FINAL ANSWER KEY

Question Paper Code:	99/2023/OL
Category Code:	675/2022
Exam:	Workshop Instructor/ Instructor Grade II/ Demonstrator/ Draftsman Grade II in Polymer Technology
Date of Test	30-06-2023
Department	Technical Education

Question1:-Answer the following polymers which is of natural origin
(i) Silk
(ii) Shellac
(iii) Wool
(iv) Nylon

A:-only (i) and (ii)

B:-only (ii) and (iii)

C:-only (i), (ii) and (iii)

D:-All of the above

Correct Answer:- Option-C

Question2:-Which of the following is a crystalline polymer
(i) Polyethylene
(ii) Polystyrene
(iii) Nylon
(iv) Polyvinylchloride
(v) All of the above

A:-only (i) and (ii)

B:-only (i) and (iii)

C:-only (i), (ii) and (iii)

D:-All of the above

Correct Answer:- Option-B

Question3:-Which of the following polymerising technique is extensively employed for the polymerisation of isoprene?

A:-Bulk polymerisation

B:-Solution polymerisation

C:-Emulsion polymerisation

D:-Suspension polymerisation

Correct Answer:- Option-B

Question4:-Which of the following is a condensation polymer?
(i) Cellulose
(ii) PMMA

(iii) Kevlar
(iv) Dacron

A:-Only (i) and (ii

B:-Only (i), (iii) and (iv)

C:-None of the above

D:-All of the above

Correct Answer:- Option-B

Question5:-What is the functionality of Vinyl Chloride?

A:-One

B:-Two

C:-Three

D:-Four

Correct Answer:- Option-B

Question6:-The size of a fibre is expressed in terms _____

A:-Denier

B:-Tenacity

C:-CRIMP

D:-All of the above

Correct Answer:- Option-A

Question7:-Who is known as the "Father of Modern Polymer Science"?

A:-Hermann Staudinger

B:-Leo Baekeland

C:-Charles Goodyear

D:-W.H. Carothers

Correct Answer:- Option-A

Question8:-The polymerisation technique employed for the polymerisation of water insoluble monomers

A:-Emulsion Polymerisation

B:-Bulk Polymerisation

C:-Solution Polymerisation

D:-Suspension Polymerisation

Correct Answer:- Option-D

Question9:-Which of the following is used as blowing agents in rubber compounds?
(i) Sodium bicarbonate
(ii) Ammonium bicarbonate
(iii) DNPT (dinitroso pentamethylene tetramine)
(iv) Titanium dioxide

A:-only (i) and (ii)

B:-only (ii) and (iv)

C:-only (i), (ii) and (iii)

D:-All of the above

Correct Answer:- Option-C

Question10:-Which among the following comes under the category of thermoplastic polymers?
(i) Polystyrene
(ii) Bakelite
(iii) Nylons
(iv) Polyvinyl chloride

A:-Only (i) and (ii)

B:-Only (ii) and (iii)

C:-Only (i), (iii) and (iv)

D:-All of the above

Correct Answer:- Option-C

Question11:-Natural rubber is _____

A:-1, 2 polyisoprene

B:-cis-1,4 polyisoprene

C:-trans - 1,4 polyisoprene

D:-3, 4 polyisoprene

Correct Answer:- Option-B

Question12:-The angle of cut in a rubber tree for tapping of latex is

A:-25-30º to the vertical

B:-4-10º to the vertical

C:-25-30º to the horizontal

D:-4-10º to the horizontal

Correct Answer:- Option-C

Question13:-An example of yield stimulant for natural rubber latex is

A:-ammonia

B:-2-chloroethane phosphonic acid

C:-Sodium sulfite

D:-formaldehyde

Correct Answer:- Option-B

Question14:-Among the following which one is not a method for concentrating natural rubber latex?

