

SEAT No. _____

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SARDAR PATEL UNIVERSITY

M.Sc. Polymer Science & Technology Semester-IV Examination – 2018

Monday, 16th April 2018

2:00 p.m. to 5:00 p.m.

PS04CPST12: Polymer Blends, Adhesives and Pigments

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) Polystyrene – Poly(vinyl methyl ether) is a example of _____ blend
(a) Miscible blend (b) Partially miscible blend (c) Immiscible blend (d) None of these
- (2) _____ is used as degreasing solvent for metals
(a) Acetone (b) Methanol (c) Ethanol (d) Trichloro ethylene
- (3) In a blend, when $\alpha_1 = \alpha_2$, $\gamma_1 = \gamma_2$, Q_{12} and χ_{12} approach zero the polymer will become _____
(a) Miscible (b) Partially miscible (c) Immiscible blend (d) None of these
- (4) _____ method is used for preparation of polymer blend
(a) solution mixing (b) melt mixing (c) Interpenetrating network (d) all of these
- (5) The major difference between Small Angle Neutron Scattering and Small Angle X-ray Scattering is their _____
(a) Intensity (b) Wavelength (c) Angle (d) None of these
- (6) _____ technique is used for metal surface preparation
(a) Abrasion (b) degreasing (c) chemical method (d) all of these
- (7) _____ can reduce the interfacial energy between two phase separated domains in polymer blends.
(a) Addition of block copolymer (b) Chemical modification of polymer (c) Polarity (d) Molecular weight of polymer
- (8) _____ is example of boil proof type adhesive
(a) UF resin (b) MF resin (c) PF resin (d) None of these

Que. 2 Answer the following (any seven)

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- (1) Discuss the advantages of blending
- (2) Explain the type of stresses that occur on the adhesive bonded joint
- (3) Discuss the surface treatment of wood for adhesive application
- (4) Discuss the method of studying miscibility or immiscibility.
- (5) Write the different reason for insufficient bonding in adhesive bonding.
- (6) Write the classification of adhesive based on durability
- (7) Discuss the surface treatment of plastic for adhesive application
- (8) Explain the different methods for preparation of polymer blend.
- (9) Write the advantage and disadvantage of adhesive bonding.

- Que. 3** (a) Write the a note on modification during polymerization in polymer modification for physical compatibilization 06
- (b) Write a note on equation of state theory 06
- OR**
- (b) **Answer the following** 06
1. Discuss the molecular interpretation of polymer –polymer miscibility.
 2. Write a note on practical compatibilization in a polymer blend.
- Que. 4** (a) Discuss briefly on physical additive used in compatibilization 06
- (b) Discuss briefly on reactive compatibilization 06
- OR**
- (b) **Answer the following** 06
1. Explain the different factors in miscibility
 2. Explain polymer modification for reactive compatibilization.
- Que. 5** (a) Explain the different parameters influencing the miscibility and immiscibility. 06
- (b) Explain the different methods of adhesive bonding 06
- OR**
- (b) Explain the different methods of adhesive application 06
- Que. 6** (a) Explain the different methods of adhesive bond curing 06
- (b) **Answer the following** 06
1. Explain the factor affecting the adhesive selection.
 2. What are the different reasons for poor adhesion bonding?
- OR**
- (b) **Answer the following** 06
1. Explain the factor affecting the adhesive and solvent bonding
 2. What are the different additives used in adhesive formulation? Explain its role in adhesive

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