

Maharashtra Public Service Commission

Notations :

- 1.Options shown in green color and with ✓ icon are correct.
- 2.Options shown in red color and with ✗ icon are incorrect.

Question Paper Name :	Assistant Chemical Analyser General State
Subject Name :	Assistant Chemical Analyser General State Service Group B
Actual Answer Key :	Yes
Calculator :	None
Magnifying Glass Required? :	No
Ruler Required? :	No
Eraser Required? :	No
Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	Yes
Highlighter :	No
Auto Save on Console?	Yes
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No
Show Progress Bar :	No
Is this Group for Examiner? :	No
Examiner permission :	Cant View

Show Progress Bar? : No

Enable Mark as Answered Mark for Review and Clear Response : Yes

Maximum Instruction Time : 0

Is Section Default? : null

Question Number : 1 Question Id : 630680149724 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following methods is used in enzyme preparation according to the property of the enzyme?

Options :

- ✘ Thin layer chromatography
- ✘ Gel filtration
- ✘ Dialysis
- ✔ Affinity chromatography

Question Number : 2 Question Id : 630680149725 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following tracers is useful for interrelationship among 4-methylsterols and 4,4-dimethyl sterols?

Options :

- ✘ ^{31}P phosphate
- ✘ ^{15}N nitrate
- ✔ ^{14}C acetate
- ✘ ^{18}S sulphate

Question Number : 3 Question Id : 630680149726 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following tracer is used in the plant growth studies for the uptake of calcium through stem from the soil?

Options :

1. ✓ ^{45}Ca

2. ✗ ^{15}N

3. ✗ ^{31}P

4. ✗ ^{40}Ar

Question Number : 4 Question Id : 630680149727 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following creatine kinases levels are higher in children?

Options :

1. ✗ CK-MM and CK-BB

2. ✗ CK-MM and CK-BK

3. ✓ CK-MB and CK-BB

4. ✗ CK-BB and CK-BK

Question Number : 5 Question Id : 630680149728 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

What are the activators in trypsinogen and proelastase zymogens, respectively?

Options :

1. ✗ Pepsin and trypsin

2. ✗ Trypsin and rennin

3. ✓ Enterokinase and trypsin

4. ✗ Pepsin and enterokinase

Question Number : 6 Question Id : 630680149729 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Who discovered ABO blood group system?

Options :

1. ✘ Georg Simon
2. ✔ Karl Landsteiner
3. ✘ Enrico Fermi
4. ✘ Henri Becquerel

Question Number : 7 Question Id : 630680149730 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following arteries is involved in carrying deoxygenated blood from the right ventricle to the lungs?

Options :

1. ✔ Pulmonary artery
2. ✘ Aorta
3. ✘ Systemic artery
4. ✘ Lingual artery

Question Number : 8 Question Id : 630680149731 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

The antigens for Rh and ABO blood groups are present on:

Options :

1. ✘ white blood cells
2. ✘ chromosomes
3. ✘ platelets

4. ✓ red blood cells

Question Number : 9 Question Id : 630680149732 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

What is the main use of Donnan membrane technique (DMT)?

Options :

1. ✗ Anions and cations detection
2. ✗ Elemental analysis
3. ✗ Detection of crystalline compounds
4. ✓ Measure free and labile metal in solution

Question Number : 10 Question Id : 630680149733 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

What are the three different temperatures reached during the polymerase chain reaction to facilitate the denaturation and hybridisation of the DNA strands?

Options :

1. ✗ Starting temperature is elevated to 72°C, then lowered to 60°C and again increased to 62°C.
2. ✗ Starting temperature is elevated to 90°C, then lowered to 60°C and again increased to 78°C.
3. ✓ Starting temperature is elevated to 95°C, then lowered to 60°C and again increased to 72°C.
4. ✗ Starting temperature is elevated to 85°C, then lowered to 60°C and again increased to 75°C.

