(91) No. of printed pages: 2

SARDAR PATEL UNIVERSITY

M. Sc. (Polymer Science & Technology) Semester – IV Examination 2016
Tuesday, 12th April, 2016
2:30 p.m. to 5:30 p.m.
PS04EPST05: Petrochemicals

TOTAL MARKS: 70

Note: (1) Attempt all questions
(2) Figures to the right indicates full marks

Que. 1 Answer the following **(8)**

(1) _____ initiator used for lummus process in liquid phase reaction.
(a) magnesium benzoate (b) benzoyl per oxide (c)Cerium ammonium nitrate (d) none of this

(2) _____is the example of non acidic sulphur compound
(a) Dimethyl sulfide (b) Thiosyclohexane (c) Thiophene (d) all of these

(3) In petrochemical Industry, _____compounds are known as paraffins
(a) Alkane (b) cycloalkane (c) aromatic (d) olefins

(4) _____is known as Isohexane
(a) 2,2 – dimethyl butane (b) 2,3 -dimethylbutane (c) 3- methylpentane (d) 2-methyl pentane

(5) _____is the example of basic nitrogen compound
(a) Pyrrole (b) Quinoline (c) Indole (d) None of these

(6) Steam to hydrocarbon weight ratio for olefin production is _____for liquid feeds
(a) 0.2 – 0.4 (b) 0.4 – 0.6 (c) 0.8 – 1.0 (d) 1.0 – 1.2

(7) The production of acetic anhydride from acetic acid occurs via the intermediate formation of _____
(a) ketone (b) ketene (c) ester (d) alcohol

(8) Sulfonation of n-paraffins in catalyzed by ultraviolet light with a wave-length between_____
(a) 3300-3600Å (b) 2500-2700Å (c) 3100-3500Å (d) 1800-2800Å

Que. 2 Answer the following (any seven) **(14)**

(1) How the internal combustion engines work?
(2) Discuss the basic building block process
(3) What are the different costing parameters in petrochemical processing? Explain
(4) Write a note on Urea
(5) Give an account on Nitration of propane
(6) Explain fermentation of n-paraffins
(7) Discuss the production and uses of formaldehyde

(8) Define Octane number. Which type of additive used in petrol manufacture? Explain it

(9) Write a note on allyl acetate

Que. 3 **(a)** Which type of distillation is used in crude oil processing? Explain it **(06)**

(b) **Answer the following** **(06)**

1. Write the synthesis, properties and application of methanol production.
2. Discuss the different fractions of natural gas liquid (NGL) and write the properties of natural gas liquids.

OR

(b) **Answer the following** **(06)**

1. Write the synthesis, properties and uses of urea
2. What are the different process variable in steam cracking process? Explain

Que. 4 **(a)** What is coking process? Explain delayed and fluid coking process **(06)**

(b) **Answer the following** **(06)**

1. Write the synthesis, property and uses of acetaldehyde
2. Write and discuss the synthesis of Aniline from benzene

OR

(b) **Answer the following** **(06)**

1. What are the advantages of conversion process?
2. Write a note on maleic anhydride

Que. 5 **(a)** Explain the petrochemical process technology with schematic flow diagram which is used in continuous processing of styrene **(06)**

(b) **Answer the following** **(06)**

1. Discuss the production of ethylene with diagram from ethane in steam cracking process
2. Which are the different routes for the production of Isoprene? Explain it

OR

(b) Write and discuss the synthesis, properties and uses of phenol from benzene via cumene **(06)**

Que. 6 **(a)** Why natural gas required treatment process? Explain the acid gas treatment process **(06)**

(b) **Answer the following** **(06)**

1. Discuss the sulphur and nitrogen containing compound in crude oil composition
2. Discuss the production and uses of acetone from Isopropanol

OR

(b) **Answer the following** **(06)**

1. Write a note on synthesis, properties and uses of metathesis of olefins
2. Write a note on synthesis, properties and uses of propylene oxide

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