

## PROVISIONAL ANSWER KEY

Question 84/2023/OL

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Department Technical Education

Question1:-Who is known as the "Father of Modern Polymer Science"?

A:-Wallace Carothers

B:-Hermann Staudinger

C:-P.J. Flory

D:-Charles Goodyear

Correct Answer:- Option-B

Question2:-Monomers used in addition polymerization is

A:-Saturated compounds

B:-Unsaturated compounds

C:-Bifunctional saturated compounds

D:-Trifunctional saturated compounds

Correct Answer:- Option-B

Question3:-Polyester fibre are prepared by

A:-Melt spinning

B:-Dry spinning

C:-Wet spinning

D:-All the above

Correct Answer:- Option-A

Question4:-Functionality of Adipic acid is

A:-One

B:-Two

C:-Three

D:-Four

Correct Answer:- Option-B

Question5:-Which polymer is used in bullet-proof vests?

A:-Polycarbonate

B:-Polyurethane

C:-Polyethylene

D:-Kevlar

Correct Answer:- Option-D

Question6:-Which of the following polymers can be synthesized by ring opening polymerization?

A:-Nylon 6

B:-Poly (ethylene terephthalate)

C:-Polyurethane

D:-Polyethylene

Correct Answer:- Option-A

Question7:-Which protein plays a role in the latex coagulation mechanism by bridging between rubber particles?

A:-Globulins

B:-Hevein

C:-Albumins

D:-Prolamins

Correct Answer:- Option-B

Question8:-Identify the component which has the maximum composition in the Hevea rubber latex?

A:-Rubber hydrocarbon

B:-Sugar

C:-Phospholipids

D:-Water

Correct Answer:- Option-D

Question9:-In the production of PLC, yellow pigments can be destroyed by

A:-Spontaneous coagulation

B:-Putrefaction

C:-Fractional coagulation

D:-None of these

Correct Answer:- Option-C

Question10:-The concentration of Ammonia used for preserving field latex is

A:-0.7% by weight on latex

B:-0.2% by weight on latex

C:-0.025% by weight on latex

D:-1% by weight on latex

Correct Answer:- Option-D

Question11:-Which among the tapping system is adopted one or two years before replanting or replacing crop?

- A:-Puncture tapping
- B:-Slaughter tapping
- C:-Controlled upward tapping
- D:-Ladder tapping

Correct Answer:- Option-B

Question12:-Natural rubber latex can be coagulated using

- A:-Ammonia
- B:-Formic acid
- C:-CBS
- D:-Silica

Correct Answer:- Option-B

Question13:-Glass transition temperature of Natural Rubber is

- A:-+100°C
- B:--100°C
- C:--70°C
- D:-+70°C

Correct Answer:- Option-C

Question14:-Surgical gloves are manufactured by

- A:-Dipping
- B:-Extrusion
- C:-Casting
- D:-Gelling

Correct Answer:- Option-A

Question15:-Parthenium Argentatum is commonly known as

- A:-Gauyule rubber
- B:-Panama rubber
- C:-Para rubber
- D:-India rubber

Correct Answer:- Option-A

Question16:-Electro decantation is related with

- A:-Foaming of latex
- B:-Coagulation of latex
- C:-Sludge removal from latex
- D:-Concentration of latex

Correct Answer:- Option-D

Question17:-Linear low density polyethylene is a copolymer of ethylene and a small

fraction of \_\_\_\_\_.

A:-Butene

B:-Isoprene

C:-Butadiene

D:-Butane

Correct Answer:- Option-A

Question18:-In Lassaigne's test for the detection of halogens, the sodium fusion extract is first boiled with concentrated nitric acid. This is performed to

A:-Remove silver halides

B:-Dissolve  $Ag_2S$

C:-Decompose  $Na_2S$  and  $NaCN$

D:-Dissolve  $AgCN$

Correct Answer:- Option-C

Question19:-Which of the following fibre is known as "Dacron"?

A:-Polyester

B:-Polyurethane

C:-Acrylic

D:-Nylon

Correct Answer:- Option-A

Question20:-Resole is an example for

A:-Thermoplastic elastomer

B:-Thermosetting polymer

C:-Thermoplastic polymer

D:-Synthetic Rubber

Correct Answer:- Option-B

Question21:-Which of the following is a thermoplastic polymer?