Question Number : 11 Question Id : 630680149734 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Taq polymerase derived from the thermophilic bacteria *Thermus aquaticus* is active at:

Options :

1. ✗ 98°C
2. ✗ 65°C

3. ✓ 72°C

4. ✗ 42°C

Question Number : 12 Question Id : 630680149735 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Polymerase Chain Reaction is a revolutionary method developed by _____.

Options :

1. ✗ Paul Flory

2. ✗ Peter Debye

3. ✓ Kary Mullis

4. ✗ Francis Mark

Question Number : 13 Question Id : 630680149736 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following is used to amplify or copy, a specific DNA target from a mixture of DNA molecules?

Options :

1. ✗ DNA finger printing

2. ✗ Gel electrophoresis

3. ✗ Electrophoresis

4. ✓ Polymerase Chain Reaction

Question Number : 14 Question Id : 630680149737 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following separations is NOT possible by using electrophoresis?

Options :

1. ✗ Carbohydrates

2. ✘ Nucleic acids
3. ✘ Proteins
4. ✔ Lipids

Question Number : 15 Question Id : 630680149738 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following species is used for extraction of Agarose?

Options :

1. ✔ *Gelidium nudifrons*
2. ✘ *Lycasusican esculentum*
3. ✘ *Ficum benghalensis*
4. ✘ *Agrostis stolonifera*

Question Number : 16 Question Id : 630680149739 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following technique separates charged particles using electric field?

Options :

1. ✘ Hydrolysis
2. ✘ Distillation
3. ✔ Electrophoresis
4. ✘ Crystallisation

Question Number : 17 Question Id : 630680149740 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Electrophoretic mobility is the ratio of :

Options :

1. ✘ it's intensity, and the velocity of the biomolecule in the electric field

2. ✓ the velocity of the biomolecule in the electric field, and it's intensity
3. ✗ the distance of the biomolecule in the electric field, and it's intensity
4. ✗ the velocity of the biomolecule in the electric field, and it's intra molecular distance

Question Number : 18 Question Id : 630680149741 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

In younger animals, carbohydrates are helpful in the absorption of:

Options :

1. ✗ magnesium and sulphur
2. ✗ sodium and chlorine
3. ✓ calcium and phosphorous
4. ✗ phosphorous and potassium

Question Number : 19 Question Id : 630680149742 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Radioimmunoassay (RIA) is a very sensitive in vitro technique used to measure concentrations of

Options :

1. ✗ Plasma
2. ✗ Urine
3. ✓ Hormone levels in blood
4. ✗ Proteins

Question Number : 20 Question Id : 630680149743 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Who among the following developed the radioimmunoassay technique for measuring concentration of insulin in blood?

Options :

1. ✘ Carl Linnaeus
2. ✘ Louis-Charles (jointly)
3. ✔ Berson-Yalow (jointly)
4. ✘ Francis Crick

Question Number : 21 Question Id : 630680149744 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following are the examples of polysaccharides and oligosaccharides, respectively?

Options :

1. ✘ Cellulose and glycogen
2. ✘ Raffinose and stachyose
3. ✘ Starch and glycogen
4. ✔ Glycogen and stachyose

Question Number : 22 Question Id : 630680149745 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

What is the pH range of lysis buffer?

Options :

1. ✔ 7.9
2. ✘ 4.9
3. ✘ 6.9
4. ✘ 8.9

Question Number : 23 Question Id : 630680149746 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

The major buffer system in the body fluid is:

Options :

- ✘ $\text{H}_2\text{SO}_4/\text{HSO}_4^-$
- ✘ $\text{HNO}_3/\text{NO}_3^-$
- ✔ $\text{H}_2\text{CO}_3/\text{HCO}_3^-$
- ✘ $\text{H}_2\text{SO}_3/\text{HSO}_3^-$

Question Number : 24 Question Id : 630680149747 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following is a salt buffer system?

