

Set No - 1

APPLIED CHEMISTRY

Time: 3 hours**Max. Marks: 70**

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PART-A

1. (a) What is addition and condensation polymerization? Give examples.
- (b) What is meant by knocking?
- (c) Draw a neat sketch of a galvanic cell.
- (d) Write any three applications of liquid crystals.
- (e) What is ferri-magnetism? Give example.
- (f) What is hybrid OTEC?
- (g) Explain why galvanized utensils are not used.

[7 x 2 = 14]

PART-B

2. (a) Explain suspension polymerization method.
(b) Write notes on p-type conducting polymers. [7+7]
3. (a) Explain the working of bomb calorimeter.
(b) Calculate HCV and LCV of a coal containing C = 93 %, H = 4%, O = 2%, S = 1%.
(Assume latent heat of steam = 587 Kcal).
(c) Write notes on rocket fuels. [5+4+5]
4. (a) What is a primary battery? Discuss the working and construction of a dry cell.
(b) Discuss electrochemical theory of corrosion. [6+8]
5. (a) Discuss any one method for preparation of carbon nanotubes.
(b) Explain R₄M₄ principles.
(c) Discuss Type – I and Type II superconductors. [5+5+4]
6. (a) Explain Hall effect and its applications.
(b) Discuss the number of atoms per unit cell in BCC and FCC. [9+5]
7. (a) Write the design and working of tidal power.
(b) Write notes on molten carbonate fuel cells. [7+7]

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Subject Code: R161106/R16**Set No - 2****I B. Tech I Semester Regular Examinations December - 2016****APPLIED CHEMISTRY****(EEE)****Time: 3 hours****Max. Marks: 70**

Question Paper Consists of **Part-A** and **Part-B**
Answering the question in **Part-A** is Compulsory,
Four Questions should be answered from **Part-B**

PART-A

1. (a) How are polyurethanes prepared?
- (b) What is cracking? Mention the types of cracking methods.
- (c) Define primary and secondary battery.
- (d) What are superconductors?
- (e) What are the advantages of a fuel cell?
- (f) Write the applications of Hall effect.
- (g) Differentiate galvanizing and tinning.

[7 x 2 = 14]

PART-B

2. (a) Explain stereoregular polymers with examples.
- (b) Discuss mechanical properties of polymers
- (b) Discuss fiber reinforced plastics.
- [4+4+6]
3. (a) What is synthetic petrol? Explain its preparation with a neat sketch.
- (b) Write notes on LPG and power alcohol.
- [7+7]
4. (a) What is electrochemical series? Explain its uses.
- (b) Discuss cathodic protection.
- [8+6]
5. (a) Discuss the types of thermotropic liquid crystals.
- (b) Explain any one method of green synthesis.
- (c) Write notes on single and multi-walled CNT's.
- [6+4+4]
6. (a) Explain semiconductivity in non-stoichiometric oxide crystals.
- (b) Write the differences between amorphous and crystalline solids.
- (c) Write notes on normal and inverse spinel.
- [6+4+4]
7. (a) Explain with a neat schematic diagram, the working of open ocean thermal energy.
- (b) Discuss biomass and biofuels.
- [8+6]

Set No - 3

APPLIED CHEMISTRY

Time: 3 hours**Max. Marks: 70**

PART-A

1. (a) What are thermosetting and thermoplastics?
- (b) What are explosives? Give examples.
- (c) What is meant by electroless deposition?
- (d) What are lyotropic liquid crystals? Give examples.
- (e) Write the anode, cathode and electrolyte used in Zn-air cells.
- (g) Give any three applications of insulators.
- (f) What is a solar cell?

[7 x 2 = 14]

PART-B

2. (a) What is vulcanization? How can they improve the properties of rubber?
(b) Write notes on biodegradable polymers. [7+7]
3. (a) Explain Orsat apparatus for analysis of flue gases.
(b) Explain fixed bed catalytic cracking method for synthesis of petrol. [8+6]
4. (a) Discuss the working of calomel electrode.
(b) Differentiate anodic and cathodic coatings.
(c) Write the anodic and cathodic reactions of Ni-Cd battery. [5+5+4]
5. (a) Explain sol-gel method for preparation of nanoparticles.
(b) Give any six principles of green chemistry. [8+6]
6. (a) Discuss the structure of NaCl.
(b) Explain zone refining method in preparation of semiconductors.
(c) Write notes on p-n junction diode as rectifier. [4+4+6]
7. (a) Discuss the design of hydropower plant with a neat sketch.
(b) What are fuel cells? Explain the working of H_2-O_2 fuel cells. Give its applications. [7+7]

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Set No - 4

APPLIED CHEMISTRY

Time: 3 hours**Max. Marks: 70**

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PART-A

1. (a) Write the preparation of polycarbonates.
- (b) Calculate the minimum air required for complete combustion of 5 Kg of a fuel.
- (c) What is a single electrode potential?
- (d) Give engineering applications of superconductors.
- (e) What are non-conventional energy sources?
- (f) What is ferromagnetism? Give examples.
- (g) What is meant by pitting corrosion?

[7 x 2 = 14]

PART-B

2. (a) Explain emulsion polymerization.
(b) Explain compounding of plastics.
(c) Explain any one moulding technique for preparation of plastics. [4+6+4]
3. (a) Write notes on biodiesel.
(b) Explain determination of % C and % S present in a coal by ultimate analysis.
(c) Define HCV and LCV. [4+6+4]
4. (a) Write notes on concentration cells.
(b) Explain the factor effecting rate of corrosion. [6+8]
5. (a) Explain chemical reduction method for preparation of nanoparticles.
(b) What are fullerenes? How are they prepared?
(c) Explain the need of green chemistry. [5+5+4]
6. (a) Discuss controlled valency semiconductors.
(b) Write notes on junction transistors. [5+9]
7. (a) Discuss geothermal energy with a neat schematic diagram.
(b) Explain phosphoric acid fuel cells. [8+6]
