[33] SEAT No._____

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No. of Printed pages: 2

SARDAR PATEL UNIVERSITY

M.Sc. 1st Semester (Surface Coating Technology) (CBCS) Examination

Tuesday, 19th March 2019

Time: 10:00 am to 01:00 pm

Course No.: PS01CSCT21

***Subject:* Chemistry & Technology of Oils and Polymers Sciences**

Total Marks: 70

N.B. *(1) Marks allotted to the question are on its RHS*
(2) Illustrate your answers wherever necessary with the help of neat sketches & chemical equations

Q.1 **Choose the *Correct Answer* from the followings:**

1.1 Which of the following is non-drying oil? **1**

a) Cottonseed oil b) Linseed oil c) Safflower oil d) Sunflower oil

1.2 Initiator used in anionic polymerization is _____. **1**

a) BF_3 b) Benzoyl peroxide c) KNH_2 d) none

1.3 The most widely used initiator in free-radical polymerization is _____. **1**

a) Benzoyl peroxide b) AIBN c) TBTH d) none

1.4 Which of the following technique is used to evaluate $\overline{Mw}$? **1**

a) Membrane osometery b) Sedimentation method

c) Ubbelohde viscometery d) All

1.5 At Tg, polymer will undergo _____ transition. **1**

a) Glassy to rubbery b) Glassy to liquid d) Rubbery to liquid d) None

1.6 Residual monomer in polymer can be identified by _____ technique. **1**

a) IR b) GC-MS c) ICP-AES d) None

1.7 The characteristic requirement for drying oil is presence of _____ bond. **1**

a) Single b) double c) isolated double d) conjugated

1.8 Metals of which group is used as catalyst in co-ordination polymerization? **1**

a) Group (I-III) b) Group (IV-VII) c) Group (II-VI) d) All

Q.2 **Answer the following short questions (any seven)** **14**

a) Write the structural formula of linolenic and ricinoleic acid.

b) Classify the polymers and explain any one in brief.

c) Describe drying, semi-drying and non-drying oils.

d) Define Initiators and Inhibitors.

e) Classify different types of copolymers with schematic representation.

f) Define viscosity and describe it types.

g) What is polydispersity of a polymer?

(P.T.O.)

h) Describe hydrolysis reaction of oil.

i) Describe glycerolysis reaction of oil and explain its significance.

Q.3	a	Describe the oxidative and thermal polymerization taking place in oil responsible for curing of film.	**6**
	b	Write a note on blown oil, boiled oil and stand oil.	**6**
		OR	
Q.3	a	Describe the procedure to find I.V & S.V of oils.	**6**
	b	Write a note on oil modification and its application in coating.	**6**
Q.4	a	Describe the mechanism and kinetics of cationic polymerization	**6**
	b	Write a note on Natta's mechanism of co-ordination polymerization.	**6**
		OR	
Q.4	a	Describe the mechanism and kinetics of free radical polymerization.	**6**
	b	Write a note on melt polycondensation and solution polycondensation.	**6**
Q.5	a	Describe Dynamic method to find $\overline{Mn}$	**6**
	b	Derive the equation to find out $\overline{Mn}$ and $\overline{Mw}$	**6**
		OR	
Q.5	a	Write a note on bulk and solution polymerization technique	**6**
	b	Discuss sedimentation method to find molecular weight of polymers.	**6**
Q.6	a	Describe the significance of GC-MS in coating industry	**6**
	b	Discuss ICP-AES in brief.	**6**
		OR	
Q.6	a	Write a note on DSC and its importance in resin chemistry.	**6**
	b	Write a note on GPC to determine molecular weight of poiymer.	**6**