Options :

- ✘ $\text{CH}_3\text{COOH}/\text{CH}_3\text{COO}^-$
- ✘ $\text{NH}_3\cdot\text{H}_2\text{O}/\text{NH}_4^+$
- ✘ $\text{H}_2\text{CO}_3/\text{HCO}_3^-$
- ✔ $\text{NaH}_2\text{PO}_4/ \text{Na}_2\text{HPO}_4$

Question Number : 25 Question Id : 630680149748 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following carbohydrates are present as stored energy in plant cells and animal cells, respectively?

Options :

- ✘ Starch and maltose
- ✘ Glycolipid and sucrose
- ✔ Starch and glycogen
- ✘ Glycolipid and glycogen

Question Number : 26 Question Id : 630680149749 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following IR radiation sources emits maximum radiation at 5200 cm^{-1} ?

Options :

1. ✓ Nernst glower
2. ✗ Mercury arc
3. ✗ Globar source
4. ✗ Incandescent lamp

Question Number : 27 Question Id : 630680149750 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following fuels has the highest maximum temperature obtained in oxygen oxidant?

Options :

1. ✗ Cyanogen
2. ✗ Butane
3. ✓ Acetylene
4. ✗ Propane

Question Number : 28 Question Id : 630680149751 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following X-ray diffraction methods is generally NOT useful for investigating the internal structures?

Options :

1. ✗ Powder method
2. ✓ Magnetic method
3. ✗ Rotating crystal method
4. ✗ Laue photographic method

Question Number : 29 Question Id : 630680149752 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following elements has the lowest sensitivity limit (in ppm) in flame photometry?

Options :

1. ✓ Barium
2. ✗ Tin
3. ✗ Lead
4. ✗ Chromium

Question Number : 30 Question Id : 630680149753 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following decreasing orders is correct with respect to detection limits?

Options :

1. ✗ Ba > As > Bi > Al
2. ✗ As > Bi > Ba > Al
3. ✓ Bi > Ba > As > Al
4. ✗ Ba > As > Al > Bi

Question Number : 31 Question Id : 630680149754 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

In the medical field, which of the following elements are routinely determined in blood analysis by flame photometry?

Options :

1. ✓ Na, K, Ca and Mg
2. ✗ Ba, Sn, Pb and Sb
3. ✗ Cr, Hg, Mo and Ru
4. ✗ Al, Cs, Ga and Ge

Question Number : 32 Question Id : 630680149755 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5 Wrong Marks : 0.5

Which of the following groups decreases, or even destroys, fluorescence?

Options :

1. ✘ $-\text{OCH}_3$
2. ✘ $-\text{OH}$
3. ✔ $-\text{NO}_2$
4. ✘ $-\text{NH}_2$

Question Number : 33 Question Id : 630680149756 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following fluorescent indicators changes its colour from Blue to colourless at pH range 4.4 – 6.3?

Options :

1. ✘ 2-Naphthaquinone
2. ✔ Eosin
3. ✘ Quinine sulphate
4. ✘ Acridine

Question Number : 34 Question Id : 630680149757 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following decreasing orders is correct for π -bonding abilities of some ligands by Mossbauer spectra?

Options :

1. ✘ $\text{NO}_2^- > \text{P}(\text{C}_6\text{H}_5)_3 > \text{NH}_3$
2. ✔ $\text{P}(\text{C}_6\text{H}_5)_3 > \text{NO}_2^- > \text{NH}_3$
3. ✘ $\text{P}(\text{C}_6\text{H}_5)_3 > \text{NH}_3 > \text{NO}_2^-$
4. ✘ $\text{NO}_2^- > \text{NH}_3 > \text{P}(\text{C}_6\text{H}_5)_3$

Question Number : 35 Question Id : 630680149758 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

In an emission determination, it was found that the concentration of barium in a place extract was linear over the 0-15 ppm range. What is the concentration of a solution that gave a reading of 87, when water was set at zero and the 15 ppm standard was set at 100?

