

PHYSICS MDCAT

UNIT-4 (A+ SERIES)

TOPICS:

✓ Waves

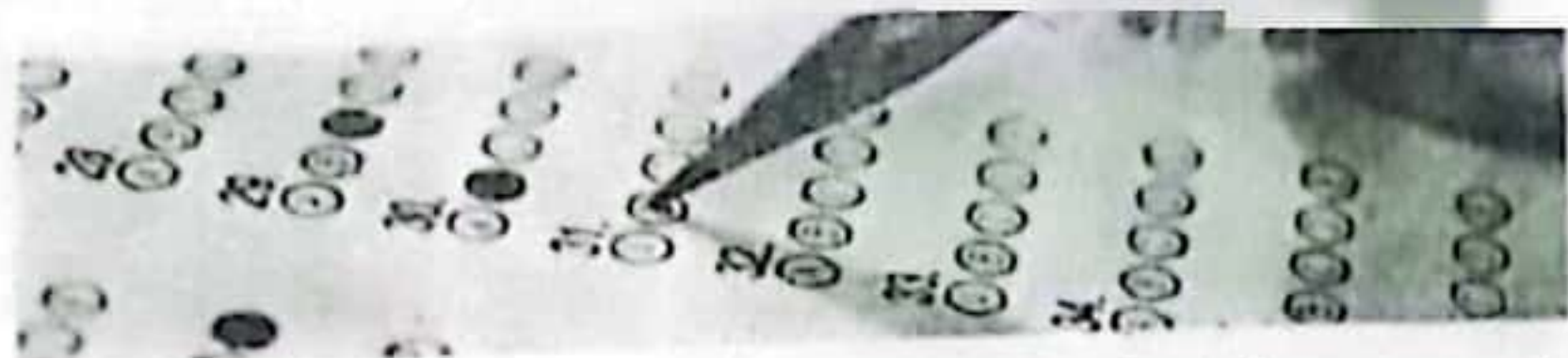
- Q.1 When both source and listener move in the same direction with a velocity equal to half the velocity of sound, the change in frequency of the sound as detected by the listener is:
A. 50% B. Zero
C. 25% D. None of these
- Q.2 An object attached to one end of a spring makes 20 complete oscillations in 10 s. Its period is
A. 2 Hz B. 0.50 s
C. 0.5 Hz D. 10 s
- Q.3 A standing wave:
A. Has motionless points that are closer than half a wavelength
B. Must be longitudinal
C. Must be transverse
D. Can be constructed from two similar waves traveling in opposite directions
- Q.4 Velocity of sound is
A. $(v \propto T)$ B. $v \propto \sqrt{T}$ C. $v \propto \frac{1}{\sqrt{T}}$ D. $v \propto \frac{1}{T}$
- Q.5 In a stationary wave _____
A. The displacement at the antinodes is minimum
B. The displacement at the nodes is maximum
C. The displacement at the nodes is zero and that at the antinode is maximum
D. The displacement is maximum at both nodes and antinodes
- Q.6 A string fixed at both the ends forms standing waves with node separation of 5 cm. If the velocity of waves travelling time string is 4 m/s, then the frequency or vibration of the string will be _____
A. 20 Hz B. 30 Hz
C. 40 Hz D. 50 Hz
- Q.7 Energy is not carried by
A. Longitudinal progressive waves B. Electromagnetic waves
C. Transverse progressive waves D. Stationary wave
- Q.8 What type of wave is produced when the particles of the medium are vibrating to and fro in the same direction of wave propagation?
A. Longitudinal wave B. Sound wave
C. Standing wave D. Transverse wave
- Q.9 A transverse wave is traveling through a medium. See diagram below. The particles of the medium are moving.
-
- A. Parallel to the line joining AD B. Along the line joining CI
C. Perpendicular to the line joining AD D. At various angles to the line CI
- Q.10 Consider the motion of waves in a wire. Waves will travel fastest in a _____ wire.
A. Tight and heavy B. Tight and light
C. Loose and heavy D. Loose and light
- Q.11 With the increase in temperature, the frequency of the sound from an organ pipe
A. Decreases B. Increases
C. Remain unchanged D. Changes erratically
- Q.12 String is in fundamental mode of vibration then velocity is directly proportional to
A. Square root of tension B. Square root of length
C. Square of tension D. Square root of linear density
- Q.13 The frequency of waves is 200 Hz, if tension is increased 4 time its frequency will be
A. 800 Hz B. 400 Hz
C. 1600 Hz D. 200 Hz

- Q.14 Consider the diagram below of several circular waves created at various times and locations. The diagram illustrates



- A. Interference
B. Diffraction
C. The Doppler effect
D. Polarization
- Q.15 Doppler's effect is not applicable when the speed of the source of sound is
A. Zero
B. Equal to the speed of the sound
C. C
D. More than the speed of sound
- Q.16 The length of a string is 1m, tension in it is 40N and mass of the string is 0.1 kg. Then the velocity of transverse waves produced in the string will be:
A. 400 ms^{-1}
B. 80 ms^{-1}
C. 180 ms^{-1}
D. 20 ms^{-1}
- Q.17 The wavelength of a sound at room temperature made from a tuning fork of frequency 340 Hz is nearly.
A. 330 m
B. 100 m
C. 10 m
D. 1m
- Q.18 The first resonance length in a closed pipe is 20 cm then second resonance occurs at
A. 60 cm
B. 90 cm
C. 120 cm
D. None
- Q.19 The length of a string tied between two rigid supports is 50 cm. The maximum wavelength of a stationary wave produced on it is
A. 25 cm
B. 75 cm
C. 100 cm
D. 125 cm
- Q.20 Wave form of SHM is
A. Sine wave
B. Pulsed wave
C. Square wave
D. Saw tooth wave
- Q.21 In SHM the velocity of a particle is maximum at
A. Mean position
B. Middle between mean and extreme on the right side
C. Extreme position
D. Middle between mean and extreme on the left side
- Q.22 The angular frequency of mass spring-system
A. $\sqrt{\frac{m}{k}}$
B. $\frac{m}{k}$
C. $\sqrt{\frac{k}{m}}$
D. $\frac{k}{m}$
- Q.23 The phase difference between the velocity and displacement of a particle executing SHM is
A. $\frac{\pi}{2}$ radian
B. 2π radian
C. π radian
D. Zero
- Q.24 Doppler shift in frequency does not depend upon
A. The actual frequency of the wave
B. The velocity of the source
C. The distance of the source from the listener
D. The velocity of the observer
- Q.25 An observer is moving towards a stationary source with a speed one fifth of the speed of sound. The frequency of sound heard by the observer will be if v is the speed and f is the original frequency of the sound waves
A. $\frac{5}{6}f$
B. $\frac{6}{5}f$
C. $\frac{4f}{5}$
D. $\frac{6f}{5}$
- Q.26 A pipe closed at one end has length 25cm, the wavelength of first harmonic will be:
A. 25cm
B. 100cm
C. 50cm
D. 200cm
- Q.27 In a simple Harmonic Motion with a radius ' x_0 ', the maximum velocity of the particle is:
A. $v = \omega\sqrt{x_0^2 - x^2}$
B. $v = \omega x_0$
C. $v = \omega(x^2 - x_0^2)$
D. $v = \omega\sqrt{(x - x_0)}$

