 m/min. Weighing platform is 15m in length and a particular weighing shows a reading of 200Kg. Find the coal delivery in T/hr.	CO3	4
7.	a.	Explain the oxygen measurement in flue gas using paramagnetic oxygen analyzer.	CO2	10
	b.	Elaborate the working principle of smoke detector and dust monitor.	CO1	10
(OR)				
8.	a.	Explain the measurement system for CO and CO ₂ in flue gas.	CO1	10
	b.	Write the principle of coal quantity measurement.	CO1	6
	c.	Calculate the feed flow rate in conveyor if the load is 200 Kg/m and belt speed is 20m/min.	CO3	2

	d.	Differentiate forced draft and induced draft system.	CO2	2
		<u>Compulsory:</u>		
9.	a.	Explain the schemes of steam temperature control system.	CO1	8
	b.	Discuss about the hardware and software system of DCS for power plant automation with necessary diagram.	CO3	12

ALL THE BEST