A:-centrifugation

B:-creaming

C:-evaporation

D:-coagulation

Correct Answer:- Option-D

Question15:-Cuplumps and tree lace are used for making _____

A:-pale crepes

B:-sole crepes

C:-brown crepes

D:-none of the above

Correct Answer:- Option-C

Question16:-The dry-rubber content of raw natural rubber latex may be _____

A:-20%

B:-50%

C:-60%

D:-32%

Correct Answer:- Option-D

Question17:-_____ helps to prevent natural coagulation and allows the latex to remain in its liquid state for a long time.

A:-Ammonia solution

B:-Sulphuric acuid

C:-Formic acid

D:-Tamarind seed powder solution

Correct Answer:- Option-A

Question18:-Among the following which is not marketable form of natural rubber?

A:-Ribbed sheets

B:-Latex concentrate

C:-Field coagulum

D:-Crepe rubber

Correct Answer:- Option-C

Question19:-The pH of fresh latex is in the range of _____

A:-3.0 - 4.0

B:-6.5 - 7.0

C:-5.0 - 6.0

D:-7.5 - 8.0

Correct Answer:- Option-B

Question20:-Which chemical is not used for low-ammonia preservative systems?

A:-Tetramethylthiuram disulphide

B:-Zinc oxide

C:-Stearic acid

D:-Lauric acid

Correct Answer:- Option-C

Question21:-Among the following, which is not a co-polymer?

A:-SBR

B:-BR

C:-NBR

D:-IIR

Correct Answer:- Option-B

Question22:-The rubber which is not vulcanized by sulphur is _____

A:-Neoprene

B:-Nitrile rubber

C:-SBR

D:-Natural rubber

Correct Answer:- Option-A

Question23:-Which rubber has high gum tensile strength?

A:-Polybutadiene

B:-Styrene-butadiene

C:-Natural rubber

D:-Nitrile rubber

Correct Answer:- Option-C

Question24:-Most commercial process for the preparation of polybutadiene employ _____

A:-Solution polymerisation

B:-Emulsion polymerisation

C:-Bulk polymerisation

D:-Suspension polymerisation

Correct Answer:- Option-A

Question25:-Closed-cell extruded _____ sponges are used in automotive weather stripping for doors and trunk lids.

A:-SBR

B:-BR

C:-IIR

D:-EPDM

Correct Answer:- Option-D

Question26:-Isobutylene and isoprene are the monomers of _____

A:-Natural rubber

B:-Nitrile rubber

C:-Butyl rubber

D:-Neoprene

Correct Answer:- Option-C

Question27:-The most important property of nitrile rubber is _____

A:-gas impermeability

B:-oil resistance

C:-weather resistance

D:-abrasion resistance

Correct Answer:- Option-B

Question28:-_____ is prominent among elastomers for adhesives because of its combination of polarity and crystallinity.

A:-Neoprene

B:-Nitrile rubber

C:-Butyl rubber

D:-Natural rubber

Correct Answer:- Option-A

Question29:-Because of the excellent radiation resistance, these rubbers are well-suited for wire and cable coverings in nuclear applications.

A:-EPDM

B:-Nitrile

C:-CSM

D:-Neoprene

Correct Answer:- Option-C

Question30:-The monomers of polyurethane are

A:-dicarboxylic acid and diamine

B:-diisocyanate and diol

C:-dicarboxylic acid and diol

D:-diamines and diisocyanate

Correct Answer:- Option-B

Question31:-The materials in combination with vulcanising agents reduce the cure time are _____

A:-processing aids

B:-anti degradants

C:-accelerators

D:-softners

Correct Answer:- Option-C

Question32:-During mastication of rubber

A:-viscosity decreases

B:-plasticity decreases

C:-viscosity increases

D:-no change in plasticity and viscosity

Correct Answer:- Option-A

Question33:-Zinc oxide and stearic acid are added as _____ in sulphur curing system.

A:-Accelerators

B:-Antioxidants

C:-Retarders

D:-Co-activators

Correct Answer:- Option-D

Question34:-Which is a chemical blowing agent?