- Q.28 A metallic wire of 2m length stretched between two points has tension of 100N. If mass per unit length of wire is 0.01 kg/m then fundamental frequency emitted by wire on vibration is:
 A. 12.5 Hz
 B. 24 Hz
 C. 48 Hz
 D. 9.24 Hz
- Q.29 A simple harmonic oscillator has a time period of 10 seconds. Which equation relates its acceleration 'a' and displacement 'x' ?
 A. $a = -10x$
 B. $a = -\left(\frac{2\pi}{10}\right)^2 x$
 C. $a = -(20\pi)^2 x$
 D. $a = -(20\pi)^2 x$
- Q.30 For destructive interference of sound waves the path difference between two interfering sounds should be
 A. $n\lambda$
 B. $(n+1/2)\lambda$
 C. Sometimes n and sometimes $(n+1/2)\lambda$
 D. None of these
- Q.31 The velocity of sound in open ended tube is 330m/s, the frequency of a wave is 1.1 kHz and length of the tube is 30cm, then number of harmonics that it will emit is?
 A. 2
 B. 3
 C. 4
 D. 5
- Q.32 Which of the following waves can be transmitted through solids, liquids and gases?
 A. Transverse waves
 B. Electromagnetic waves
 C. Mechanical waves
 D. Longitudinal waves
- Q.33 The motion of simple pendulum is SHM only if:
 A. Amplitude is large
 B. Mass is small
 C. Amplitude is small
 D. Length is small
- Q.34 The speed of sound in air is 332 m/s. The speed of sound at 2 °C will be:
 A. 333.2m/s
 B. 340 m/s
 C. 350m/s
 D. 330 m/s
- Q.35 The negative sign in $F = -kx$, indicates that:
 A. F is directed opposite to x
 B. F is directed along x
 C. F is always equal to x
 D. None of these
- Q.36 If displacements due to two individual waves are y_1 and y_2 . Then the resultant displacement, y, of the particle of the medium is:
 A. $y = y_1 \times y_2$
 B. $y = y_1 / y_2$
 C. $y = y_1 - y_2$
 D. $y = y_1 + y_2$
- Q.37 Time period of the wave is 1/4 sec. How long does it take to pass 20 complete waves from a point?
 A. 5 sec
 B. 80 sec
 C. 1/80 sec
 D. 1/5 sec
- Q.38 The linear distance between two nearest points of medium vibrating in phase is
 A. Path difference
 B. Time period
 C. Frequency
 D. Wavelength
- Q.39 Speed of transfer wave pulse in an elastic stretched string is given by
 A. $v = \sqrt{\frac{M}{T \times L}}$
 B. $v = \frac{\sqrt{M}}{T \times L}$
 C. $v = \sqrt{\frac{T \times L}{M}}$
 D. $\sqrt{M \times L}$
- Q.40 The speed of a wave on a particular string is 24 ms^{-1} . If string is 6m long. Find its fundamental frequency
 A. 2 Hz
 B. 6 Hz
 C. 4 Hz
 D. 8 Hz
- Q.41 The restoring force of SHM is zero when particle:
 A. Displacement is maximum
 B. Half way between them
 C. Crossing mean position
 D. At rest
- Q.42 Higher the frequency of a musical sound, _____ is its pitch.
 A. Lower
 B. Higher
 C. Remains same
 D. None of these
- Q.43 If frequency of a wave is 5 Hz, then it is
 A. Ultrasonics
 B. Microwaves
 C. Infra-sonics
 D. Radio waves
- Q.44 When we change sound to loud sound we increase its
 A. Frequency
 B. Amplitude
 C. Velocity
 D. Wavelength
- Q.45 Which of the property makes difference between progressive and stationary waves
 A. Amplitude
 B. Frequency
 C. Propagation of energy
 D. Phase of the wave



- Q.46 When an observer is approaching a stationary source with a velocity v_o then the apparent change in frequency observed by him will be:
 A. $\frac{v}{v+v_o}f$ B. $\left(1+\frac{v_o}{v}\right)f$ C. $\frac{v}{v_o}f$ D. $\frac{v_o}{v}f$
- Q.47 A source of sound of frequency 450 Hz is moving towards a stationary observer with 34 m/sec speed. If the speed of sound is 340 m/sec, then the apparent frequency will be
 A. 410 Hz B. 500 Hz
 C. 550 Hz D. 450 Hz
- Q.48 What is the ratio of velocity to fundamental frequency for a closed organ pipe of length ℓ ?
 A. 0 B. ℓ
 C. 2ℓ D. 4ℓ
- Q.49 Standing waves are produced in 10m long stretched string. If string vibrates in 5 segments and wave velocity is 20m/s, what is the frequency?
 A. 10Hz B. 5Hz
 C. 20Hz D. 4Hz
- Q.50 At what temperature, the velocity of sound will be 4 times its value at 273 K?
 A. 2×273 K B. 8×273 K
 C. 4×273 K D. 16×273 K
- Q.51 For all gases
 A. $v_t = v_o \sqrt{1 - \frac{t}{273}}$ B. $v_t = v_o \sqrt{1 + \frac{t}{273}}$ C. $v_t = v_o \sqrt{1 + 273t}$ D. $v_t = v_o \sqrt{1 + \frac{273}{t}}$
- Q.52 If the number of loops of a stationary wave are increasing, then
 A. λ increases B. λ decreases
 C. λ remains same D. λ may increase or decrease
- Q.53 Find the amplitude of an object oscillating at the end of a spring, if the equation for its position at any instant 'T' is given by $x = 0.258 \cos\left(\frac{1}{8}t\right)$
 A. 0.258m B. $\frac{\pi}{8}m$
 C. 25 m D. None of these
- Q.54 Two springs A and B have force constants k_1 and k_2 respectively. The ratio of the work done on A to that done on B in increasing their lengths by the same amount is
 A. $\frac{k_1}{k_2}$ B. $\sqrt{\frac{k_1}{k_2}}$ C. $\frac{k_2}{k_1}$ D. $\sqrt{\frac{k_2}{k_1}}$
- Q.55 A sonic 'tape measure' is used to measure the length of a room. It receives echo after .06 sec. The speed of sound is 330 m/sec. What is the length of room?
 A. 5.9m B. 8.1m
 C. 9.9m D. 10.9m
- Q.56 Silence zone takes place due to
 A. Constructive interference B. Destructive interference
 C. Beats D. Resonance
- Q.57 Which one is the correct relation for fundamental frequency of open and closed pipe?
 A. $f_{open} = 2 f_{closed}$ B. $f_{closed} = 2f_{open}$
 C. $f_{open} = f_{closed}$ D. $f_{open} = 1/ f_{closed}$
- Q.58 With the increase in temperature, the frequency of the sound from an organ pipe
 A. Decreases B. Remains unchanged
 C. Increases D. None of these
- Q.59 A tuning fork vibrated with 2 beats in 0.04 second. The frequency of the fork is
 A. 50 Hz B. 100 Hz C. 80 Hz D. None
- Q.60 An empty vessel is partially filled with water. Then the frequency of vibration of air column in the vessel
 A. Remain same B. Decrease
 C. Increase D. First increase then decreases