Options :

1. ✘ 17 ppm
2. ✘ 22 ppm
3. ✘ 9 ppm
4. ✔ 13 ppm

Question Number : 36 Question Id : 630680149759 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following increasing orders is correct with respect to equivalent conductance of ions at infinite dilution at 25°C?

Options :

1. ✘ $\text{Co}^{2+} < \text{Ag}^+ < \text{Fe}^{2+} < \text{Pb}^{2+}$
2. ✘ $\text{Fe}^{2+} < \text{Ag}^+ < \text{Pb}^{2+} < \text{Co}^{2+}$
3. ✔ $\text{Fe}^{2+} < \text{Co}^{2+} < \text{Ag}^+ < \text{Pb}^{2+}$
4. ✘ $\text{Ag}^+ < \text{Fe}^{2+} < \text{Pb}^{2+} < \text{Co}^{2+}$

Question Number : 37 Question Id : 630680149760 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following substances has the highest dielectric constant?

Options :

1. ✘ Benzene
2. ✘ Carbon tetrachloride
3. ✔ Aniline

4. ✖ Chloroform

Question Number : 38 Question Id : 630680149761 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

One of the limitations of hydrogen electrode in electrolysis process?

Options :

1. ✖ It gives no salt error.
2. ✔ It is not easy to get pure hydrogen.
3. ✖ It can be used over the entire pH range.
4. ✖ It is a fundamental electrode to which all measurements of pH are ultimately referred.

Question Number : 39 Question Id : 630680149762 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following bases has no keto group in nucleic acid?

Options :

1. ✖ Guanine
2. ✖ Uracil
3. ✖ Cytosine
4. ✔ Adenine

Question Number : 40 Question Id : 630680149763 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

How many hydrogen bonds are present between Adenine and Thymine?

Options :

1. ✖ Five
2. ✔ Two
3. ✖ Four

4. ✘ Three

Question Number : 41 Question Id : 630680149764 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following is an amine?

Options :

1. ✘ Estrogen

2. ✘ Androgen

3. ✘ Winstrol

4. ✔ Epinephrine

Question Number : 42 Question Id : 630680149765 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following is responsible for the preparation of the uterus for implantation of a fertilised egg?

Options :

1. ✘ Cortisone

2. ✘ Adenine

3. ✔ Progesterone

4. ✘ Thymine

Question Number : 43 Question Id : 630680149766 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following is an iodinated derivative of tyrosine?

Options :

1. ✘ Adrenaline

2. ✔ Thyroxine

3. ✘ Cytosine

4. ✘ Insulin

Question Number : 44 Question Id : 630680149767 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following reducing agents is added to reduce the disulphide linkages to prevent any tertiary protein folding?

Options :

1. ✘ 3-mercaptoethanol

2. ✘ 4-mercaptoethanol

3. ✔ 2-mercaptoethanol

4. ✘ 5-mercaptoethanol

Question Number : 45 Question Id : 630680149768 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following steroid hormones controls the level of excretion of water and salt by the kidney?

Options :

1. ✘ Testosterone

2. ✘ Adrenaline

3. ✘ Thyroxine

4. ✔ Mineralocorticoids

Question Number : 46 Question Id : 630680149769 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following tests is useful for distinguishing disaccharides and monosaccharides?

Options :

1. ✓ Barfoed's test
2. ✗ Saponification test
3. ✗ Melting test
4. ✗ Gabriel test

Question Number : 47 Question Id : 630680149770 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following sterols is NOT found in plants?

Options :

1. ✗ Stigmasterol
2. ✓ Ergosterol
3. ✗ Sitosterol
4. ✗ Campesterol

Question Number : 48 Question Id : 630680149771 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

N-acetylmuramic acid is a derivative of glucosamine, in which lactic acid is linked to oxygen at _____ of N-acetylglucosamine.

Options :

1. ✗ C-2
2. ✗ C-4
3. ✓ C-3
4. ✗ C-6

Question Number : 49 Question Id : 630680149772 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following carbohydrates is found mostly in the liver and muscles of animals?

