

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE - SEMESTER– 1<sup>st</sup> / 2<sup>nd</sup> EXAMINATION (NEW SYLLABUS) – SUMMER- 2018**

**Subject Code: 2110001**

**Date: 18-05-2018**

**Subject Name: Chemistry**

**Time: 2:30 PM to 05:00 PM**

**Total Marks: 70**

**Instructions:**

- 1. Question No. 1 is compulsory. Attempt any four out of remaining Six questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**

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	<b>Marks</b>
Q.1. (a)	7
1. Ultraviolet rays are used in water treatment for	
a) Illumination	b) Disinfection
c) Coagulation	d) Sedimentation
2. High grade steel is manufactured using	
a) Open hearth furnace	b) Bessemer converter
c) Electric furnace	d) Blast furnace
3. White Portland cement does not contain	
a) SiO <sub>2</sub>	b) Al <sub>2</sub> O <sub>3</sub>
c) Fe <sub>2</sub> O <sub>3</sub>	d) MgO
4. A good fuel should possess	
a) Very high ignition temperature	b) Very low ignition temperature
c) Moderate ignition temperature	d) Moisture content.
5. Which of the following polymers are hard	
a) Linear	b) Branched
c) Cross-linked	d) Thermoplastic
6. Porosity in the refractory brick generally decreases	
a) Strength	b) Resistance to abreaction
c) Resistance to spalling	d) All of the above
7. Enzyme Rennin is used in	
a) Brewing industry	b) Dairy industry
c) Bio-fuel	d) Paper industry

- Q.1. (b) 7
1. Low ionization energy and high electron affinity will favor the formation of ----- bond.
  2. Dissolved CO<sub>2</sub> may be removed from water by addition -----.
  3. The presence of the nitrogen in the organic compound can be detected by ----- test.
  4. Polymerization between styrene and butadiene would lead to the formation of a-----.
  5. The ----- acid is responsible for the ripening of the guava fruit.
  6. ----- is used on tips of drilling and cutting tools.
  7. Chromatography is the technique of ----- chemical compound.
- Q.2.
- a) Write about the 12 principles of the green chemistry. 3
  - b) Write a short note on the co-ordinate bond. 4
  - c) What is the principle of EDTA titration? How the permanent hardness of water is determined using EDTA method? 7
- Q.3.
- a) What are the three methods of preparation of alloys? 3
  - b) Describe the process for the production of steel from cast iron. 4
  - c) Define corrosion. Explain the protection of iron metal through cathodic and anodic protection. 7
- Q.4.
- a) How tricalcium silicates react with water? Write the chemical equations. 3
  - b) What is the vulcanization of rubber? How does it improve the properties of the natural rubber? 4
  - c) Explain the manufacturing process of lime. Write its properties and significance of lime. 7
- Q.5.
- a) What are the abrasives? Give important uses of abrasives. 3
  - b) What are the thermal insulators? Name three organic and inorganic thermal insulators. 4
  - c) How is ethanol biosynthesized from molasses, starch and cellulosic materials? 7

Q.6.

- a) Calculate the mass of air needed for complete combustion of 5.0 kg of coal containing 80% carbon, 15% hydrogen and the rest oxygen. 3
- b) Write the short note on annealing and hardening. 4
- c) What is the composition of Portland cement? Discuss the manufacturing process of Portland cement. 7

Q.7.

- a) What is meant by the carbonization? How is carried out in a bee-hive oven? 3
  - b) State two disadvantages of using hard water for domestic and industrial purpose. 4
  - c) Discuss the various methods of controlling corrosion. Explain any one. 7
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