A:-Sodium bicarbonate

B:-Calcium carbonate

C:-Calcium silicate

D:-Chromium oxide

Correct Answer:- Option-A

Question35:-Which type of sulphur vulcanisation system provide resistance to thermal oxidation?

A:-Conventional vulcanisation system

B:-Un-accelerated sulphur vulcanisation system

C:-Semi-efficient vulcansiation system

D:-Efficient vulcanisation system

Correct Answer:- Option-D

Question36:-Among the following, which accelerator is used in room temperature vulcanisation?

A:-Zinc diethyl dithiocarbamate

B:-Sodium isopropyl xanthate

C:-Zinc salt of mercaptobenzothiazole

D:-Tetra methyl thiuram disulphide

Correct Answer:- Option-B

Question37:-Saturated rubbers are cross-linked by

A:-Sulphur vulcanisation

B:-Sulhurless vulcanisation

C:-Peroxide vulcanisation

D:-metal oxide vulcanisation

Correct Answer:- Option-C

Question38:-The materials used to ensure scorch safety of the rubber compound

A:-Processing aids

B:-Retarders

C:-Antioxidants

D:-Tackifiers

Correct Answer:- Option-B

Question39:-The strong antidegradants which discolour and stain the material are _____

A:-Phenolic compounds

B:-Amines

C:-Phosphites

D:-None of the above

Correct Answer:- Option-B

Question40:-An example for chemical plasticizer is _____

A:-xylyl mercaptan

B:-zinc oxide

C:-diphenyl guanidine

D:-stearic acid

Correct Answer:-Question Cancelled

Question41:-Addition of _____ increases hardness and modulus of the vulcanisate.

A:-Plasticisers

B:-Blowing agents

C:-Reinforcing fillers

D:-Extenders

Correct Answer:- Option-C

Question42:-The chemical used to reduce the flammability of a vulcanisate

A:-Azo compounds

B:-Antimony compounds

C:-Fluoro carbons

D:-Titanium dioxide

Correct Answer:- Option-B

Question43:-The initial tensile properties are better for a rubber vulcanisate with _____

A:-Monosulfidic linkages

B:-Disulfidic linkages

C:-Polysulfidic linkages

D:-None of these

Correct Answer:- Option-C

Question44:-An example of thickening agent used in latex compounding is _____

A:-gelatine

B:-rosin acid soap

C:-sodium salt of sulfonic acid

D:-sodium dodecyl sulfate

Correct Answer:- Option-A

Question45:-Equipment used for the preparation of very fine and stable emulsions is _____

A:-ball mill

B:-centrifuge

C:-homogeniser

D:-pearl mill

Correct Answer:- Option-C

Question46:-The dipping process in which no destabilisation agent is used, is known as

A:-Straight dipping

B:-Coagulant dipping

C:-Heat sensitised dipping

D:-Electrodeposition

Correct Answer:- Option-A

Question47:-Which one is the indirect chemical used in the manufacture of gloves?

A:-curatives

B:-antioxidants

C:-stabilisers

D:-coagulant

Correct Answer:- Option-D

Question48:-The process that keeps the residual protein level of gloves to a minimum

A:-Coagulant dipping

B:-Post leaching

C:-Slurry dip

D:-Tumbling

Correct Answer:- Option-B

Question49:-The type of defect found in dipped goods because of the presence of bubbles in the coagulant tank.