Options :

1. ✘ Lactose
2. ✔ Glycogen
3. ✘ Starch
4. ✘ Maltose

Question Number : 50 Question Id : 630680149773 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Lipids are insoluble in _____.

Options :

1. ✘ chloroform
2. ✔ water
3. ✘ benzene
4. ✘ ether

Question Number : 51 Question Id : 630680149774 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

What type of transition is possible in azo compounds?

Options :

1. ✘ $\sigma \rightarrow \sigma^*$
2. ✘ $n \rightarrow \pi^*$
3. ✔ $\pi \rightarrow \pi^*$
4. ✘ $\sigma \rightarrow \pi$

Question Number : 52 Question Id : 630680149775 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following solvents has the highest UV cut-off area?

Options :

1. ✘ Acetonitrile
2. ✘ Water
3. ✘ Methanol
4. ✔ Chloroform

Question Number : 53 Question Id : 630680149776 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

What is the correct decreasing order of energy level of $n \rightarrow \sigma^*$?

Options :

1. ✔ $\text{CH}_3\text{-OH} > \text{CH}_3\text{-NH}_2 > \text{CH}_3\text{-SH}$
2. ✘ $\text{CH}_3\text{-NH}_2 > \text{CH}_3\text{-OH} > \text{CH}_3\text{-SH}$
3. ✘ $\text{CH}_3\text{-SH} > \text{CH}_3\text{-NH}_2 > \text{CH}_3\text{-OH}$
4. ✘ $\text{CH}_3\text{-SH} > \text{CH}_3\text{-OH} > \text{CH}_3\text{-NH}_2$

Question Number : 54 Question Id : 630680149777 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

What are the isoelectric points of lysine and proline, respectively?

Options :

1. ✘ 5.6 and 4.9
2. ✔ 9.47 and 6.3
3. ✘ 3.5 and 9.5
4. ✘ 4.9 and 2.3

Question Number : 55 Question Id : 630680149778 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

In which of the following microscopes is the surface of the specimen irradiated with a very narrow beam of electrons?

Options :

1. ✘ Emission spectroscopy
2. ✔ Scanning electron microscopy
3. ✘ X-ray spectroscopy
4. ✘ Transmission electron microscopy

Question Number : 56 Question Id : 630680149779 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

In Scanning electron microscopy, the intensity or the number of secondary electrons doesn't depend on

Options :

1. ✘ the number of electrons reabsorbed by surrounding
2. ✘ the number of electrons ejected
3. ✘ the chemical composition of the irradiated object
4. ✔ the liberated electrons from source are very few

Question Number : 57 Question Id : 630680149780 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

In SEM, the magnified image of the surface topography of the specimen is obtained on

Options :

1. ✘ the anode ray tube
2. ✔ the cathode ray tube
3. ✘ vacuum chamber

4. ✖ phosphorescent screen

Question Number : 58 Question Id : 630680149781 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following methods are provided by NMR spectrometer for determining structure in soluble chemical compounds?

Options :

1. ✖ Inaccurate and non-destructive
2. ✖ Accurate and destructive
3. ✔ Accurate and non-destructive
4. ✖ Inaccurate and destructive

Question Number : 59 Question Id : 630680149782 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Isoelectric point is a value of

Options :

1. ✖ Molarity
2. ✖ Gram molecular weight
3. ✔ Exact pH value
4. ✖ Normality

Question Number : 60 Question Id : 630680149783 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Cation exchange chromatography retains positively charged cations, as the stationary phase in the column displays negatively charged functional group, such as:

Options :

1. ✖ aniline

- ✘ nitrobenzene
- ✔ phosphoric acid
- ✘ chloroform

Question Number : 61 Question Id : 630680149784 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following are the weak acid cation exchanger, and strong base anion exchanger, respectively?