A:-PVC

B:-Bakelite

C:-Epoxy resin

D:-None of these

Correct Answer:- Option-A

Question22:-The catalyst used in the polymerization of propylene is

A:- $MoO_2$

B:- $TiCl_4 + Al(C_2H_5)_3$

C:- $HCl$

D:- $Ni + Cd$

Correct Answer:- Option-B

Question23:-The term "Tenacity" is associated with

A:-Rubber

B:-Solvent

C:-Polymerization

D:-Fibre

Correct Answer:- Option-D

Question24:-Which of the following grade of polystyrene is well suited for the purpose of insulating applications?

A:-Expandable

B:-General Purpose

C:-HIPS

D:-All the above

Correct Answer:- Option-A

Question25:-An example for dienes used in the manufacture of EPDM is

A:-Ethylidene norbornene

B:-Dicyclopentadiene

C:-Vinyl norbornene

D:-All the above mentioned

Correct Answer:- Option-D

Question26:-Identify the monomers of butyl rubber.

A:-Isoprene and Isobutylene

B:-Isoprene and Propylene

C:-Isobutylene and methylene

D:-Isobutylene and ethylene

Correct Answer:- Option-A

Question27:-Which is an inorganic polymer?

A:-Nitrile rubber

B:-Polyurethane rubber

C:-Silicone rubber

D:-Chloroprene rubber

Correct Answer:- Option-C

Question28:-Chloroprene rubber is vulcanized using

A:-Metal oxide

B:-Epoxy

C:-Oxime

D:-Peroxide

Correct Answer:- Option-A

Question29:-The synthetic rubber used in the inner tubes of tyre is

A:-SBR

B:-NR

C:-IIR

D:-Hypalon

Correct Answer:- Option-C

Question30:-Higher acrylonitrile content in NBR leads to

A:-Improved hardness

B:-Good tensile strength

C:-Good oil resistance

D:-All the above mentioned

Correct Answer:- Option-D

Question31:-An example for a homopolymer is

A:-Polybutadiene rubber

B:-Nitrile Rubber

C:-Styrene butadiene rubber

D:-Acrylonitrile butadiene styrene

Correct Answer:- Option-A

Question32:-Buna N is a copolymer of \_\_\_\_\_ and \_\_\_\_\_.

A:-Styrene and Butadiene

B:-Acrylonitrile and Butadiene

C:-Isoprene and Isobutylene

D:-Dicyclopentadiene and Isobutylene

Correct Answer:- Option-B

Question33:-Ribbed Smoked sheets are graded according to the standards as per

A:-IS 3708 : 1968

B:-IS 15361 : 2003

C:-IS 5599 : 1999

D:-IS 6450 : 1971

Correct Answer:- Option-B

Question34:-DIN Abrader is used to measure

A:-Tensile strength

B:-Resilience

C:-Abrasion resistance

D:-Hardness

Correct Answer:- Option-C

Question35:-ASTM D412 standard defines procedures used to evaluate \_\_\_\_\_ properties of vulcanized thermoset rubber and thermoplastic elastomers.

A:-Hardness

B:-Tensile

C:-Compression set

D:-Resilience

Correct Answer:- Option-B

Question36:-\_\_\_\_\_ indicates the resistance of raw rubber to deterioration during processing or aging.

A:-FEF

B:-PRI

C:-DPNR

D:-Po

Correct Answer:- Option-B

Question37:-Hardness is measured using

A:-Durometer

B:-UTM

C:-Screw gauge

D:-Abrader

Correct Answer:- Option-A

Question38:-In tensile testing, the standard rate of grip separation in rubbers is

A:- $120 \pm 50$  mm/min

B:- $75 \pm 50$  mm/min

C:- $500 \pm 50$  mm/min

D:- $50 \pm 50$  mm/min

Correct Answer:- Option-C

Question39:-The percentage of dirt in ISNR 5 is

A:-0.05%

B:-5%

C:-0.5%

D:-0.005%

Correct Answer:- Option-A

Question40:-Which among the following parameter is considered for grading ISNR?

A:-Dirt Content

B:-KOH number

C:-Viscosity

D:-Cure rate

Correct Answer:- Option-A

Question41:-As per ASTM D395 for the determination of compression set under constant force in air, a force of \_\_\_\_\_ is applied to the specimen for a set time at a set temperature.