Physics (A+ series)

U# 04 (CTS)



KIPS
PREPARATIONS

2023

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BIOLOGY MDCAT

UNIT-4 (A+ Series)

TOPICS:

- ✓ Biodiversity/Acellular Life/Viruses
- ✓ Prokaryotes/Kingdom Monera/Bacteria

- Q.1 New viruses arise due to:
- A. Mutations
B. Cell division
C. Metabolic errors
D. Non-disjunction
- Q.2 In some viruses, RNA is present instead of DNA indicating that:
- A. Their RNA must combine with host DNA before replication
B. They cannot replicate
C. There is no hereditary information present in these viruses
D. RNA can act to transfer hereditary information
- Q.3 Which of the following are found in all viruses?
- A. Envelope and nucleic acid
B. DNA, RNA and protein
C. Proteins and nucleic acid
D. Protein, nucleic acids and lipids
- Q.4 A character that make retroviruses different from other groups of viruses is:
- A. Spherical capsid
B. RNA genome
C. Presence of reverse transcriptase
D. Resistant to interferons
- Q.5 Which of the following step in life cycle of HIV occurs in cytoplasm of helper T-lymphocytes?
- A. Adsorption
B. Translation
C. Integration
D. Transcription
- Q.6 An AIDS patient can suffer from:
- A. Immune deficiency
B. Opportunistic infections
C. Tumor production
D. All A, B, C
- Q.7 In HIV, reverse transcriptase converts single stranded RNA into double stranded viral DNA. This process is called:
- A. Translation
B. Replication
C. Duplication
D. Reverse transcription
- Q.8 Which one of the following cells is mainly infected by HIV?
- A. Suppressor T-lymphocytes
B. Plasma clone cells
C. Helper T-lymphocytes
D. Dendritic cells
- Q.9 Mode of reproduction in viruses is:
- A. Conjugation
B. Binary fission
C. Replication
D. Transduction
- Q.10 What is true about viruses?
- A. They are devoid of genetic material
B. They do not occur as parasites in living cells
C. They can be cultured on artificial medium
D. They can be crystallized and stored for several years
- Q.11 It is also called as infusion hepatitis:
- A. Hepatitis 'A'
B. Hepatitis 'C'
C. Hepatitis 'B'
D. Hepatitis 'D'
- Q.12 The organisms which are unicellular, exist in diverse habitats and having cell wall with short peptides belongs to:
- A. Kingdom Monera
B. Kingdom Fungi
C. Kingdom Protista
D. Kingdom Plantae
- Q.13 Infectious, chemically homogenous and acellular particles are:
- A. Virions
B. Viruses
C. Prions
D. Bacteriophages



- Q.14** All of the following are the essential components of virion except:
 A. Proteins
 B. Nucleic acids
 C. Capsid
 D. Lipoproteins
- Q.15** It is a peptidoglycan degradative enzyme:
 A. DNA polymerase
 B. RNA polymerase
 C. Reverse transcriptase
 D. Lysozyme
- Q.16** Viruses are obligate intracellular parasites due to which they:
 A. Show antibiotic resistance
 B. Cannot use host machinery
 C. Cannot be cultured on artificial media
 D. Infect only bacteria
- Q.17** All of the following properties related to HIV are true except:
 A. Belongs to retroviruses
 B. Enveloped in nature
 C. Spherical capsid
 D. Contains nine genes in its genome
- Q.18** Bacteriophage is the name given to a:
 A. Bacterium that infects higher plant cells
 B. Virus that infects a bacterium
 C. Bacterium which infects an animal cells
 D. Bacterium that infects a virus
- Q.19** Which of the following is an example of enveloped ds-DNA virus?
 A. Small pox
 B. Poliovirus
 C. Paramyxoviruses
 D. Parvovirus
- Q.20** Shape of T₄ phage is:
 A. Spherical
 B. Rod-like
 C. Conical
 D. Tadpole
- Q.21** The universal structure of all living organisms is _____ which are not related to viruses.
 A. Proteins
 B. DNA
 C. RNA
 D. Ribosomes
- Q.22** HIV causes acquired immunodeficiency syndrome because it primarily attacks on:
 A. Nervous system
 B. Reproductive system
 C. Immune system
 D. Circulatory system
- Q.23** Reverse transcriptase is actually:
 A. RNA dependent RNA polymerase
 B. RNA dependent DNA polymerase
 C. DNA dependent DNA polymerase
 D. DNA dependent RNA polymerase
- Q.24** Uncoating of HIV virion occurs:
 A. Outside the host cell
 B. Inside cytoplasm of host cell
 C. In nucleus of host cell
 D. In nucleolus of the host cell
- Q.25** _____ of virus is developed from host plasma membrane.
 A. Capsid
 B. Coat
 C. Envelope
 D. Core
- Q.26** Which of the following glycoprotein of HIV is critical in cell fusion process during infectious cycle?
 A. CD4
 B. gp41
 C. CD8
 D. gp120
- Q.27** All of the following are viral diseases except:
 A. AIDS
 B. Rabies
 C. Polio
 D. Tetanus
- Q.28** All of the following are common symptoms of AIDS except:
 A. Swollen lymph nodes
 B. Jaundice due to heart enlargement
 C. Multiple infections
 D. Sudden weight loss
- Q.29** Which pair of hepatitis viruses can be transmitted via oro-fecal route?
 A. HCV and HEV
 B. HAV and HEV
 C. HAV and HBV
 D. HBV and HCV
- Q.30** 162 capsomeres are found in the capsid of:
 A. Poliovirus
 B. Adenovirus
 C. Herpes virus
 D. Hepatitis 'B' virus