Options :

- ✘ Sulphuric acid and amine
- ✘ Carboxylic acid and amine
- ✔ Carboxylic acid and quaternary amine
- ✘ Sulphuric acid and quaternary amine

Question Number : 62 Question Id : 630680149785 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Acetylcholine esterase is purified by using:

Options :

- ✔ affinity chromatography
- ✘ cation exchanger
- ✘ anion exchanger
- ✘ gel filtration

Question Number : 63 Question Id : 630680149786 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following are used to purify Cytochrome-C and alpha amylase, respectively?

Options :

1. ✘ Q-Sepharose and DEAE-cellulose
2. ✔ Amberlite CG-50 and Sephacryl S-300
3. ✘ Amberlite CG-50 and DEAE-cellulose
4. ✘ DEAE-cellulose and Sephacryl S-300

Question Number : 64 Question Id : 630680149787 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Alkaline protease and peroxidase are purified/separated by using

Options :

1. ✘ cation exchangers
2. ✘ affinity chromatography
3. ✔ anion exchangers
4. ✘ gel filtration

Question Number : 65 Question Id : 630680149788 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following commercial resins is related to strong base?

Options :

1. ✘ Amberlite IR-200
2. ✘ Zerolite MPF
3. ✘ XFS 4195
4. ✔ Lewatit MP200

Question Number : 66 Question Id : 630680149789 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following types of chromatography is used for separating compounds that have hydrophobic moieties?

Options :

1. ✘ Normal phase chromatography
2. ✘ Ion exchange chromatography
3. ✔ Reversed phase chromatography
4. ✘ Gel permeation chromatography

Question Number : 67 Question Id : 630680149790 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

In which of the following types of paper chromatography does the mobile phase move horizontally over a circular sheet of paper?

Options :

1. ✘ Two-dimensional paper chromatography
2. ✔ Radial paper chromatography
3. ✘ Ascending paper chromatography
4. ✘ Descending paper chromatography

Question Number : 68 Question Id : 630680149791 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

What percentage of pentosans are present in Whatman paper?

Options :

1. ✘ 0.01% – 0.4%
2. ✘ 8.0% – 12.5%
3. ✘ 12.0% - 18.0%
4. ✔ 0.4% – 0.8%

Question Number : 69 Question Id : 630680149792 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following statements is INCORRECT with respect to paper chromatography?

Options :

- ✘ In paper chromatography, the solvent moves by capillary action.
- ✘ Paper chromatography is based on solid-liquid adsorption.
- ✔ Paper chromatography has longer stationary phase.
- ✘ Paper chromatography requires less amount of substance.

Question Number : 70 Question Id : 630680149793 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following is partition chromatography?

Options :

- ✔ Liquid-liquid chromatography
- ✘ Ion exchange chromatography
- ✘ Liquid-solid chromatography
- ✘ Gel permeation chromatography

Question Number : 71 Question Id : 630680149794 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following chromatography types is the best for separation of an antibiotic from a broth mixture?

Options :

- ✘ Thin layer chromatography
- ✘ Paper chromatography
- ✔ High performance liquid chromatography
- ✘ Column chromatography

Question Number : 72 Question Id : 630680149795 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following statements is INCORRECT with respect to gas chromatography?

Options :

- ✘ In gas chromatography, the sample to be tested must be volatile.
- ✘ In Gas chromatography mobile phase could be a gas
- ✔ Gas chromatography is done at low temperatures.
- ✘ In gas chromatography, the stationary phase is a low volatile liquid adsorbed on a solid support

Question Number : 73 Question Id : 630680149796 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following will change into a white powder after it is heated, due to the loss of water during crystallisation?

Options :

- ✘ Green vitriol
- ✘ Potash alum
- ✘ Benzaldehyde
- ✔ Blue vitriol

Question Number : 74 Question Id : 630680149797 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following statements is correct with respect to crystallisation and evaporation?

