Seat No.: _____ Enrolment No.: _____

GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA ENGINEERING – SEMESTER – V (NEW) • EXAMINATION – SUMMER - 2018

Subject Code: 3350504 Date: 05-May-2018

Subject Name: Utilities and Instrumentation in Chemical Plant

Time: 02:30 PM TO 05:00 PM Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make Suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Use of programmable & Communication aids are strictly prohibited.**
5. **Use of only simple calculator is permitted in Mathematics.**
6. **English version is authentic.**

Q.1 Answer any seven out of ten. **14**

1. Difine Utility and Instrumentation.
2. Write full form of PLC and DCS.
3. Write name of Instruments used for measurement of Humidity and Specific gravity.
4. Define Sedimenatation and Coagulation in water purification.
5. Write principle of Radiation Pyrometer.
6. Define COP and TOR of refrigeration.
7. Define Sterilization.
8. Write Principle of RTD.
9. List out the Principles of Thermoelectricity.
10. Write Characteristics of Inert Gas.

Q.2 (a) Explain Various Sources of Water. **03**

OR

(a) Explain Zeolite Process in brief. **03**

(b) Write any four uses of steam. **03**

OR

(b) Write factors affecting selection of boiler. **03**

(c) List out Primary and Secondary Refrigerants. (any three in each) **04**

OR

(c) Discuss inert gases. **04**

(d) Explain Evaporative refrigeration system with diagram. **04**

OR

(d) Explain Vapour refrigeration system with diagram. **04**

Q.3 (a) Explain Wheaston briedge circuit for RTD. **03**

OR

(a) Classify measuring Devices. **03**

(b) Write functions of primary and secondary elements of instrument. **03**

OR

(b) Explain Dynamic characteristics of an instrument. **03**

(c) Write principle and draw neat diagram of Bi-metalic thermometer. **04**

OR

(c) Explain Temperature control loop. **04**

(d) Write principle, construction and working of mercury thermometer. **04**

OR

(d) Write principle, construction and working of optical pyrometer. **04**

Q.4 (a) Classify Level measuring devices. **03**

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OR

	(a)	Explain See-back effect.	**03**
	(b)	Discuss DCS system.	**04**

OR

	(b)	Draw a simple diagram of temperature control system.	**04**
	(c)	Explain static characteristics of instruments.	**07**
Q.5	(a)	Write importance of instrumentation in chemical plant.	**04**
	(b)	Explain Ice refrigeration.	**04**
	(c)	Discuss air trape method for level measurements.	**03**
	(d)	Explain Helical type Bi-metalic thermometer with diagram.	**03**

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