- Q.31 Which of the following bacterium is resistant to penicillin?
 A. *E. coli* B. *Compylobacter*
 C. *Mycoplasma* D. *Clostridium*
- Q.32 A bacterium with only one cluster of polar flagella is known as:
 A. Lophotrichous B. Amphitrichous
 C. Atrichous D. Monotrichous
- Q.33 From the following options, identify the true statement about the cell wall of Gram positive bacteria:
 A. Cell wall contains lipopolysaccharides
 B. Cell wall is thin as compared to Gram negative bacterial cell wall
 C. Cell wall contains teichoic acids
 D. Cell wall is less permeable
- Q.34 Which of the following bacterial structure is functionally analogous to the mitochondria in a typical eukaryotic cell?
 A. Capsule B. Mesosomes
 C. Plasmids D. Cysts
- Q.35 Some _____ may functions as means of attachment of bacteria to various surfaces.
 A. Mesosomes B. Slime
 C. Capsule D. Pili
- Q.36 All of the following are examples of rod shaped bacteria except:
 A. *Escherichia coli* B. *Bacillus subtilis*
 C. *Pseudomonas* D. *Hyphomicrobium*
- Q.37 The shape of *Staphylococci* is:
 A. Chain like B. Grape-like cluster
 C. Plate like D. Cube like
- Q.38 Which of the following bacteria is not motile?
 A. *Treponema pallidum* B. *Bacillus subtilis*
 C. *Escherichia coli* D. *Streptococcus pneumoniae*
- Q.39 The horizontal transfer of DNA using a plasmid is an example of:
 A. Generalized transduction B. Binary fission
 C. Transformation D. Conjugation
- Q.40 The first evidence about existence of virus was provided by:
 A. L. Pasteur B. D. Ivanowsky
 C. C. Chamberland D. W. M. Stanley
- Q.41 Who discovered first living cell?
 A. R. Koch B. A. V. Leeuwenhoek
 C. R. Hooke D. C. Chamberland
- Q.42 Which of the following is typically not associated with a prokaryotic cell?
 A. One or more plasmid molecules B. A lack of internal compartmentalization
 C. Multiple, linear chromosomes D. Cell size ranges between 0.1-600µm
- Q.43 The cell wall in both Gram positive and Gram negative bacterial cells is:
 A. Composed of phospholipids B. Composed of teichoic acid
 C. Composed of peptidoglycan D. Surrounded by a membrane
- Q.44 CV-I complex is retain during Gram staining procedure by:
 A. Gram negative bacteria B. Gram positive bacteria
 C. *Mycoplasma* D. Archaeobacteria
- Q.45 Bacteria are said to be haploid because they have:
 A. Many plasmid molecules B. A single chromosome in nucleoid
 C. Multiple chromosomes D. A single plasmid molecule
- Q.46 The molecules of peptidoglycan are linked together via:
 A. Covalent bonds B. Ionic bonds
 C. Disulphide linkages D. Hydrogen bonds

- Q.47 Origin of the basal body in prokaryotes is located:
 A. On the outer side of cell wall
 B. On the inner side of capsule
 C. Just beneath cell membrane
 D. Just beneath nucleoid
- Q.48 Bacterial spores can be killed through:
 A. Immunization
 B. Sterilization
 C. Disinfection
 D. Antisepsis
- Q.49 What is the specific name given to the arrangement of bacteria when cocci are divided in three planes?
 A. Streptococci
 B. Tetrad
 C. Sarcina
 D. Staphylococci
- Q.50 Methods used to reduce the chances of getting a disease are known as:
 A. Disinfection
 B. Antiseptics
 C. Antisepsis
 D. Antibiotics
- Q.51 *Mycoplasmas* are bacteria that lack cell wall. On the basis of this structural feature, which statement concerning *Mycoplasmas* should be true?
 A. They are Gram negative in nature
 B. They are subjected to lysis in hypotonic conditions
 C. They lack a cell membrane as well
 D. They possess typical prokaryotic flagella
- Q.52 A Gram negative bacterium does not retain crystal violet stain because:
 A. Of thin peptidoglycan layer
 B. Of thick peptidoglycan layer
 C. Periplasmic space is absent
 D. Cell wall include significant amount of teichoic and lipoteichoic acids
- Q.53 Prokaryotic life is divided into how many domains?
 A. 2
 B. 4
 C. 3
 D. 5
- Q.54 Misuse of _____ can affect auditory nerve thus causing deafness.
 A. Streptomycin
 B. Cephalosporin
 C. Penicillin
 D. Tetracycline
- Q.55 Most effective method of pasteurization of milk is through UHT in which milk is treated at _____ and then cooled suddenly in vacuum chamber.
 A. 62°C for 30 minutes
 B. 71°C for 15 seconds
 C. 25°C for 60 minutes
 D. 140°C for 3 seconds
- Q.56 A process which will not take place without viruses is:
 A. Transformation
 B. Conjugation
 C. Transduction
 D. Transfection
- Q.57 Which of the following virus was crystallized by W. M. Stanley in 1935?
 A. Bacteriophage
 B. Adenovirus
 C. Influenza virus
 D. Tobacco mosaic virus
- Q.58 It is an infectious agent that solely contains RNA:
 A. Virion
 B. Viroid
 C. Prion
 D. Bacteriophage
- Q.59 The core of HIV is made up of:
 A. RNA only
 B. RNA and proteins
 C. Proteins only
 D. RNA, proteins and envelop
- Q.60 Enzymes are generally not synthesized in/by:
 A. Algae
 B. Fungi
 C. Bacteria
 D. Viruses