Options :

- ✘ Crystallisation converts a liquid into its gaseous phase at a specific high temperature.
- ✘ Crystallisation is less efficient because some solids decompose on heating.
- ✘ Evaporation is used in separating pure solid from liquid with high efficiency.
- ✔ Crystallisation is the formation of solid crystals from a liquid.

Question Number : 75 Question Id : 630680149798 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following statements is INCORRECT with respect to fractional distillation?

Options :

1. ✘ Fractional distillation is a process of separation of 2 immiscible liquids.
2. ✘ Fractional distillation is different from distillation because of the presence of fractionating column.
3. ✘ Difference in the boiling point of 2 liquids fractional distillation is less than 25 K.
4. ✔ Liquid nitrogen gas cannot be separated from air using fractional distillation.

Question Number : 76 Question Id : 630680149799 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

One milliequivalent is:

Options :

1. ✘ 1000 chemical equivalents
2. ✘ 100 chemical equivalents
3. ✔ 1/1000 chemical equivalents
4. ✘ 1/100 chemical equivalents

Question Number : 77 Question Id : 630680149800 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following statements is correct with respect to molarity and molality?

Options :

1. ✘ Molarity has kilograms of solvent and molality depends on temperature of solution
2. ✘ Molarity depends on temperature of solution and molality depends on volume of solution
3. ✘ Molarity depends on volume of solution and molality depends on atmospheric pressure
4. ✔ Molarity depends on temperature of solution and molality has kilograms of solvent.

Question Number : 78 Question Id : 630680149801 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

The molar mass and equivalent masses of $\text{Ca}(\text{OH})_2$, respectively, are: (Atomic number of Ca, O and H are 20, 8 and 1 respectively)

Options :

1. ✘ 1 and 2
2. ✘ 37 and 74
3. ✔ 74 and 37
4. ✘ 2 and 1

Question Number : 79 Question Id : 630680149802 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Parts per million can be expressed as _____.

Options :

1. ✔ mg/l
2. ✘ gm/L
3. ✘ ml/kg
4. ✘ l/kg

Question Number : 80 Question Id : 630680149803 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following processes is the most widely used chemical precipitation process?

Options :

1. ✘ Carbonate precipitation
2. ✘ Nitrates precipitation
3. ✘ Hydride precipitation

4. ✓ Hydroxide precipitation

Question Number : 81 Question Id : 630680149804 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following organic reagents is used for the reduction and determination of gold?

Options :

1. ✗ Pinene
2. ✓ Hydroquinone
3. ✗ Cumene
4. ✗ Styrene

Question Number : 82 Question Id : 630680149805 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following methods is NOT suitable for extraction techniques?

Options :

1. ✗ Enzyme assisted extraction
2. ✗ Ultrasound assisted extraction
3. ✓ X-ray diffraction assisted extraction
4. ✗ Solvent extraction

Question Number : 83 Question Id : 630680149806 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

What are the pH ranges of Thymol blue and methyl orange indicators, respectively?

Options :

1. ✗ 8.0-9.6 and 9.1-10.6
2. ✓ 8.0-9.6 and 3.1-4.4
3. ✗ 9.1-10.6 and 3.1-4.4

4. ✘ 9.1-10.6 and 8.0-9.6

Question Number : 84 Question Id : 630680149807 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

What are the colours of Phenol red indicator in acidic medium and basic medium, respectively?

Options :

1. ✘ Colourless and blue

2. ✘ Yellow and blue

3. ✘ Colourless and red

4. ✔ Yellow and red

Question Number : 85 Question Id : 630680149808 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following titrants is NOT used in non-aqueous titrations of weak acids?

Options :

1. ✘ Calcium methoxide

2. ✔ Potassium methoxide

3. ✘ Strontium methoxide

4. ✘ Aluminium methoxide

Question Number : 86 Question Id : 630680149809 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following nonaqueous solvents is an example of Protophilic solvents?