A:-1.8 kN

B:-1 kN

C:-2 kN

D:-3 kN

Correct Answer:- Option-A

Question42:-ISNR grade which doesn't show storage hardness

A:-ISNR-50

B:-ISNR-20

C:-ISNR-5

D:-ISNR-3 CV

Correct Answer:- Option-D

Question43:-Higher VFA number in a natural rubber latex indicates

A:-Loss of colloidal stability

B:-High level of Ammonia

C:-Low level of Ammonia

D:-Improved colloidal stability

Correct Answer:- Option-A

Question44:-Viscosity of latex is measured using

A:-ODR

B:-Brookfield Viscometer

C:-Mooney Viscometer

D:-All the above

Correct Answer:- Option-B

Question45:-Magnesium content of latex is estimated by direct titration with \_\_\_\_\_ using Erichrome Black T as indicator.

A:-0.02 N  $Ba(OH)_2$  Solution

B:-0.1 N  $HCl$

C:-0.005 M EDTA Solution

D:-0.05 N  $NaOH$  Solution



Correct Answer:- Option-C

Question46:-As per IS 5430 - 1981, the maximum permissible value for Coagulum content for preserved natural rubber latices is

A:-1% by mass of latex

B:-0.15% by mass of latex

C:-0.10% by mass of latex

D:-0.05% by mass of latex

Correct Answer:- Option-D

Question47:-Water soluble ingredients can be added into latex as \_\_\_\_\_.

A:-Dispersions

B:-Solutions

C:-Emulsions

D:-Foaming agent

Correct Answer:- Option-B

Question48:-Dispersions can be prepared using

A:-Ball mills

B:-Vibration mills

C:-Colloid mills

D:-All the above mentioned

Correct Answer:- Option-D

Question49:-TMTD is added into the latex as \_\_\_\_\_.

A:-Emulsion

B:-Dispersion

C:-Solution

D:-None of the above mentioned

Correct Answer:- Option-B

Question50:-Identify the creaming agent used for concentrating latex

A:-Tamarind seed powder

B:-Vulcafor F

C:-Stearic acid

D:-Sodium Silicofluoride

Correct Answer:- Option-A

Question51:-KOH is added to the latex compound as

A:-Emulsions

B:-Dispersion

C:-Suspension

D:-None of the above mentioned

Correct Answer:- Option-D

Question52:-Dry rubber content of field latex can be measured roughly using

A:-Metrolac meter

B:-Lactometer

C:-Saccharometer

D:-Acidometer

Correct Answer:- Option-A

Question53:-Which is used for the proper alignment of the nozzle and mold of the injection molding machine?

A:-Spider

B:-Sprue

C:-Register ring

D:-Sprue bush

Correct Answer:- Option-C

Question54:-Which type of cooling system provides the most efficient heat exchange in the calendaring process?

A:-Cored roll

B:-Surface rolls

C:-Central rolls

D:-Peripherally drilled rolls

Correct Answer:- Option-D

Question55:-What is the compression ratio of a cold feed extruder?

A:-1:1

B:-2.5:1

C:-1.08:1

D:-6.08:1

Correct Answer:- Option-B

Question56:-What type of compression mold is most suitable for extremely soft and hard compounds?

A:-Straight

B:-Flash

C:-Positive

D:-Semi-positive

Correct Answer:- Option-C

Question57:-The efficiency of a machine is defined as the ratio of the output work produced by the machine to \_\_\_\_\_.

A:-the raw material used

B:-energy consumed

C:-labor work

D:-cost of machine

Correct Answer:- Option-B

Question58:-Which is the corrective maintenance of a machine?

A:-Lubricate rotating parts to prevent premature wear.

B:-Check machinery power to optimize energy efficiency.

C:-Repair or replace equipment before it fails.

D:-Disassembling parts and replacing a worn component.

Correct Answer:- Option-D

Question59:-Which device is used for constant temperature maintenance?

A:-Thermocouple

B:-Thermometer

C:-Thermostat

D:-Pyrometer

Correct Answer:- Option-C

Question60:-Which molding method is used for making carbonated beverage bottles?

A:-Injection molding

B:-Extrusion blow molding

C:-Stretch blow molding

D:-Blow molding

Correct Answer:- Option-C

Question61:-The ratio of the die cross-section and extrudate cross-section is termed as \_\_\_\_\_.

A:-L/D ratio

B:-Compression ratio

C:-Dieswell

D:-Fill factor

Correct Answer:- Option-C

Question62:-Some rubber processing machines are given below, which one has interlocking rotors and rotates at the same speed.