Biology (A+ series)

2023



U#04 (CTS)

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CHEMISTRY MDCAT

UNIT-4 (A + SERIES)

TOPIC:-

✓ CHEMICAL EQUILIBRIUM

✓ CHEMICAL KINETICS

- Q.1 Which one of the following is an example of heterogeneous equilibrium?
A. $N_2 + 3H_2 \rightleftharpoons 2NH_3$
B. $2SO_2 + O_2 \rightleftharpoons 2SO_3$
C. $CaCO_3 \rightleftharpoons CaO + CO_2$
D. $CO_2 + H_2 \rightleftharpoons CO + H_2O$
- Q.2 $H_{2(g)} + CO_{2(g)} \rightleftharpoons H_2O_{(g)} + CO_{(g)}$ $\Delta H = -41.84 kJ mol^{-1}$
The equilibrium can be shifted in the forward direction by
A. Lowering the temperature
B. Increasing the pressure
C. Decreasing the concentration of H_2
D. Increasing the temperature
- Q.3 Equilibrium constant for the given reaction $COCl_{2(g)} \rightleftharpoons CO_{(g)} + Cl_{2(g)}$ is 0.5
What will be the equilibrium constant for the following reaction
 $CO_{(g)} + Cl_{2(g)} \rightleftharpoons COCl_{2(g)}$
A. 0.5
B. 1
C. 4
D. 2
- Q.4 Favorable conditions for maximum solubility of gas in water
A. High temperature, high pressure
B. Low temperature, high pressure
C. High temperature, low pressure
D. Low temperature, low pressure
- Q.5 Which term describes a solution in which dissolved solute is in equilibrium with undissolved solute?
A. Dilute
B. Unsaturated
C. Saturated
D. Supersaturated
- Q.6 A gaseous reaction has a rate law equation $Rate = k[A][B]^2$. If the volume of vessel is reduced to half of its initial volume then rate of reaction _____
A. Increases by two times
B. Increases by eight times
C. Increases by four times
D. Remains constant
- Q.7 Which of the following is zero order reaction
A. $2N_2O_5 \longrightarrow 2N_2O_4 + O_2$
B. $NO + O_3 \longrightarrow NO_2 + O_2$
C. $6CO_2 + 6H_2O \longrightarrow C_6H_{12}O_6 + 6O_2$
D. $CHCl_3 + Cl_2 \longrightarrow CCl_4 + HCl$
- Q.8 Increase in rate of reaction due to the rise in temperature because
A. Decrease in number of collisions
B. Lowering the activation energy
C. Increase the concentration of reactant
D. Increase in number of effective collisions
- Q.9 One mole of a reactant reacts with a rate of $0.6 \text{ mol dm}^{-3} \text{ s}^{-1}$. What is the rate constant of this reaction if reaction is first order?
A. 1 s^{-1}
B. 0.3 s^{-1}
C. 0.6 s^{-1}
D. 0.9 s^{-1}
- Q.10 What is "NOT TRUE" about rate of a reaction?
A. Concentration of reactants does not affect the rate of a reaction
B. Surface area of reactants affects rate of reaction
C. Concentration affects rate of reaction
D. Catalyst affects rate of a reaction
- Q.11 For which of the following reactions $K_p > K_c$
A. $H_{2(g)} + F_{2(g)} \rightleftharpoons 2HF_{(g)}$
B. $PCl_{5(g)} \rightleftharpoons PCl_{3(g)} + Cl_{2(g)}$
C. $2SO_{2(g)} + O_{2(g)} \rightleftharpoons 2SO_{3(g)}$
D. $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$
- Q.12 A buffer is prepared by mixing the solutions of equimolar acetic acid and sodium acetate. The pH should be equal to
A. pKa of acid
B. Less than pKa of acid
C. Number of moles of acid
D. More than pKa of acid
- Q.13 Which statement about the order of reaction is correct
A. The order of reaction must be positive integer
B. The order of reaction is number of molecules present in the reaction
C. The order of reaction increases with increase in temperature
D. The order of reaction can only be determined by experiment

- Q.14 NH_3 is purified using condensation method at
 A. 33.4°C B. -23.4°C
 C. 23.4°C D. -33.4°C
- Q.15 The mechanism below has been proposed for the reaction of CHCl_3 with Cl_2
- Step 1: $\text{Cl}_{2(g)} \rightleftharpoons 2\text{Cl}_{(g)}$ fast
 Step 2: $\text{Cl}_{(g)} + \text{CHCl}_{3(g)} \longrightarrow \text{CCl}_{3(g)} + \text{HCl}_{(g)}$ slow
 Step 3: $\text{CCl}_{3(g)} + \text{Cl}_{(g)} \longrightarrow \text{CCl}_{4(g)}$ fast
- Rate law for the reaction is
 A. $\text{Rate} = [\text{CHCl}_3][\text{Cl}]^2$ B. $\text{Rate} = [\text{CCl}_3][\text{Cl}]$
 C. $\text{Rate} = [\text{CHCl}_3][\text{Cl}_2]^{1/2}$ D. $\text{Rate} = [\text{Cl}_2]$
- Q.16 All are correct about zero order except
 A. All photochemical reactions are zero order
 B. Rate is independent of concentration
 C. Radioactive decay follows zero order
 D. Half-life is directly proportional to initial concentration
- Q.17 For the gas phase reaction $2\text{X} + \text{Y} \rightleftharpoons 2\text{Z}$ $\Delta\text{H} = -\text{ive kJmol}^{-1}$
 yield of Z at equilibrium could be increased by
 A. Increasing the pressure B. Increasing the temperature
 C. Using a catalyst D. Increasing the volume
- Q.18 If the value of the K_c is larger then it shows that the products are:
 A. More stable B. Not stable
 C. More unstable D. Do not gives information
- Q.19 The equilibrium at which the effect of pressure cannot be studied
 A. $\text{Ice} \rightleftharpoons \text{water}$ B. $\text{N}_{2(g)} + 3\text{H}_{2(g)} \rightleftharpoons 2\text{NH}_{3(g)}$
 C. $\text{H}_{2(g)} + \text{F}_{2(g)} \rightleftharpoons 2\text{HF}_{(g)}$ D. $2\text{SO}_{2(g)} + \text{O}_{2(g)} \rightleftharpoons 2\text{SO}_{3(g)}$
- Q.20 If the equilibrium constant K_c value for a certain reaction is very small, then:
 A. Reactants are in large amount
 B. Products are in appreciable amount
 C. Reactant and products both are in appreciable amount
 D. In such a situation equilibrium cannot be obtained
- Q.21 Choose the one which is not the assumption of collision theory of reaction rate:
 A. For chemical reaction to occur molecule / particles must collides
 B. For reacting Particles must possess a certain minimum amount of energy, the E_a
 C. Every collision is not productive
 D. For hydrogen chloride formation from atoms do not require specific orientation
- Q.22 The parameter which can neither affect equilibrium constant nor the position of equilibrium.
 A. Catalyst B. Concentration of reactants and product
 C. Temperature D. Pressure
- Q.23 For the first order reaction, half-life is related to the expression $k t_{1/2} = 0.693$ Half life is the
 A. Time taken for the conc. of the product to the increase to half of its original value.
 B. Time taken for the concentration of the reactant, to fall to half of its products value.
 C. Time taken for the concentration of the reactant to fall to half of its original value
 D. Time taken for the concentration of the reactant to fall to quarter of its original value
- Q.24 The pK_a values of CH_3COOH is 4.74, the pH of equimolar solution of acetic acid and sodium acetate is:
 A. 13.0 B. 9.26
 C. 4.79 D. 4.74
- Q.25 If energy of activated complex is close to energy of reactants, it means that the reaction is
 A. Fast B. Moderate
 C. Slow D. Very slow
- Q.26 $\text{Ag}_2(\text{CrO}_4)$ is sparingly soluble having solubility value 3.2×10^{-5} . What will be its solubility
 A. 2.75×10^{-2} B. 2.0×10^{-2}
 C. 2.75×10^2 D. 3.63×10^3
- Q.27 The rate of reaction involving ions can be studied by method
 A. Dilatometric B. Electrical conductivity
 C. Refractometric D. Optical rotation
- Q.28 The rate law for the reaction is $\text{rate} = k[\text{A}][\text{B}]^{1/3}$. The order of reaction is
 A. Zero B. $2/3$
 C. $1/3$ D. $4/3$

