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SE-8289

B. E. III (Sem. V) (I.C.) Examination

May / June – 2011

Industrial Measurement

Time : 3 Hours] [Total Marks : 100

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ B. E. 3 (Sem. 5) (I.C.)

Name of the Subject :

☛ Industrial Measurement

☛ Subject Code No. : 8 2 8 9 ☛ Section No. (1, 2,.....) : 1&2

Seat No. :

Student's Signature

(1) Attempt all Questions.
(2) Figure to the right indicates marks.
(3) Answer of two sections must be written in separate answer books.

Section I

Q-1(a)		Answer the Following questions.	10
	1	The performance of capacitance level indicator is severely affected by dirt, because they change the a) Area of plate b) distance between two plate c) dielectric constant d) None of the above.	1
	2	What are the different types of direct methods of liquid level measurement?	1
	3	Explain formula for cubical expansion of liquid used in liquid filed thermometer.	1
	4	800°Celcius = _____ Fahrenheit	1
	5	"Platinum is the commonly used metal for RTDs". justify	2
	6	"Mostly pyrometers are preferred for high temperature ranges rather than other temperature transducer". justify	2
	7	Define : stem point	2
Q-1 (b)		With neat diagram, explain the working of radiation pyrometer.	8
Q-2(a)		Describe the working and construction of resistance thermometers. Describe the materials used for RTDs, along with their properties.	10
Q-2(b)		What is cold junction compensation? What are different ways to achieve it? Explain any one.	6

OR

Q-2(a)		Name different type of expansion thermometers. Explain, with neat sketches, the construction and working of any two of them.	8

Q-2(b)		i) compare between RTD and Thermocouple	4
		ii) what is a thermowell? Give its constructional details.	4
Q-3		Explain any two:	16
	1	optical level measurement	
	2	Capacitive type level measurement	
	3	laser level switch	

Section II

Q-4(a)		Answer the Following questions.	10
	1	The reciprocating piston pump flow meter is mainly used in a) Petroleum industry b) b)steel industry c) c) chemical industry d) d)iron and steel industry	1
	2	"Presser loss in orifice is very high as compare to venture" explain.	1
	3	Orifice plates are usually made3 of a) Stainless steel b) copper c) plastic material d) none of this	1
	4	Thermal flow meters are very popular for the measurement flow of- A) Unsteady floe of gases B) unsteady flow of both gases and liquids C) Steady flow of gases d) none of this. D) None of this	1
	5	A capsule diaphragm is made by welding two diaphragms a) To a solid base b) b) together at the center c) c) tougher around at the edge d) d) to two other diaphragms	1
	6	Positive displacement flow metes are a) a variable area flow meter b) a quantity flow meter c) differential pressure flow meter d) None of the above.	1
	7	What is Bernoulli's theorem?	2
	8	What is Reynolds Number?	2
Q-4 (b)		What are the different types of manometers? Explain the working of any one of them with a neat sketch. What are the different types of errors in manometers?	8
Q-5(a)		What are the different types of electrical pressure transducer commonly used in process industries? Explain any one in detail.	8

Q-5(b)	Derive the equation for fluid flow measurement using orifice. Which are different types of orifice?	8

OR

Q-5(a)	What is the difference between head meter and area meter? Derive the equation of flow using rotameter.	8
Q-5(b)	What is a bellow? Explain differential bellow gauge.	8
Q-6	Explain any two: 1 Dead weight piston gauge 2 Pitot tube 3 Bourdon tube	16