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## SARDAR PATEL UNIVERSITY

M.Sc. Polymer Science & Technology Semester-IV Examination – 2016

Wednesday, 6<sup>th</sup> April 2016

2:30 p.m. to 5:30 p.m.

PS04CPST09: Specialty Polymer

Note: (1) Attempt all questions.

Total marks: 70

(2) Figures to the right indicate full marks.

### Que. 1 Answer the following

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- (1) Which product is formed when sodium salt of cellulose reacted with with propylene oxide  
(a) methyl cellulose (b) sodium carboxy methyl cellulose (c) hydroxy propyl cellulose (d) none of these
- (2) \_\_\_\_\_ is known as gum arabic  
(a) Acacia gum (b) guar gum (c) alginate (d) none of these
- (3) In ionic polymer, If bound ion is sulphonate group then polymer is known as \_\_\_\_\_ exchange polymer  
(a) cation (b) anion (c) Zwitter ionic (d) none of these
- (4) In preparation of PEEK polymer, starting material is \_\_\_\_\_  
(a) 4,4'-difluorobenzophenone (b) Disodium salt of hydroquinone (c) both a & b (d) none of these
- (5) The energy difference between valance band and conduction band is known as \_\_\_\_\_  
(a) Carrier mobility (b) forbidden gap (c) semiconductor (d) none of these
- (6) \_\_\_\_\_ Polymer is used in analytical separation technique in gel electrophoresis  
(a) polyvinyl pyrrolidone (b) Polyvinyl alcohol (c) Polyacryl amide (d) none of these
- (7) Which type of polymer is known as ionene?  
(a) Contain sulfonate group (b) contain phosphonate group  
(b) Contain quaternary group (d) contain carboxylate group
- (8) In polyvinyl pyrrolidone, k value indicate \_\_\_\_\_  
(a) Viscosity Mol.wt. (b) Number average mol.wt. (c) Weight Average Mol.wt. (d) none of these

### Que. 2 Answer the following (any seven)

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- (1) Why we need thermally stable polymer?
- (2) Explain the different steps for burning processes of a macromolecule
- (3) Discuss the application of hydrophilic polymer
- (4) How to improve low performance polymers for high temperature use?
- (5) Explain Carbohydrate
- (6) Write a note on alginate
- (7) Define LOI and Smoke

- (8) Discuss piezoelectricity and pyroelectricity  
(9) Write a short note on polyvinyl pyrrolidone.
- Que. 3** (a) Write a synthesis scheme, property and application of polyimide 06  
(b) **Answer the following** 06  
1. Write a note on Polysulphone  
2. Explain Guar gum  
OR  
(b) **Discuss the following** 06  
1. Polyetherether ketone  
2. Polyphenylene Sulfide
- Que. 4** (a) Write a reaction mechanism of polyparaphenylene and give the properties and application 06  
(b) **Answer the following** 06  
1. Explain Polyvinyl alcohol  
2. Write a note on casein  
OR  
(b) Discuss hydrogel polymer.
- Que. 5** (a) Write a note on Ionic crosslinking 06  
(b) Explain the synthesis of ionic polymer by post functionalization of a standard and special pre-formed polymer 06  
OR  
(b) **Write a note on following** 06  
1. Explain the hydrophilicity in Ionic polymer  
2. How gelatin is produced? Write properties and application of gelatin
- Que. 6** (a) Explain Ion Exchange resin and Ion Exchange membrane 06  
(b) Write a note on polyelectrolyte for Ion exchange 06  
OR  
(b) **Answer the following** 06  
1. Explain Polytetrafluoroethylene  
2. Explain the classification of Ionic polymer

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