QUIZ-2 (CL623 : Polymer Science and Technology)
18th November 2022; 11:10 AM-11:50 AM

Instructions :
1. All questions are in **MSQ (multiple selection questions) format**. i.e. there may be **one or more than one correct options**. **Selection of all possible correct answers is mandatory**.

2. Duration of quiz is **40 Minutes**.

3 .Quiz Link will be closed sharp at **11:50 AM.**

4. All are requested to submit before said time manually as responses sent on mail after **11:55 AM will not be evaluated.**

1

Roll No. *

190101039

2

Blister is a troubleshoot seen in which of the following type of processing technique ?(2 Points)

- [ ] Transfer molding
- [ ] Injection molding
- [ ] Blown film extrusion
- [x] Vacuum forming

3

Select the matching of column.(2 Points)

P. Blow molding	1. Bucket
Q. Co extrusion	2. Blister p
R. Injection molding	3. Bottles
S. Thermos forming	4. Multilay

- [x] P-3, Q-4, R-1, S-2
- [ ] P-3, Q-1, R-4, S-2
- [ ] P-3, Q-4, R-2, S-1
- [ ] P-3, Q-2, R-1, S-4

4

During the manufacturing of a injection molded product, what should be relation between clamping force and injection pressure?(2 Points)

- [ ] Clamping force should be equal to injection pressure
- [x] Clamping force should be greater than injection pressure
- [ ] There is no relation between in clamping force and injection pressure
- [ ] Clamping force should be less than injection pressure

5

Which of the following troubleshoots are seen in case of injection moulding? (2 Points)

- [x] All of the above
- [x] Bambooing
- [x] Jetting
- [x] Shrinkage

6

Disposable cups, and trays are made by which of the following processing techniques(2 Points)

- [ ] casting
- [x] Transfer molding
- [x] stretch blow molding
- [ ] Vacuum forming

7

The monomers, A and B with reactivity ratios rA and rB form alternating copolymers when(2 Points)

- [ ] rA > 1, rB > 1
- [x] rA = rB = 0
- [ ] rA = rB = 1
- [ ] rA < 1, rB < 1

8

In extrusion blow molding, parison swell is _____.(2 Points)

- [x] Ratio of cross-section area of parison to cross-section area of die opening
- [ ] None of the above
- [ ] Product of cross-section area of parison to cross-section area of die opening
- [ ] Ratio of cross-section area of die opening to cross-section area of parison

9

In free radical polymerization, rate of polymerization depends on(2 Points)

- [ ] Rate of termination
- [ ] Both A and B
- [x] Monomer concentration
- [x] Square root of rate of initiation

10

Which of the following processing technique is/are batch process?(2 Points)

- [ ] Sheet extrusion
- [x] Injection moulding
- [x] Compression moulding
- [ ] Blown film extrusion

11

With increasing crystallinity of polymer, tensile strength_____ and impact strength _____.(2 Points)

- [ ] decrease, increase
- [x] increase, decrease
- [ ] increase, increase
- [ ] decrease, decrease

12

For a hydraulic clamping injection moulding machine, maximum daylight is (2 Points)

- [ ] Mould opening stroke + Minimum mould height
- [x] Mould opening stroke + Maximum mould height
- [ ] Mould opening stroke - Minimum mould height
- [ ] Mould opening stroke + Sprue length

13

In which of the following case the functional group -CH3 is arranged in an alternating fashion around the head-to-tail configuration of caron backbone chain in polypropylene (PP)?(2 Points)

- [x] Syndiotactic PP
- [ ] Atactic PP
- [ ] Isotactic PP
- [ ] None of the above

14

Relation between creep compliance J(t) & shear modulus G is(2 Points)

- [ ] 1/G(1-exp(-tλ))
- [x] G(1-exp((-t)/λ))
- [ ] G(1-exp((-λ)/t)
- [ ] 1/G(1-exp((-λ)/t)

15

In which of the following processing techniques filament threads are obtained from polymer solution?(2 Points)

- [x] Fiber spinning
- [ ] Wire coating extrusion
- [ ] Flat film extrusion
- [ ] Blown film extrusion

16

Blow ratio can be defined as(2 Points)

- [x] Ratio of maximum diameter of bubble and die diameter
- [ ] Ratio of die diameter and maximum diameter of bubble
- [ ] Ratio of die gap and lay flat width
- [ ] Ratio of draw down ratio and die diameter