A:-Mixing mill

B:-Banbury

C:-Intermix

D:-Kneader

Correct Answer:- Option-C

Question63:-Which FRP process is most suitable for chemical storage tank manufacturing?

- A:-Centrifugal Casting
- B:-Vacuum bag molding
- C:-Hand layup
- D:-Pultrusion

Correct Answer:- Option-A

Question64:-Which is the open method of FRP manufacturing?

- A:-Pultrusion
- B:-Continuous lamination
- C:-Matched die molding
- D:-Injection molding

Correct Answer:- Option-A

Question65:-Which standard system is used for the identification of the hazard material for emergency response?

- A:-OSHA
- B:-NFPA 704
- C:-NFPA 500
- D:-ICSCS

Correct Answer:- Option-B

Question66:-The chemicals, which produce suffocation from lack of oxygen are known as \_\_\_\_\_.

- A:-Peroxides
- B:-Narcotics
- C:-Asphyxiants
- D:-Carcinogens

Correct Answer:- Option-C

Question67:-LD 50 and LC 50 are the measurements of \_\_\_\_\_.

- A:-fire resistance
- B:-toxicity
- C:-hazard rating
- D:-oxidation

Correct Answer:- Option-B

Question68:-Which rubber-to-metal bonding system is most suitable for large rubber roller manufacturing?

- A:-Epoxy adhesives

B:-Ebonite bonding

C:-Isocyanate bonding

D:-Brass-plating

Correct Answer:- Option-B

Question69:-Estimations done by standard iodine solutions are called \_\_\_\_\_.

A:-Iodometry

B:-Iodimetry

C:-Iodine absorption

D:-Iodolysis

Correct Answer:- Option-B



Question70:-

What is the meaning of this chemical hazard symbol?

A:-Flammable liquid

B:-Explosive

C:-Oxidizable liquid

D:-Open flame

Correct Answer:- Option-C

Question71:-Which indicator should be used for complexometric titrations?

A:-Starch

B:-Phenolphthalein

C:-Eriochrome black T

D:-Methyl orange

Correct Answer:- Option-C

Question72:-Which intermediate solution is used in iodometry for the estimation of potassium dichromate?

A:-Potassium iodide

B:-Sodium thiosulphate

C:-Starch

D:-Buffer

Correct Answer:- Option-B

Question73:-The hardness of water is expressed in \_\_\_\_\_.

A:-Shore O

B:-Degree Celsius

C:-Degrees

D:-Grams

Correct Answer:- Option-C

Question74:-Which of the following solution should be used for eye bathing, when acids get in the eyes at the laboratory?

A:-2%  $KOH$

B:-2%  $NaOH$

C:-2%  $NaHCO_3$

D:-2%  $Na_2CO_3$

Correct Answer:- Option-C

Question75:-Solutions of a weak acid and its conjugate base or weak base and its conjugate acid can maintain pH is known as \_\_\_\_\_.

A:-Indicator

B:-Titrant

C:-EDTA

D:-Buffer

Correct Answer:- Option-D

Question76:-How do you make 0.1N aqueous  $NaOH$  solution?

A:-40 gm  $NaOH$  in 1 litre water

B:-400 gm  $NaOH$  in 1000 ml water

C:-4 gm  $NaOH$  in 1000 ml water

D:-40 gm  $NaOH$  in 100 ml water

Correct Answer:- Option-C

Question77:-Which of the given parameter value increases with the magnesium content?

A:-KOH number

B:-DRC

C:-Coagulum content

D:-Sludge content

Correct Answer:- Option-D

Question78:-Hearing protection is required when noise levels exceed OSHA's PEL of \_\_\_\_\_ dBA.

A:-80

B:-90

C:-100

D:-110

Correct Answer:- Option-B

Question79:-Which equipment is used in the determination of the KOH Number of

latex?

A:-Markham still

B:-Kjheldhal

C:-pH meter

D:-Condenser

Correct Answer:- Option-C

Question80:-Which of the following chemical is used as a coagulating agent in the VFA number determination of latex?

A:-10% Ammonium sulfate

B:-30% Ammonium sulfate

C:-30% Ammonium acetate

D:-50% Ammonium acetate

Correct Answer:- Option-B

Question81:-What is the function of an Electrostatic precipitator in industries?

A:-Device for pneumatic system

B:-Device for electrical heating

C:-Device for material handling

D:-Device for pollution control

Correct Answer:- Option-D

Question82:-Which of the following is most considered for approved eye protection in labs?