Options :

1. ✔ Ketone

2. ✘ Formic acid

3. ✘ Chloroform

4. ✘ Acetonitrile

Question Number : 87 Question Id : 630680149810 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Mayonnaise is an example of what type of solution?

Options :

1. ✘ Solid sol

2. ✘ Solid aerosol

3. ✔ Emulsion

4. ✘ Gel

Question Number : 88 Question Id : 630680149811 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Antifreeze is an example of:

Options :

1. ✘ solid in solid

2. ✔ liquid in liquid solution

3. ✘ gas in liquid

4. ✘ Liquid in gas

Question Number : 89 Question Id : 630680149812 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

If 16.18 is the actual value of a quantity and 19.53 is the experimentally measured value, then the absolute error will be: (in percentage)

Options :

1. ✘ 35.71

2. ✔ 3.35

3. ✖ 19.53

4. ✖ 10.18

Question Number : 90 Question Id : 630680149813 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Who proposed the double helical structure of DNA?

Options :

1. ✖ Joseph John Thomson

2. ✔ Francis Crick

3. ✖ Galileo Galilei

4. ✖ Charles Darwin

Question Number : 91 Question Id : 630680149814 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following bases contains an amino acid group at C-4?

Options :

1. ✖ Adenine

2. ✖ Guanine

3. ✔ Cytosine

4. ✖ Thymine

Question Number : 92 Question Id : 630680149815 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Cyclic voltammetry, which has a three-electrode system, does NOT consist of

Options :

1. ✖ counter electrode

2. ✔ hydric electrode

- ✘ working electrode
- ✘ reference electrode

Question Number : 93 Question Id : 630680149816 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

What are the equivalent masses of Ca(OH)_2 and H_2SO_4 , respectively?

Options :

- ✘ 28 and 46
- ✘ 74 and 98
- ✔ 37 and 49
- ✘ 37 and 98

Question Number : 94 Question Id : 630680149817 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

What are the pKa values of Bromocresol green and Cresol purple, respectively?

Options :

- ✘ 2.6 and 5.6
- ✘ 5.6 and 9.1
- ✔ 4.7 and 8.3
- ✘ 3.8 and 8.7

Question Number : 95 Question Id : 630680149818 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Calculate the absolute error value when actual length is 28 mm and measured length is 25.4 mm respectively.

Options :

- ✘ 53.4

2. ✘ 25.4

3. ✘ 28

4. ✔ 2.6

Question Number : 96 Question Id : 630680149819 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Find the relative error value, where the actual and measured values are 252.14 mm and 249.02 mm.

Options :

1. ✔ 0.0123 %

2. ✘ 1.2358 %

3. ✘ 0.2561 %

4. ✘ 0.1963 %

Question Number : 97 Question Id : 630680149820 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following statements is INCORRECT with respect to gravimetric analysis?

Options :

1. ✔ Gravimetric analysis is potentially less accurate than volumetric analysis.

2. ✘ Gravimetric analysis avoids problems with temperature fluctuation, with volumetric analysis.

3. ✘ Gravimetric analysis is used for determination of purity, and thermal stability of both primary and second standard.

4. ✘ Gravimetric analysis is used for determination of composition of complex mixtures.

Question Number : 98 Question Id : 630680149821 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following indicators is colourless in acidic medium?

Options :

1. ✘ Methyl yellow
2. ✔ Trinitro benzoic acid
3. ✘ Phenol red
4. ✘ Alizarin yellow

Question Number : 99 Question Id : 630680149822 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following precipitate is formed when glycol reacts with periodate ion?

Options :

1. ✘ I^-
2. ✘ OH^-
3. ✔ IO_3^-
4. ✘ SO_4^{2-}

Question Number : 100 Question Id : 630680149823 Is Question Mandatory : No Calculator :

None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Wrong Marks : 0.5

Which of the following rainfall types has intensity traced to 2.5 mm/h?

Options :

1. ✘ Moderate rain
2. ✔ Light rain
3. ✘ Heavy rain
4. ✘ Violent rain