A:-Pin hole

B:-Weak spot

C:-Tear

D:-Lumps

Correct Answer:- Option-A

Question50:-Sodium silicofluoride in conjugation with zinc oxide is used in the Dunlop process as _____

A:-stabiliser

B:-curing agent

C:-gelling agent

D:-accelerator

Correct Answer:- Option-C

Question51:-Extrusion of latex compound is involved in the manufacture of _____

A:-Latex thread

B:-Gloves

C:-Latex foam

D:-None of these

Correct Answer:- Option-A

Question52:-The Talalay process is used for the manufacture of _____

A:-Surgical gloves

B:-Latex foam

C:-Latex thread

D:-Latex adhesives

Correct Answer:- Option-B

Question53:-According to BIS specification, maximum volatile matter content by mass permitted for ISNR grader is

A:-0.5%

B:-0.6%

C:-0.8%

D:-0.1%

Correct Answer:- Option-C

Question54:-Thickness of the specimen used for the determination of plasticity retention index are in the range of

A:-3.2 to 3.6 mm

B:-3 to 3.4 mm

C:-2.8 to 3.4 mm

D:-3 to 4 mm

Correct Answer:- Option-A

Question55:-In order to find ash content of a ISNR sample it should be heated
(i) At 550ºC
(ii) At 500ºC
(iii) under nitrogen blanket
(iv) in presence of oxygen

A:-(i) and (ii)

B:-(i) and (iv)

C:-(ii) and (iii)

D:-(ii) and (iv)

Correct Answer:- Option-B

Question56:-Catalytic mixture used in the determination of nitrogen content of ISNR consist of

(i) Selenium powder
(ii) Ferrous sulphate
(iii) Potassium sulphate
(iv) Copper sulphate

A:-(i) and (ii)

B:-(i), (ii) and (iii)

C:-(i), (iii) and (iv)

D:-(i), (ii) and (iv)

Correct Answer:- Option-C

Question57:-According to BIS specification test for determining dry rubber content, the TSC of the concentrated latex sample is adjusted to _____ before coagulating it.

A:-20%

B:-30%

C:-25%

D:-32%

Correct Answer:- Option-A

Question58:-Indicator used for the determination of the alkalinity of concentrated latex is

A:-Phenolpthalein

B:-Methyl Red

C:-Thymol Blue

D:-Bromocresol Green

Correct Answer:- Option-B

Question59:-KOH number of latex is the number of grams of potassium hydroxide equivalent to the radicals combined with ammonia in latex concentrate containing _____ g of total solids.

A:-20

B:-50

C:-80

D:-100

Correct Answer:- Option-D

Question60:-Markham still apparatus is used for the determination of

A:-Ash content

B:-Viscosity of latex

C:-VFA number

D:-Sludge content

Correct Answer:- Option-C

Question61:-Indian standard which describe the specification tests of concentrated latex is

A:-IS 3708

B:-IS 2414

C:-IS 3660

D:-IS 4588

Correct Answer:- Option-A

Question62:-During MST testing, the speed of stirrer of apparatus is maintained at

A:-14,000 rev/min.

B:-1400 rev/min.

C:-10,000 rev/min.

D:-1000 rev/min.

Correct Answer:- Option-A

Question63:-Which among the following is a thermosetting polymer?

A:-Bakelite

B:-Arylite

C:-Grilamid

D:-Vecton

Correct Answer:- Option-A

Question64:-Which process is used for the production of HDPE?

A:-High pressure process

B:-Zeigler process

C:-Phillips process

D:-Metallocene polymerization

Correct Answer:-Question Cancelled

Question65:-Type of polypropylene that cannot crystallize

A:-Isotactic

B:-Syndiotactic

C:-Atactic

D:-All types of polypropylenes can crystallize

Correct Answer:- Option-C

Question66:-Glass transition temperature of PVC is

A:-−70ºC

B:-80ºC

C:-100ºC

D:-147ºC

Correct Answer:- Option-B

Question67:-Tower process for the production of polystyrene is a

A:-Bulk polymerization

B:-Solution polymerization

C:-Suspension polymerization

D:-Emulsion polymerization

Correct Answer:- Option-A

Question68:-PMMA produced by Bulk polymerization is difficult to melt process. Why?