17

Larger L/D ratio in screw of extruder will (2 Points)

- [x] Uniformly generate more shear heat without degradation
- [x] Create greater opportunity for mixing
- [ ] None of these
- [x] Create greater residence time of plastic in barrel

18

Which of the following technique squeezes a plastic melt between two or more counter rotating cylinders or rolls to form a continuous film and sheet? (2 Points)

- [ ] Vacuum forming
- [ ] Fiber spinning
- [x] Calendering
- [ ] Extrusion

19

Which of the following is a proper sequence seen in case of an extruder (2 Points)

- [ ] Screw – Screen pack – Breaker plate – Die
- [x] Screw – Breaker plate – Screen pack – Die
- [ ] Screw – Breaker plate – Die – Screen pack
- [ ] Screen pack – Breaker plate – Screw – Die

20

The relationship between Young's modulus (E), Shear modulus (G) and Poisson's ration (μ) can be given by(2 Points)

- [x] Y = 2G (1 + μ)
- [x] Y = 2G + 2μG
- [ ] Y = G (1 + μ)
- [x] Y/G = 2 + 2μ

21

In which of the following extruder pumping of plasticized material is/are not positive?(2 Points)

- [ ] Single screw extruder
- [ ] Counter rotating intermeshing
- [x] Counter rotating non-intermeshing
- [ ] Co-rotating intermeshing

22

In PVC screw, which zone is made long?(2 Points)

- [ ] Metering zone
- [x] Compression zone
- [ ] Mixing zone
- [ ] Feed zone

23

Which of the following is/are a set of rotational molded products?(2 Points)

- [x] Automobile parts & gears
- [x] Water tanks & balls
- [ ] Water bottles & shampoo containers
- [ ] Pipes & seeds

24

Which following set of molds are used in compression molding ?(2 Points)

- [ ] Side feed, bottom feed spiral and spiral mandrel type
- [ ] Integral port type and plunger type
- [x] Flask type, positive type, and semi positive-flask type
- [ ] T-type, fish-tail type, and coat-hanger type

25

(2 Points)

In Maxwell model of viscoelastic polymer, creep $\gamma(t)$ *and stress relaxation* $\sigma_0(t)$ *can be gi*

- [ ] $G\gamma_0 \exp(-\tau/t),\ (\sigma_0/G)\cdot(1-\exp(-\lambda/t))$
- [x] $G\gamma_0 \exp(-t/\tau),\ (\sigma_0/G)\cdot(1-\exp(-t/\lambda))$
- [ ] $G/\gamma_0 \exp(-t/\tau),\ (\sigma_0/G)\cdot(1-\exp(-\lambda t))$
- [ ] $G\gamma_0 \exp(-t/\tau),\ \sigma_0 G\cdot(1-\exp(-t/\lambda))$

26

What is the advantage of reciprocating screw injection molding machine?
(2 Points)

- [x] Plasticization of heat sensitive materials and blending of color are more efficient
- [x] The molded product is more durable
- [x] The overall cycle time is larger
- [x] All of these

27

Which type of calender/calenders is/are used in calendaring process?
(2 Points)

- [x] L-type
- [x] I-type
- [x] Z-type
- [x] Inverted L-type

28

What are the assumptions taken in Flory – Huggins theory?(2 Points)

- [x] There is no volume change of mixing
- [x] All of the above
- [x] All polymer molecules contain the same number of segments
- [x] The volume occupied by one polymer segment is not equal to that occupied by one solvent molecule

29

Breathing time is a term associated with which of the following polymer processing method?(2 Points)

- [ ] Roto molding
- [x] Injection molding
- [x] Compression molding
- [ ] Extrusion

30

Which of the following method used to make PET bottles ?(2 Points)

- [x] Blown film extrusion
- [x] Roto molding
- [x] Blow molding
- [x] Injection molding

31

Solubility parameter is related to cohesive energy density as(2 Points)

- [ ] $(Solubility\ parameter)^{\frac{1}{2}} = Cohesive\ energy\ density$
- [x] $Solubility\ parameter = (Cohesive\ energy\ density)^{2}$
- [x] $Solubility\ parameter = (Cohesive\ energy\ density)^{\frac{1}{2}}$
- [ ] $(Solubility\ parameter)^{2} = Cohesive\ energy\ density$