A:-goggles

B:-goggle glasses meeting ANSI standard Z57

C:-Reading glasses

D:-Goggle glass meeting ANSI standard Z87

Correct Answer:- Option-D

Question83:-Which is calculated as the percentage of the specimen's permanent deformation to its original thickness?

A:-Compression set under a constant deflection

B:-Compression set under a constant force

C:-Tension set under a constant strain

D:-Tension set under a constant force

Correct Answer:- Option-B

Question84:-The hazard rating diamond of a chemical label is marked 3 in the blue zone. What does this mean?

A:-The chemical is a minimum health hazard

B:-The chemical is moderately explosive

C:-The chemical is a simple asphyxiant

D:-The chemical is a serious health hazard

Correct Answer:- Option-D

Question85:-Which part of analytical balance is directly linked with central agate?

A:-Pans

B:-Stirrups

C:-Pointer

D:-Lever

Correct Answer:- Option-D

Question86:-If the rider is placed at the <sup>10<sup>th</sup></sup> small division from the center of the beam on the right side, then the effective mass due to the rider is \_\_\_\_\_.

A:-2 mg

B:-0.002 mg

C:-0.2 mg

D:-2 gm

Correct Answer:- Option-A

Question87:-What is the first remedy for bromine burn accidents in the laboratory?

A:-Wash with water and olive oil

B:-Wash with petrol and apply olive oil

C:-Wash with alkali and waer

D:-Wash with glycerin and alkali

Correct Answer:- Option-B

Question88:-Which laboratory flask is used for Vacuum filtration?

A:-Conical flask

B:-Kjheldhal flask

C:-Buchner flask

D:-Pear-shaped flasks

Correct Answer:- Option-C

Question89:-The filled volume of an internal mixer = \_\_\_\_\_.

A:-Filled volume\*Specific gravity of mix

B:-Net chamber volume\*Fill factor

C:-Volume cost/density

D:-Total mass/density

Correct Answer:- Option-B

Question90:-Which curing system is suitable for the epoxy resin to obtain high alkali resistance?



A:-Acid

B:-Anhydride

C:-Amine

D:-Alkali

Correct Answer:- Option-C

Question91:-What is the function of styrene in UP-resin compounding?

A:-The curing agent of UP resin

B:-Filler

C:-Diluent of UP resin

D:-Increase the viscosity of UP resin

Correct Answer:- Option-C

Question92:-Which catalyst is used for elevated temperature of curing of UP resin?

A:-Methyl ethyl ketone peroxide

B:-Cyclohexanone peroxide

C:-Cobalt naphthenate

D:-Benzoyl peroxide

Correct Answer:- Option-D

Question93:-Which promotes good adhesion between fibrous reinforcement and resin matrix?

A:-MEKP

B:-Styrene

C:-Vinyl trichlorosilane

D:-Clay

Correct Answer:- Option-C

Question94:-Which is used as a UV stabilizer?

A:-Antimony trioxide

B:-PPD

C:-Benzotriazole

D:-Lead oxide

Correct Answer:- Option-C

Question95:-Which ingredient increases the tinctorial power and fastness to light of rubber product?

A:-Carbon black

B:-Clay

C:-Titanium dioxide

D:-Calcium carbonate

Correct Answer:- Option-C

Question96:-Which is used as a co-agent in peroxide curing of rubber?

A:-Ethylene thio urea

B:-Try allyl isocyanurate

C:-Thiuramdisulphide

D:-Thiazoles

Correct Answer:- Option-B

Question97:-What is the function of ethylene thio urea in Chloroprene rubber compounding?

A:-Acid absorbent

B:-Accelerator

C:-Antioxidant

D:-Activator

Correct Answer:- Option-B

Question98:-Which type of carbon black increases the conductivity of rubber compounds?

A:-Acetylene black

B:-ISAF

C:-Thermal black

D:-GPF

Correct Answer:- Option-A

Question99:-Which is the most suitable reinforcing filler for fluorocarbon rubbers?

A:-ISAF

B:-Clay

C:-Medium thermal black

D:-Precipitated silica

Correct Answer:- Option-C

Question100:-Which curing system is suitable for saturated rubbers for high-temperature resistance?

A:-Sulphur-CV system

B:-Sulphur-EV system

C:-Peroxide

D:-Metal oxide

Correct Answer:- Option-C