A:-Its molecular weight is high

B:-It is having a highly cross linked structure

C:-Higher amount of impurities in it

D:-Low thermal stability of polymer

Correct Answer:- Option-A

Question69:-During the polymerization of nylon 6,6, acetic acid is added in to the reaction system as a

A:-Molecular weight modifier

B:-Antifoaming agent

C:-Chain transfer agent

D:-Catalyst

Correct Answer:- Option-A

Question70:-Example for a hardener used for epoxy resin is

A:-Diamino diphenyl methane

B:-Azobis isobutyro nitrile

C:-Benzoyl peroxide

D:-Thymoquinone

Correct Answer:- Option-A

Question71:-Which among the following is/are a continuous mixerls?
(i) Two roll mill
(ii) Twin screw extruder
(iii) Banbury mixer
(iv) MVX machine

A:-(i) and (iii)

B:-(i) and (ii)

C:-(ii) and (iv)

D:-(ii) only

Correct Answer:- Option-C

Question72:-Dispersive mixing is
(i) Size reduction of the agglomerates of compounding ingredients
(ii) Uniform distribution of compounding ingredients in rubber
(iii) Achieving lower viscosity compound

A:-(i) only

B:-(ii) only

C:-(i) and (ii)

D:-(i), (ii) and (iii)

Correct Answer:- Option-A

Question73:-Which type of compression mold produce products with lower density?

A:-Positive

B:-Flash

C:-Semi positive

D:-None of the above

Correct Answer:-Question Cancelled

Question74:-In pot transfer molding, compound is transferred from pot to cavity through a vertical channel called

A:-Nozzel

B:-Sprue

C:-Die

D:-Gate

Correct Answer:- Option-B

Question75:-In an injection molding machine with two plate mold, the maximum distance between the stationery and moving platen is called

A:-Day light

B:-Cycle

C:-L/O ratio

D:-Runner

Correct Answer:- Option-A

Question76:-The angle formed between the flight and the plane normal to the screw axis in an extruder is

A:-Helix angle

B:-Land angle

C:-Pitch angle

D:-Taper angle

Correct Answer:- Option-A

Question77:-In extrusion blow molding the ratio of the final tube diameter to original die diameter is known as

A:-Blow rate

B:-Blown up ratio

C:-Stretch ratio

D:-Throughput

Correct Answer:- Option-B

Question78:-Perison programming in extrusion blow molding is

A:-Adjusting the extrusion screw speed to obtain Parison with uniform thickness

B:-Adjusting the die to get different wall thickness for parison

C:-Positioning Parison inside the mold

D:-Tuning blowing pressure

Correct Answer:- Option-B

Question79:-Among the polymers given below which polymer is used in reaction injection molded products.

A:-Nylon 6, 6

B:-Polyurethane

C:-Polyethylene

D:-Polylectic acid

Correct Answer:- Option-B

Question80:-L/O ratio 5 can be used for

A:-Hot feed rubber extruder

B:-Cold feed rubber extruder

C:-Plastic extruders

D:-Vented extruder

Correct Answer:-Question Cancelled

Question81:-Which among the following is produced by thermoforming?

A:-Blistering packaging

B:-Pipes

C:-Bottle caps

D:-Package films

Correct Answer:- Option-A

Question82:-PET Bottles are manufactured by

A:-Extrusion blow molding

B:-Stretch blow molding

C:-Rotation molding

D:-Thermo forming

Correct Answer:- Option-B

Question83:-If the mooney viscosity value of a rubber sample is 50-UML 1+4 (100ºC) the value 1 represents

A:-Sample loading time

B:-Preheating time

C:-Time after starting the motor at which the reading is taken

D:-Viscosity number

Correct Answer:- Option-B

Question84:-In cure characteristics study by ODR with 3º oscillating amplitude, scorch time is represented as

A:-t_{S^2}

B:-t_{S^5}

C:-t_5

D:-t_3

Correct Answer:-Question Cancelled

Question85:-Tensile strength is calculated by dividing the _____ by the average original cross-sectional area.

