



RM-7029

B. E. - III (Sem. VI) (Chemical) Examination
May / June - 2010
Instrumentation

Time : 3 Hours]

[Total Marks :

Instructions :

(1)

नीचे दृष्टावेक निशानीवाणी विगतो उत्तरवडी पर अवश्य लपवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
B. E. - 3 (Sem. 6) (Chemical)	<input type="text"/>
Name of the Subject :	<input type="text"/>
Instrumentation	<input type="text"/>
Subject Code No. : <input type="text"/> 7 <input type="text"/> 0 <input type="text"/> 2 <input type="text"/> 9	Section No. (1, 2,.....): <input type="text"/> 1&2
	Student's Signature

- (2) Write answers of each section in **separate** answer book.
- (3) Draw a neat sketch wherever necessary.
- (4) Figures to the right indicate full marks.
- (5) Use of casio fx 82, 83 or 100 or equivalent are allowed for scientific calculations.

SECTION - I

- 1 (a) Attempt the following : 10
- (i) Define Instrument.
 - (ii) Define Reproducibility.
 - (iii) Flow nozzles have very high coefficient of discharge typically _____.
 - (iv) Mcleod gauge is used for calibrating other pressure gauge (True/false).
 - (v) Only light mineral oil, not the water, is used as the purge liquid in liquid purge system of level indication. (True/False)
 - (vi) Pyrometry detrmines a body's temperature by measuring its _____.

- (vii) What is the range of thermal conductivity gauge?
- (viii) What is vanacontracta?
- (ix) When it is desired to measure liquid level with liquid under pressure or vacuum, the sight glass must be connected to the tank at _____ (top, bottom, top as well as bottom).
- (x) Justify the glass of the thermometer stem is generally shaped.
- (b) Attempt the following : **10**
- (i) What is principle of venturimeter? **2**
- (ii) Discuss dynamic characteristics of instrument in detail. **8**
- 2** Attempt the following (any **two**) **8×2=16**
- (i) Enlist various type of filled type thermometers. Explain in detail the working of any **one** of them.
- (ii) Describe in detail bourdon tube pressure gauge with neat sketch. What are the two types of adjustments done in a bourdon tube gauge?
- (iii) Describe with neat sketch the construction and working principle of variable area meter.
- 3** Attempt the following (any **two**) **7×2=14**
- (i) Write a short note on Bubbler system for liquid level measurement.
- (ii) What is thermal well? Discuss response of thermocouple.
- (iii) Write a short note on response of mechanical pressure gauge.

SECTION - II

- 4** (a) Answer the following : **5×2=10**
- (i) Give methods of composition analysis.
- (ii) Write principle of area flow meters.
- (iii) Draw symbol of exclusive-OR gate with truth table.
- (iv) Convert $(0.6875)_{10}$ to binary.
- (v) Convert $(10110001101011.11110000110)_2$ to octal.

(b) Describe principle construction and working of pitot tube. 8

5 Attempt any **two** : **8×2=16**

(i) Using 2's complement subtract

(a) $72532 - 3250$

(b) $3250 - 72532$

(ii) Simplify Boolean function

$$F = x'yz + x'yz' + xyz' + xy'z$$

(iii) Explain subtraction with 2's complement.

6 Attempt any **four** : **4×4=16**

(i) Describe integrated circuits.

(ii) Explain Karnaugh map.

(iii) Explain Encoders.

(iv) Write short note on Titrating trap meter.

(v) Describe psychrometer method for measurement of moisture in gases.
