

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– 1st / 2nd 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.

| | Marks |
|---|----------------------------------|
| 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_2 | b) Al_2O_3 |
| c) Fe_2O_3 | 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 CO₂ 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 shot 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 though 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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