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 B. Time taken for the concentration of the reactant, to fall to half of its products value.
 C. Time taken for the concentration of the reactant to fall to half of its original value
 D. Time taken for the concentration of the reactant to fall to quarter of its original value
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 A. Zero B. $2/3$
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- Q.29 In a reaction, $A + B \rightarrow \text{Product}$, rate is doubled when the concentration of B is doubled, and rate increases by a factor of 8 when the concentrations of both the reactants A and B are doubled, rate law for the reaction can be written as
 A. Rate = $k[A][B]$ B. Rate = $k[A]^2[B]$
 C. Rate = $k[A]^3[B]$ D. Rate = $k[A][B]^2$
- Q.30 When the change in concentration is $6 \times 10^{-3} \text{ moldm}^{-3}$ and time for that change is 100 seconds, the rate of reaction will be
 A. $6 \times 10^{-3} \text{ moldm}^{-3} \text{ sec}^{-1}$ B. $6 \times 10^{-7} \text{ moldm}^{-3} \text{ sec}^{-1}$
 C. $6 \times 10^{-4} \text{ moldm}^{-3} \text{ sec}^{-1}$ D. $6 \times 10^{-5} \text{ moldm}^{-3} \text{ sec}^{-1}$
- Q.31 In the given $2A + B \rightarrow \text{products}$ it is observed on quadrupling the conc. of B, rate is increases 16 times. The order of reaction with respect to B is
 A. 0 B. 1
 C. -1 D. 2
- Q.32 Correct equilibrium constant expression for the following reaction is

$$\text{N}_{2(g)} + 3\text{H}_{2(g)} \rightleftharpoons 2\text{NH}_{3(g)}$$

 A. $\frac{4x^2V^2}{(a-x)(b-3x)^3}$ B. $\frac{2x^2V^2}{(a-x)(3b-x)^3}$
 C. $\frac{4x^2V^2}{(a-x)(3b-x)^3}$ D. $\frac{4x^2}{V^2(a-x)(b-3x)^3}$
- Q.33 Which of the followings is pseudo first order reaction
 A. Acid catalyzed hydrolysis of an ester B. Hydrolysis of tertiary butyl bromide
 C. Chloroform to Carbon tetrachloride D. Both A and B
- Q.34 According to Arrhenius equation, which statement is correct
 A. Rate constant increases with the increase in activation energy
 B. Rate constant decreases with the increase in temperature
 C. Rate constant decrease with the decrease in temperature
 D. Both A and B
- Q.35 $2X + Y \rightleftharpoons Z$ At equilibrium 0.20 mole of X, 0.45 mole of Y and 0.15 mole of Z are present, Calculate K_c
 A. 8.3 B. 5.0
 C. 4.0 D. 6.0
- Q.36 When 1 mole of HCl is added to 1 molar aqueous solution of H_2S then
 A. pH of solution decreases B. S^{2-} ion concentration decreases
 C. Ionization of H_2S decreases D. All of these
- Q.37 In $\text{N}_2 + 3\text{H}_2 \rightleftharpoons 2\text{NH}_3$, the yield of product will be minimum if
 A. Temperature is increased and pressure remains same
 B. Temperature is increased and pressure is decreased
 C. Both temperature and pressure is increased
 D. Amount of catalyst is increased
- Q.38 Correct optimum conditions for synthesis of ammonia by Haber process
 A. 200-300 atm, 400°C , Fe/MgO, Al_2O_3 and SiO_2
 B. 1-2 atm $400-500^\circ\text{C}$, V_2O_5
 C. 200-300 atm, 650°C , Pt
 D. 10-20atm, 200°C
- Q.39 A certain chemical reaction has the rate equation, Rate = $k[A][B]^2$. The rate is $2.5 \times 10^{-3} \text{ moldm}^{-3}\text{s}^{-1}$. When [A] is 0.2 mol dm^{-3} and [B] is $0.050 \text{ mol dm}^{-3}$. Calculate the numerical value of rate constant 'k'
 A. 50 B. 5.0
 C. 2 D. 0.05
- Q.40 One of the following is not a physical method for determination of rate of reaction
 A. Spectrometry B. Electrical Conductivity
 C. Refractrometry D. Titrimetry
- Q.41 For third order reaction, rate constant has units
 A. $\text{moldm}^{-3}\text{s}^{-1}$ B. $\text{mol}^{-1}\text{dm}^3\text{s}^{-1}$
 C. s^{-1} D. $\text{mol}^{-2}\text{dm}^6\text{s}^{-1}$
- Q.42 Arrhenius equation describes the effect of
 A. Temperature on rate of reaction B. Volume on rate of reaction
 C. Pressure on rate of reaction D. Number of moles on rate of reaction
- Q.43 Catalyst can change
 A. K_c B. Equilibrium yield
 C. ΔH D. E_a

Chemistry (A+ series)



KIPS
PREPARATIONS

(U# 04) CTS

2023

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Incomplete statement

LOGICAL REASONING MDCAT

UNIT-3 (A+SERIES)

TOPIC:

✓ LOGICAL DEDUCTIONS

Q.1 One evening, P started walking positioning his back towards the sun after some time, he turned left, then turned right and towards the left again. In which direction is he going now?

