

X

NPTEL

reviewer1@nptel.iitm.ac.in ▼

Courses » Principles of Polymer Synthesis

Announcements Course Ask a Question Progress Mentor

Unit 4 - Week 3

Course outline

How to access the portal

Week 1

Week 2

Week 3

● Lecture 11: Principles of radical chain polymerization

● Lecture 12: Principles of radical chain polymerization (Contd..)

● Lecture 13: Principles of radical chain polymerization (Contd..)

● Lecture 14: Principles of radical chain polymerization (Contd..)

● Lecture 15: Principles of radical chain polymerization (Contd..)

○ Quiz : Week 3 Assignment

○ Week 3 : Lecture Material

○ Week 3 Assignment 3: Solution

Week 4

Week 5

Week 6

Week 3 Assignment

The due date for submitting this assignment has passed. **Due on 2018-02-28, 23:59 IST.**

Submitted assignment

1) In uncontrolled radical chain growth polymerization high molecular weight species is formed **1 point**

- (a) At the final stage of the reaction
- (b) At the initial stage of the reaction
- (c) At the middle stage of the reaction
- (d) None of these

No, the answer is incorrect.

Score: 0

Accepted Answers:

(b) At the initial stage of the reaction

2) In radical chain growth polymerization, the propagating species can undergo termination by- **1 point**

- (a) Coupling
- (b) Disproportionation
- (c) Chain transfer
- (d) All of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

(d) All of the above

3) Which of the following can be used as a initiator in free radical polymerization- **1 point**
(P) Benzoyl peroxide (Q) Azoisobutyronitrile (T) tert-Butylhydroperoxide
(R) $\text{H}_2\text{O}_2 + \text{Fe}^{2+}$ (S) K_2SO_4

- (a) P,Q,R,S
- (b) Q,R,S,T
- (c) P,Q,R,T
- (d) P,Q,S,T

No, the answer is incorrect.

Score: 0

Accepted Answers:

(c) P,Q,R,T

4) Which of the following monomers will undergo free radical polymerization ? **1 point**

- (a) monomer containing one hydroxyl group and one carboxylic group.

Week 7

Week 8

[DOWNLOAD VIDEOS](#)

- (b) monomer containing one amine group and one hydroxyl group
- (c) monomer containing two hydroxyl group
- (d) monomer containing double bond

No, the answer is incorrect.

Score: 0

Accepted Answers:

(d) monomer containing double bond

5) At ceiling temperature, for radical polymerization:

1 point

- (a) Rate of propagation is higher than rate of depropagation.
- (b) Rate of propagation is lower than rate of depropagation.
- (c) Rate of propagation is equal to the rate of depropagation.
- (d) Rate of propagation can be lower or higher than the rate of depropagation depending on polymer structure.

No, the answer is incorrect.

Score: 0

Accepted Answers:

(c) Rate of propagation is equal to the rate of depropagation.

6) In a radical polymerization, If the fraction of propagating species terminated by coupling and disproportionation are 'a' and '1-a' respectively, and there are 'n' propagating chains are involved in the reaction, then the average number of initiators fragments per polymer molecule is :

- (a) $2/(2-a)$
- (b) $1/(1-a)$
- (c) $1/(a-1)$
- (d) $1/(1+a/2)$

No, the answer is incorrect.

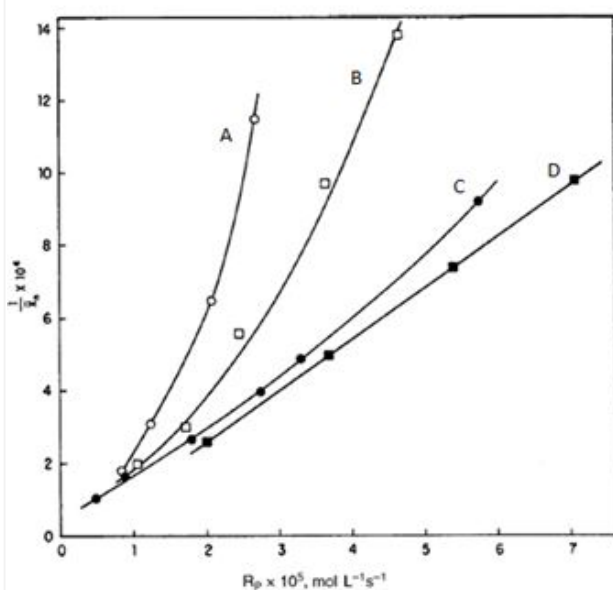
Score: 0

Accepted Answers:

(a) $2/(2-a)$

7) In the graph given below ($1/X_n$ vs R_p), showing the dependence of the degree of polymerization of a hypothetical monomer on the polymerization rate in the presence of different initiators (A,B,C or D), which of the initiators among A,B,C and D has negligible contribution in chain transfer to initiator ?

1 point



- (a) A
- (b) B
- (c) C
- (d) D

No, the answer is incorrect.

Score: 0

Accepted Answers:

(d) D

8) For a thermal initiation process, how does the rate of radical polymerization and molecular weight depend on the initiator concentration ? **1 point**

- (a) Both increase with increase in initiator concentration
- (b) Both decrease with increase in initiator concentration
- (c) Rate of polymerization increases and molecular weight decreases with increase in initiator concentration.
- (d) Rate of polymerization decreases and molecular weight increases with increase in initiator concentration.

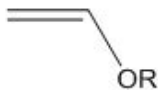
No, the answer is incorrect.

Score: 0

Accepted Answers:

(c) Rate of polymerization increases and molecular weight decreases with increase in initiator concentration.

9) Which of the following options is true for monomer shown below ? **1 point**



- (a) Can undergo both cationic and anionic polymerization
- (b) Can undergo both cationic and radical polymerization
- (c) Can undergo radical polymerization only
- (d) Can undergo both anionic and radical polymerization

No, the answer is incorrect.

Score: 0

Accepted Answers:

(b) Can undergo both cationic and radical polymerization

10) In a polystyrene synthesis the ratio of rate of propagation (R_p) to the rate of initiation (R_i) is 8000, calculate the molecular weight (assuming 100% termination by coupling)

Hint

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Numeric) 16000

0 points

Previous Page

End

© 2014 NPTEL - Privacy & Terms - Honor Code - FAQs -



A project of



In association with



Funded by

Government of India
Ministry of Human Resource Development

Powered by

