

Subject Code: R161106/R16

Set No - 1

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) 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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Set No - 2

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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

- (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

- (a) Explain stereoregular polymers with examples.
(b) Discuss mechanical properties of polymers
(b) Discuss fiber reinforced plastics. [4+4+6]
- (a) What is synthetic petrol? Explain its preparation with a neat sketch.
(b) Write notes on LPG and power alcohol. [7+7]
- (a) What is electrochemical series? Explain its uses.
(b) Discuss cathodic protection. [8+6]
- (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]
- (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]
- (a) Explain with a neat schematic diagram, the working of open ocean thermal energy.
(b) Discuss biomass and biofuels. [8+6]



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Set No - 3

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

- (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

- (a) What is vulcanization? How can they improve the properties of rubber?
(b) Write notes on biodegradable polymers. [7+7]
- (a) Explain Orsat apparatus for analysis of flue gases.
(b) Explain fixed bed catalytic cracking method for synthesis of petrol. [8+6]
- (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]
- (a) Explain sol-gel method for preparation of nanoparticles.
(b) Give any six principles of green chemistry. [8+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]
- (a) Discuss the design of hydropower plant with a neat sketch.
(b) What are fuel cells? Explain the working of H₂-O₂ fuel cells. Give its applications. [7+7]



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Set No - 4

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

- (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

- (a) Explain emulsion polymerization.
(b) Explain compounding of plastics.
(c) Explain any one moulding technique for preparation of plastics. [4+6+4]
- (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]
- (a) Write notes on concentration cells.
(b) Explain the factor effecting rate of corrosion. [6+8]
- (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]
- (a) Discuss controlled valency semiconductors.
(b) Write notes on junction transistors. [5+9]
- (a) Discuss geothermal energy with a neat schematic diagram.
(b) Explain phosphoric acid fuel cells. [8+6]