- A. North
B. South
C. East
D. West

Q.2 A four-person crew from Classic Colors is painting Mr. Faisal's house. Mohsin is painting the front of the house. Rizwan is in the alley behind the house painting the back. Javed is painting the window frames on the north side, Sohail is on the south. If Mohsin switches places with Javed, and Javed then switches places with Sohail, where is Sohail?

- A. In the alley behind the house
B. On the north side of the house
C. In front of the house
D. On the south side of the house

DIRECTIONS: (QUESTIONS 3 to 4):

(i) A, B, C, D, E, F and G are sitting on a wall and all of them are facing east.

(ii) C is on the immediate right of D.

(iii) B is at an extreme end and has E as his neighbor.

(iv) G is between E and F.

(v) D is sitting third from the south end.

Q.3 Who is sitting to the right of E?

- A. A
B. G
C. D
D. F

Q.4 Which of the following pairs of people are sitting at the extreme ends?

- A. AB
B. AE
C. CB
D. FB

DIRECTIONS:

A blacksmith has five iron articles A, B, C, D and E, each having a different weight.

(i) A weighs twice as much as B.

(ii) B weighs four and a half times as much as C.

(iii) C weighs half as much as D.

(iv) D weighs half as much as E.

(v) E weighs less than A but more than C.

Q.5 Which of the following represents the descending order of weights of the articles?

- A. A, B, E, D, C
B. B, D, E, A, C
C. E, C, D, A, B
D. C, A, D, B, E

Q.6 Statements:

The Shop and Save Grocery is south of Greenwood Pharmacy.

Rebecca's house is northeast of Greenwood Pharmacy.

Rebecca's house is west of the Shop and Save Grocery.

If the first two statements are true, the third statement is

- A. True
B. False
C. Uncertain
D. None of these

Q.7 Statements:

The temperature on Monday was lower than on Tuesday.

The temperature on Wednesday was lower than on Tuesday.

The temperature on Monday was higher than on Wednesday

If the first two statements are true, the third statement is

- A. True
B. False
C. Uncertain
D. None of these

Q.8 Statements:

Three pencils cost the same as two erasers.

Four erasers cost the same as one ruler.

Pencils are more expensive than rulers.

If the first two statements are true, the third statement is

- A. True
B. False
C. Uncertain
D. None of these

DIRECTION: (QUESTION 9 to 13)

Anam, Mehwish Raju, Laraib and Dua are five cousins. Anam is twice as old as Mehwish. Raju is half the age Mehwish. Anam is half the age of Dua and Raju is twice the age of Laraib.

- Q.9 Who is the youngest?**
A. Dua
B. Raju
C. Laraib
D. Anam
- Q.10 Who is the eldest?**
A. Dua
B. Laraib
C. Anam
D. None of these
- Q.11 Which of the following pairs of persons are of the same age?**
A. Mehwish and Laraib
B. Anam and Mehwish
C. Mehwish and Raju
D. None of these
- Q.12 Anam is younger than:**
A. Raju
B. Mehwish
C. Dua
D. None of these
- Q.13 If Mehwish is 16 years old, then what is the age of Laraib**
A. 4 years
B. 5 years
C. 7 years
D. 14 years
- Q.14 Z25A, ?, X23C, W22D, V21E**
A. Y24A
B. Y24B
C. X24C
D. Y26D
- Q.15 Find out the wrong term 52, 51, 48, 43, 34, 27, 16**
A. 51
B. 48
C. 34
D. 27
- Q.16 Radio : Listener :: Film : ?**
A. Producer
B. Actor
C. Viewer
D. Director
- Q.17 Spider : Insect :: Crocodile : ?**
A. Reptile
B. Mammal
C. Frog
D. Carnivore
- Q.18 Statements:**
All grapes are apples.
All apples are mangoes
Conclusions:
I. All grapes are mangoes
II. All mangoes are grapes
A. If only I follows
B. If only II follows
C. If neither I nor II follows
D. If both I and II follows
- Q.19 Statements:**
All inputs are outputs.
Some outputs are results.
No result is good.
Conclusions:
I. Some inputs are results
II. Some goods are not outputs.
III. Some inputs are good.
A. Only I follows
B. Only II follows
C. Both II and III follow
D. None follows
- Q.20 Statements:**
Most architects are writers.
No writer is a driver.
All drivers are architects.
Conclusions:
I. Some writers are architects.
II. All architects are drivers.
III. No driver is a writer.
IV. Some drivers are writers.
A. Only I follows
B. Only II and III follow
C. Only I and III follow
D. None of these

ENGLISH MDCAT

TEST-4 (A+ SERIES)

TOPICS:

COMBINATION MISTAKES & VOCABULARY

Directions:

