Register Number:……..

KUMARAGURU
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B.E DEGREE EXAMINATIONS: MAY 2017

(Regulation 2014)

Sixth Semester

ELECTRONICS AND INSTRUMENTATION ENGINEERING

U14EIT602:Industrial Instrumentation-II

COURSE OUTCOMES

CO1: Understand the basic construction, principle and working of various types of transducers to measure physical quantities like physical quantities like pressure, flow, level.

CO2: Equip to analyze, formulate and select suitable sensor and how to calibrate also knows to apply for the given applications.

CO3: Understand technical terms and nomenclature used in industrial measurement, industrial processes, process measurement and industrial process control.

CO4: Demonstrate a working knowledge of safety practices used in the measurement and control of industrial processes.

CO5: Demonstrate skills in trouble shooting problems with the measurement and control of industrial processes.

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Matching type item with multiple choice code CO2 [K_1]

List I	List II
A.Rotameter	i.Electrical type
B. Venturi	ii.Mass flow meter
C. Positive displacement type	iii.variable area flow meter
D. Ultrasonic flow meter	iv. Head type

	A	B	C	D
a)	ii	i	iii	Iv
b)	iii	iv	ii	I
c)	ii	iv	iii	I
d)	iii	i	ii	Iv

2. The velocity equation of pitot tube is given by CO1 [K_2]

a) $V=\sqrt{2gh}$ b) $V=\sqrt{4gh}$

c) $V=2gh$ d) $V=\sqrt{3gh}$

3. Which of the following are true for hydra step boiler drum level gauge? CO2 [K_4]

1.Highly reliable
2. High and low water level alarms are available without using any other system.
3.Down time is high
4. Less accurate and more expensive.

a) 1,3 b) 1,4

c) 1,2 d) 2,3

4. The method used to measure liquid level of too corrosive or too viscous liquids is by CO2 [K_2]

a) Weighing method b) Air purge method

c) Float type method d) Displacer method

5. Assertion (A): In reciprocating pumps, the flow produced is of pulsating in nature. CO3 [K_3]

Reason (R): Piston produces pressure in only one direction.

a) Both A and R are Individually true and R is the correct explanation of A b) Both A and R are Individually true but R is not the correct explanation of A

c) A is true but R is false d) A is false but R is true

6. Rotameters are widely used to measure the flow of CO3 [K_1]

a) Slurries b) Dirty liquids

c) Low viscous fluids d) High viscous fluids

7. Packaged purge systems consists of following components. CO4 [K_1]

1.Air filter
2.Protected enclosure
3.control valve
4.pressure indicator

a) 2-3-4-1 b) 1-3-2-4

c) 3-4-2-1 d) 4-1-3-2

8. The flow meters used for measuring the flow rate of erosive slurries are CO3 [K_3]

a) Electromagnetic flow meters b) Venturi meters

c) Target flow meters d) Vertex flow meters

9. Assertion (A): The NEC permits circuits up to 150 V CO4 [K_2]

Reason (R): if they are incapable of delivering more than 5 mA without special requirements for wire insulation.

a) Both A and R are Individually true and R is the correct explanation of A b) Both 11=A and R are Individually true but R is not the correct explanation of A

c) A is true but R is false d) A is false but R is true

10. The principle of leakage field electrode is used for — CO5 [K_2]

a) measurement of high flow rate b) measurement of low flow rate

c) measurement of solid flow rate d) measurement of slurries flow

PART B (10 x 2 = 20 Marks)
(Answer not more than 40 words)

11.	List out the important considerations in the use of float for level measurement.	CO1	[K_1]
12.	Write the basic principle of operation of liquid displacer.	CO2	[K_2]
13.	State Bernoulli's theorem.	CO1	[K_1]
14.	What is flow nozzle?	CO1	[K_1]
15.	Mention the applications of caloris flow meter.	CO2	[K_3]
16.	Name some positive displacement flow meters.	CO1	[K_1]
17.	Mention the two basic techniques for measurement of flow using anemometers.	CO2	[K_2]
18.	What is the basic principle of working of vortex shedding flow meters?	CO1	[K_2]
19.	Name the two types of interference.	CO4	[K_1]
20.	List out the factors that industrial safety depends upon.	CO4	[K_2]

Answer any FIVE Questions:-
PART C (5 x 14 = 70 Marks)
(Answer not more than 300 words)

Q.No. 21 is Compulsory

21.	(i) Explain how level is measured using ultrasonic method?	(7)	CO1	[K_4]
	(ii) With necessary diagrams, discuss the working of capacitance type level gauging.	(7)	CO2	[K_2]
22.	(i)Elaborate the operation of orifice meter in detail.	(10)	CO2	[K_2]
	(ii)Sketch the piping arrangement for steam and gas measurement using head flow meters.	(4)	CO5	[K_5]
23.	Describe the operation of flow meter that works on the principle of conservation of angular momentum. Also mention its advantages.		CO3	[K_4]
24.	With neat sketch, explain the operation of electromagnetic flow meters.		CO2	[K_1]
25.	Discuss in detail about the flow meter that measures the flow based on measuring the force on a disc.		CO3	[K_4]
26.	Explain how solid flow is measured using dynamic weighing method?	(14)	CO3	[K_4]
27.	(i)Discuss in detail about the earth looping techniques.	(7)	CO4	[K_1]
	(ii)Write briefly about protection methods.	(7)	CO5	[K_2]

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