A:-Load at break

B:-Maximum load

C:-Load at the straight of experiment

D:-Average load

Correct Answer:- Option-B

Question86:-Which among the following is a unit of tear strength?

A:-N/m^2

B:-kN/m

C:-kg.cm

D:-J/m^2

Correct Answer:- Option-B

Question87:-Durometer is used to measure

A:-Hardness

B:-Resiliance

C:-Elasticity

D:-Plasticity

Correct Answer:- Option-A

Question88:-In an abrasion resistance test using DIN abrader, the volume loss of standard rubber in cubic millimeters is V_s and volume loss of test rubber in cubic millimeters is V_t

A:-$\frac{V_s}{V_t}\times 100$

B:-$\frac{V_t}{V_s}\times 100$

C:-$\frac{V_s}{V_t}$

D:-$V_s \times V_t$

Correct Answer:-Question Cancelled

Question89:-In a compression set test at constant strain, the original thickness of specimen = 12.5mm. Final thickness of specimen = 12.2 mm and thickness of the space bar used = 9.5 mm. Find the compression set of specimen.

A:-0.1%

B:-10%

C:-2.4%

D:-1%

Correct Answer:- Option-B

Question90:-Vicat softening temperature is the temperature at which the specimen is penetrated to a depth of _____ by a flat ended needle with a $1mm^2$ cross section.

A:-1mm

B:-1 in

C:-0.1 in

D:-10mm

Correct Answer:- Option-A

Question91:-Which apparatus is used for the determination of melting point?

A:-TGA apparatus

B:-MST apparatus

C:-Fisher Johns apparatus

D:-Bunsen burner

Correct Answer:- Option-C

Question92:-Which among the following statements is correct about MFI?
(i) MFI is temperature dependent
(ii) MFI is directly proportional to molecular weight
(iii) MFI is inversely proportional to molecular weight

A:-(i) only

B:-(ii) only

C:-(i) and (ii)

D:-(i) and (iii)

Correct Answer:- Option-D

Question93:-Specified rim diameter of a cylce tyre is rounded off to the nearest whole number to get

A:-Nominal rim diameter

B:-Specified rim width

C:-Nominal rim width

D:-Sectional width

Correct Answer:- Option-A

Question94:-Cord strength of cycle tyre is tested in accordance with

A:-IS 4910

B:-IS 4824

C:-IS 7133

D:-IS 3400

Correct Answer:- Option-A

Question95:-In accelerated ageing test of cycle tube, samples are subjected to an ageing condition of

A:-140 ± 2°C for 72 hours

B:-70 ± 1°C for 72 hours

C:-100 ± 1°C for 70 hours

D:-200 ± 1°C for 48 hours

Correct Answer:- Option-B

Question96:-Which among the following tests is not a specification test of cycle tube?

A:-Tension set

B:-Tensile strength and elongation at break

C:-Casing strength

D:-Detaching test

Correct Answer:- Option-C

Question97:-As per IS 10702 the length and breadth of split tear sample should be

A:-10 mm and 12 mm

B:-100 mm and 25 mm

C:-100 mm and 30 mm

D:-75 mm and 12 mm

Correct Answer:- Option-B

Question98:-In flexing test of latex foam sample is subjected to a continued flexing with an indentor for 250000 cycles at _____ cycles per second.

A:-5

B:-8

C:-
4

D:-10

Correct Answer:- Option-C

Question99:-The load in kilograms required to give an indentation in the sample equivalent to 10 percentage of the original thickness of the latex foam sample under specified condition is known as

A:-Hardness

B:-Reduced hardness

C:-Indentation hardness

D:-Storage hardness

Correct Answer:- Option-C

Question100:-Hardness required for a hawai sole as per IS 10702 is

A:-45±5 Shore A

B:-40±5 Shore A

C:-50±5 Shore A

D:-55±5 Shore A

Correct Answer:- Option-A