5th Semester Regular Examination 2017-18
Process Instrumentation
BRANCH: BIOTECH
Time: 3 Hours
Max Marks: 100
Q.CODE: B187
Answer Question No.1 and 2 which are compulsory and any four from the rest.
The figures in the right hand margin indicate marks.

Q1	**Answer the following questions:** *multiple type or dash fill up type*	**(2 x 10)**
	a) Air purge also known as --------- system.	
	b) Inferential flow measurement methods are -----, ------.	
	c) Variable head flow meter operates on the --------- theorem.	
	d) Velocity pressure is the difference between ------ and ------.	
	e) Bimetallic thermometers strips are made of two metals of different ------.	
	f) Pyrometry is a technique for measuring temperature without-------.	
	g) Diaphragms used in pressure applications are	
	a)light b)small in size c)slack d)bimetallic	
	h) In calibrating a pressure instrument, we first adjust its	
	a)span b)zero c)linearity d)output	
	i) Reynolds number is used to determine the point at which the flow goes from ------- to -------.	
	j) Piezoelectric transducer cannot measure ---------- pressure.	

Q2	**Answer the following questions:** *Short answer type*	**(2 x 10)**
	a) Write two advantage of sight glass level instrument.	
	b) Where air bellows are used for liquid level measurement.	
	c) What is Reaumur scale?	
	d) Is thermocouple requiring bridge circuit?	
	e) What type of manometer is best for measuring low pressures?	
	f) The pressure switch is usually a micro switch not a mercury switch? (T/F)	
	g) Very little power is dissipated in thermistor. (T/F)	
	h) Orifice plates are usually made of what?	
	i) Define static pressure.	
	j) Pitot tubes are used mainly for measurement of what?	

Q3	**a)**	Explain the direct Methods of liquid level measurement briefly.	**(10)**
	b)	With suitable diagram explain torque tube type Displacer level detector.	**(5)**

Q4	**a)**	Explain any two type vertex flow meter briefly.	**(10)**
	b)	Explain any one electrical Methods of liquid level indicator briefly.	**(5)**

Q5	**a)**	Discuss with neat sketch, any type of flow meter used to measure flow of highly corrosive liquids involving measurement of erosive slurries.	**(10)**
	b)	Discuss its advantages and disadvantages (for que. 5.(a))	**(5)**

Q6	**a)**	Explain the gauges which measure vacuum pressure briefly.	**(10)**
	b)	Discuss with neat sketch construction and working of dead-weight piston gauge.	**(5)**

Q7	**a)**	Explain expansion thermometers briefly.	**(10)**
	b)	Explain the sources of errors in Filled-system thermometers briefly.	**(5)**

Q8 **a)** Explain radiation and optical pyrometer briefly. **(10)**
b) Explain any one Electrical temperature instruments briefly. **(5)**

Q9 **a)** Explain mass spectroscopy briefly. **(10)**
b) Explain emission spectroscopy briefly **(5)**