Spot the Error

- Q.1 He behaved as if (A) he was (B) in his living room at (C) home, when, clearly (D) he wasn't.
A. as if B. was C. at D. clearly
- Q.2 If I had (A) not gone to bed so late, (B) I had not (C) been tired. (D)
A. If I had B. so late C. had not D. tired
- Q.3 Early (A) in the book, this exchange takes place (B) between the author or (C) his guide to (D) the ways of Australia's Aborigines.
A. Early B. takes place C. or D. to
- Q.4 Wishes haunt (A) us throughout (B) our life; some times we wish we live (C) somewhere else. (D)
A. haunt B. throughout C. live D. else
- Q.5 Maulvi Abul had a special amulet whose charm (A) blessed him with (B) secret power to get so much money (C) as he desired (D) from the angels.
A. whose charm B. with C. so much money D. desired
- Q.6 It was nothing less (A) but (B) to be appointed acrobat to the Court of the country in which (C) he lived. (D)
A. nothing less B. but C. in which D. lived
- Q.7 As soon as (A) a mallet and a blanket were (B) brought, he tied up (C) the woman's throat. (D)
A. As soon as B. were C. tied up D. the woman's throat
- Q.8 If you did not dig (A) it, before (B) the king you will go (C) and then you will be hanged. (D)
A. did not dig B. before C. will go D. hanged
- Q.9 Although the evening air was no longer (A) black and thick, but (B) everything else was gone (C) under the brown masses. (D)
A. no longer B. but C. was gone D. the brown masses
- Q.10 Most of them (A) were wearing overcoats such that (B) are (C) found in large bundles at the secondhand clothes' shops. (D)
A. Most of them B. such that C. are D. clothes' shops
- Q.11 The cities (A) show an (B) absence of automobiles which (C) is neither backwardness or (D) delay.
A. The cities B. an C. which D. or
- Q.12 To tell (A) you the truth, Chipping, I'm not taking (B) too easy (C) a time (D) here.
A. To tell B. taking C. too easy D. time
- Q.13 He spoke with such (A) fondness of the tuna melt that (B) although (C) my disdain for tinned tuna felt compelled (D) to try one.
A. such B. that C. although (in spite of) D. compelled
- Q.14 The hotel was sealed off (A) like (B) a team of paramedics (C) treated one of the injured workers. (D)
A. sealed off B. like C. paramedics D. the injured workers
- Q.15 Half a million years ago (A) the population of the world was (B) much small (C), but since then (D) has gradually increased.
A. ago B. was C. much small D. ,but since then

Directions:

Choose the Correct Option

- Q.16
A. I spoke to both the Director or her secretary. B. I spoke to both the Director but her secretary.
C. I spoke to both the Director as well as her secretary. D. I spoke to both the Director and her secretary.
- Q.17
A. If you want ice cream there's nor raspberry, lemon and vanilla.
B. If you want ice cream there's neither raspberry, lemon or vanilla.
C. If you want ice cream there's either raspberry, lemon or vanilla.
D. If you want ice cream there's either raspberry, lemon and vanilla.
- Q.18
A. He neither smiled, spoke, or looked at me. B. He neither smiled, spoke, nor looked at me.
C. He neither smiled, spoke, and looked at me. D. He neither smiled, spoke, did not looked at
- Q.19
A. She not only sings like an angel, but also dances divinely.
B. She does not only sings like an angel, but also dances divinely.
C. She not only sings like an angel, as well as dances divinely.
D. She not only sings like an angel, and dances divinely.
- Q.20
A. As soon as she had agreed to marry him when she started to have doubts.
B. As soon as had she agreed to marry him than she started to have doubts.
C. No sooner had she agreed to marry him when she started to have doubts.
D. No sooner had she agreed to marry him than she started to have doubts.

- Q.21
 A. She was scarcely inside the house than the kids started screaming.
 B. She was scarcely inside the house, the kids started screaming.
 C. She was scarcely inside the house before the kids started screaming.
 D. She was scarcely inside the house then the kids started screaming.
- Q.22
 A. I'll have a good time if I win or lose.
 C. I'll have a good time whether I win nor lose.
 B. I'll have a good time whether I win or lose.
 D. I'll have a good time whether I win and lose.
- Q.23
 A. She had reduced the wooden blade to splinters before I got it out again.
 B. She had reduced the wooden blade to splinters before I get it out again.
 C. She has reduced the wooden blade to splinters before I got it out again.
 D. She reduced the wooden blade to splinters before I can get it out again.
- Q.24
 A. She had just turned over the supper steaks when the telephone rings.
 B. She had just turned over the supper steaks when the telephone rang.
 C. She will have just turned over the supper steaks when the telephone rang.
 D. She had just turned over the supper steaks when the telephone had rung.
- Q.25
 A. He would do it if he had to crawl.
 C. He would do it if he would have to crawl.
 B. He would do it if he has to crawl.
 D. He would have done it if he had to crawl.
- Q.26
 A. The pines looked as if their long boughs will be fondling a white cloud.
 B. The pines looked as if their long boughs are fondling a white cloud.
 C. The pines looked as if their long boughs have been fondling a white cloud.
 D. The pines looked as if their long boughs were fondling a white cloud.
- Q.27
 A. If we stay here, we'd all change.
 C. If we stay here, we'll all change.
 B. If we will stay here, we'll all change.
 D. If we stayed here, we'll all change.
- Q.28
 A. She got a glimpse of a very different way of life.
 B. She did a glimpse of a very different way of life.
 C. She made a glimpse of a very different way of life.
 D. She captured a glimpse of a very different way of life.
- Q.29
 A. The students finely does their assignments.
 C. The students finely kept their assignments.
 B. The students finely were having their assignments.
 D. The students finely did their assignments.
- Q.30
 A. I made a terrible shock when I saw him.
 C. I took a terrible shock when I saw him.
 B. I did a terrible shock when I saw him.
 D. I got a terrible shock when I saw him.

Directions:

Choose the correct SYNONYMS

- Q.31 CAPTIVATED
 A. Fascinated
 B. Averted
 C. Absolved
 D. Redeemed
- Q.32 CURIOUS
 A. Typical
 B. Peculiar
 C. Predictable
 D. Customary
- Q.33 FRINGED
 A. Licensed
 B. Homely
 C. Embossed
 D. Soiled
- Q.34 CONFINING
 A. Isolating
 B. Rampant
 C. Insolating
 D. Exceeding
- Q.35 CRAMMED
 A. Merrily
 B. Deficient
 C. Drained
 D. Brimming

Directions:

Choose the Correct Antonym

- Q.36 DELICATELY
 A. Defly
 B. Meticulously
 C. Daintily
 D. Sordidly
- Q.37 Choose the Correct Spelling
 A. Crateria
 B. Cretaria
 C. Critaria
 D. Criteria

Directions:

Choose the correct WORD with respect to the given context.

- Q.38 She is so _____ that she easily catches cold.
 A. sober
 B. sincere
 C. sensitive
 D. irritated
- Q.39 I decided to sell a piece of land when I was offered a more _____ price.
 A. correct
 B. true
 C. exact
 D. realistic
- Q.40 Mary became _____ at typing because she practiced every day for six months.
 A. proficient
 B. reflective
 C. dormant
 D. redundant

English (A+ series)

2023



KIPS
PREPARATIONS

V# 04 (CTS)

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