Code No: R161211 **R16** SET - 1

I B. Tech II Semester Regular Examinations, April/May - 2017
APPLIED CHEMISTRY
(Com. to ECE, CSE, EIE, IT, ECC)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answering the question in **Part-A** is Compulsory
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1.	a)	Differentiate emulsion and suspension polymerization with examples.	(2M)
	b)	Why net calorific value (NCV) is less than gross calorific value (GCV)?	(2M)
	c)	Explain differential aeration corrosion with one example.	(2M)
	d)	Draw and explain the structure of fullerene.	(2M)
	e)	Write the applications of Hall-Effect.	(2M)
	f)	What are electrical insulators? Give their applications.	(2M)
	g)	Write the principle involved in Batteries.	(2M)

PART –B

2.	a)	Bring out the difference between thermoplastics and thermosetting plastics with suitable examples.	(8M)
	b)	Explain the following i) Biodegradable polymers ii) Vulcanization of natural rubber.	(6M)
3.	a)	Name the different types of coals? Explain the proximate analysis of coal and write its significance.	(8M)
	b)	Define the octane number of gasoline .what is its significance and how is it measured? Why ethylene di bromide is added when TEL is used as an antiknock reagent?	(6M)
4.	a)	What are nano materials? How to characterise nano materials by BET and TEM methods?	(8M)
	b)	Explain the following i) Green synthesis principles ii) Applications of Super conductors	(6M)
5.	a)	Explain the construction, working and applications of photo voltaic cell.	(8M)
	b)	Which type of non conventional energy source you prefer for the generation of energy? How to construct it and its importance?	(6M)
6.	a)	What are the insulators? Write about electrical and electronic applications of Insulators?	(10M)
	b)	What are semiconductors and P-n junction diode?	(4M)
7.	a)	What are batteries ?Explain the principle ,construction, working and application of Ni-metal hydride cell.	(8M)
	b)	Write about cathodic protection methods to control corrosion? Explain with suitable examples. Differentiate galvanizing and tinning.	(6M)
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Code No: R161211 **R16** SET - 2

I B. Tech II Semester Regular Examinations, April/May - 2017
APPLIED CHEMISTRY
(Com. to ECE, CSE, EIE, IT, ECC)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answering the question in **Part-A** is Compulsory
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1.	a)	Why conducting polymers shows conductivity? Give examples.	(2M)
	b)	What is power alcohol? Write its applications.	(2M)
	c)	What is electrode potential? What is the effect of electrolyte concentration on electrode potential?	(2M)
	d)	Define R_4M_4 principle of green synthesis.	(2M)
	e)	Differentiate Ferro and Ferri magnetism.	(2M)
	f)	What is tidal energy? Write any two conditions to generate tidal energy.	(2M)
	g)	Discuss the phenomenon of metal Cladding with suitable examples.	(2M)

PART –B

2.	a)	Explain chain growth and step growth polymerization with suitable examples.	(8M)
	b)	What are Elastomers? Explain preparation, properties and engineering applications of Thiokol rubber.	(6M)
3.	a)	Differentiate HCV and LCV? Explain with neat diagram how to determine calorific value by bomb calorimeter.	(10M)
	b)	What are explosives? Explain the classification and discuss about RDX and TNT	(4M)
4.	a)	What are nano materials? How to prepare Nano materials with chemical reductions method? Explain how Nano materials are taking major role in medical field.	(8M)
	b)	What are the super conductors? Explain properties of type-1 and type-2 super conductors	(6M)
5.	a)	Explain differences between conventional and non conventional energy sources.	(8M)
	b)	Explain the construction, working and applications of methanol – oxygen fuel cell. Write short notes on Biofuels.	(6M)
6.	a)	Explain Hall effect and its applications.	(8M)
	b)	Discus the structure of cesium chloride with neat diagram.	(6M)
7.	a)	What is electro chemical series? Discuss its significance.	(8M)
	b)	Explain the principle involved in batteries. Differentiate electroplating and electro less plating of corrosion control.	(6M)
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Code No: R161211 **R16** SET - 3

I B. Tech II Semester Regular Examinations, April/May - 2017
APPLIED CHEMISTRY
(Com. to ECE, CSE, EIE, IT, ECC)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answering the question in **Part-A** is Compulsory
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1.	a)	What is heterogeneous polymerization? Explain about suspension polymerization.	(2M)
	b)	Differentiate between HDPE and LDPE.	(2M)
	c)	What is refining? Why petroleum is subjected to refining?	(2M)
	d)	Write the composition of LPG and CNG.	(2M)
	e)	What is electro less plating? What are its advantages over electroplating?	(2M)
	f)	Define Hall Effect.	(2M)
	g)	What are the applications of solar energy?	(2M)

PART –B

2.	a)	Discus about the preparation and engineering applications of Teflon, Bakelite and Thiokol rubber.	(8M)
	b)	Write a note on biodegradable polymers.	(6M)
3.	a)	Define L.C.V and H.C.V. How these are related. A gas has the following composition by volume H_2 =22%, CH_4=4%, CO=20%, CO_2=6%, O_2=3% and N_2=45%. If 25 % excess air is used. Find the actual weight of air supplied per m^3 of this gas.	(8M)
	b)	How explosives are classified? Write about RDX, TNT.	(6M)
4.	a)	Write about the construction and working of calomel electrode. Give a neat sketch.	(8M)
	b)	Explain about i) Water line corrosion. ii) Sacrificial anodic protection. iii) Electro less plating	(6M)
5.	a)	How do you characterise nonomaterials by BET method?	(8M)
	b)	How green chemical methods are superior over conventional methods in organic synthesis? Explain with examples.	(6M)
6.	a)	What are magnetic materials? Explain.	(8M)
	b)	Explain with suitable examples about the BCC, FCC structure and spinels.	(6M)
7.	a)	What is photo voltaic cell? Explain the principle of working.	(8M)
	b)	What are the non-conventional energy sources? Discus about geothermal energy.	(6M)
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Code No: R161211 **R16** SET - 4

I B. Tech II Semester Regular Examinations, April/May - 2017
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Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answering the question in **Part-A** is Compulsory
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1.	a)	What are plastics? How do they differ from fibers and elastomers?	(2M)
	b)	What are conducting polymers? Give the applications of conducting polymers.	(2M)
	c)	What is RDX and TNT? Write their uses.	(2M)
	d)	Give about cetane number.	(2M)
	e)	Write any three differences between galvanic cell and electrolytic cell.	(2M)
	f)	What are electrical insulators? Give their applications.	(2M)
	g)	Give the importance of photo voltaic cells.	(2M)

PART –B

2.	a)	How are the plastics fabricated by compression and injection molding methods?	(8M)
	b)	What are the conducting polymers? Why the polymers becomes conducting? Explain by taking Poly acetylene as an example.	(6M)
3.	a)	What are the advantages of liquid fuels?	(8M)
	b)	Explain about Fisher-Tropsch's process. What are rocket fuels? Give examples.	(6M)
4.	a)	Explain about cathodic protection methods with suitable examples.	(10M)
	b)	What are the characteristic of a battery? Explain Ni-Cd cell, its constructions and working.	(4M)
5.	a)	What are CNTs? Give their applications.	(8M)
	b)	Explain the principles of green synthesis.	(6M)
6.	a)	How is the semi conductors prepared?	(8M)
	b)	Write a note on electrical and electronic applications of insulators. Give the applications of Ferro magnetic materials.	(6M)
7.	a)	Give the applications of solar energy.	(8M)
	b)	How do non-conventional energy sources differ from conventional energy sources? Write about tidal wave power.	(6M)

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