CADET COLLEGE KOHAT

ENTRANCE EXAMINATION, 11TH CLASS – 2024

Total Time: 3 Hours

Total Marks : 200

CHEMISTRY (50)	PHYSICS (50)	ENGLISH (50)	MATHS / BIOLOGY (50)	TOTAL (200)

Instructions :

1. Use same sheet for answers.
2. Over-writing / cutting / erasing are not allowed.
3. Please send copy of DMC immediately on declaration of SSC result.

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Q/No. 1(20)	Q/No. 2 (30)	Total (50)

PAPER CHEMISTRY
(Use same sheet for answers)

Q/No. 1   Tick (✓) the correct option: (20)

(i).   One mole of an unsaturated Hydrocarbon reacts with one mole of Hydrogen to form a saturated compound. Predict the formula of unsaturated compound.
(a) C_6H_{12} (b) C_4H_{10} (c) C_3H_4 (d) C_7H_{16}

(ii).   Which one of the following compound is aldehyde?
(a) CH_3CH_2OH (b) CH_3COOH (c) CH_3COCH_3 (d) CH_3CHO

(iii). Marble building are disintegrated by Acid rain because of the reaction of acid with;
(a) Calcium Sulphate (b) Calcium Oxalate (c) Calcium Carbonate (d) Calcium Nitrate

(iv).   Which of the following molecule shows +2 as oxidation number of oxygen?
(a) Na_2O (b) Na_2O_2 (c) Cl_2O (d) F_2O

(v).   1 amu is equal to _____ Kg.
(a) 1.67×10^{-24} (b) 1.67×10^{31} (c) 1.67×10^{-27} (d) 1.67

(vi).   2 moles of Na_2SO_4 are dissolved in one dm^3 of solution. Molarity of the solution is _____
(a) 1 M   (b) 2 M   (c). 3 M   (d) 2.5 M

(vii). Which of the following changes reaction is an example of oxidation?
(a) Chlorine molecule to chloride   (b) Silver atoms to Silver(I) ion
(c) Oxygen molecule to oxide ion   (d) Iron(III) to Iron(II) ion

(viii). What is the conjugate base of HF?
(a) H^+ (b) F^+ (c) H^- (d) F^-

(ix).   Which element belongs to chalcogen family?
(a) Si   (b) Sb   (c) Se   (d) Sc

(x).   Which statement about $^{12}_6X$ and $^{14}_6Y$ is false?
(a) They have the same number of electrons   (b) They are isotopes
(c) The have the same number of Neutrons   (d) They are same elements

(xi).   58.5 g mol^{-1} is the:
(a) Formula Mass of NaCl (b) Molar mass of NaCl (c) Mass of one formula   (d) All

(xii). For reversible reaction given below, the Unit of Kc is: $2SO_2 + O_2 \rightleftharpoons 2SO_3$
(a) $mol^{-1}.dm^3$ (b) $mol^{-1}.dm^{-3}$ (c) $mol.dm^{-3}$ (d) $mol.dm^3$

(xiii). Incomplete combustion of Alkanes produces _____.
(a) Carbon dioxide only   (b) Carbon monoxide only
(c) Carbon dioxide and Carbon black   (d) Carbon monoxide and Carbon black

(xiv). Which one of the following has greater number of molecules?
(a) 1 mole H_2O (b) 2 mol H_2 (c) 2.5 mol CO_2 (d) 44 g CO_2

(xv).   Which one of the following reaction is substitution reaction?
(a) Halogenation of Alkynes   (b) Halogenation of Alkanes
(c) Halogenation of Alkenes   (d) Bromination of Alkenes

(xvi). H_2SO_4 is an example of _____ Acid.
(a) Monoprotic   (b) Diprotic   (c) Triprotic   (d) None of these **(P.T.O)**

(xvii). The water soluble base is called_____
    (a)   Halogen   (b) Metal   (c)   Alkali   (d) None of these

(xviii). Which one of the following has strong bonding?
    (a) CH_4 (b) PH_3 (c) H_2S (d) H_2O

(xix). Percentage of Nitrogen in Urea is _____
    (a) 70%   (b) 50.5%   (c) 60.5%   (d) 46.6%

(xx). _____ Has greater electronegativity among the following
    (a) Fe   (b) Fe^{+3} (c) Fe^{+2} (d) Fe^{+1}

Q/No. 2   **Write short answers of the following:-**   (3 x 10 = 30)

i.   How would you distinguish between baking powder and washing soda by heating?

ii.   Define Avogadro's number. How does it relate to masses of chemical substances?

iii.   What are limitations of Arrhenius Concept? Explain.

iv.   The concentration of an aqueous solution of Potassium hydroxides is $1.x \ 10^{-3}$ mol.dm^{-3}. What is its POH? Classify the solution is acidic, basic or neutral.

(P.T.O)

v. Why Alkanes are inert in nature?

_____
_____
_____
_____
_____

vi. Why H_2O form Hydrogen bonding but H_2S not?

_____
_____
_____
_____
_____

vii. Why Ice floats on the surface of water?

_____
_____
_____
_____
_____

viii. Give the reason that why dative bond is always polar?

_____
_____
_____
_____
_____

ix. Show by chemical reaction that water is amphoteric in nature?

_____
_____
_____
_____
_____

x. Complete the following reactions:

$CH_3CH_2OH \xrightarrow[180°]{H_2SO_4}$ _____ + _____

$CH_3 I + 2H \xrightarrow{Zn / HCl}$ _____ + _____

$C_2H_2 + Cl_2 \longrightarrow$ _____
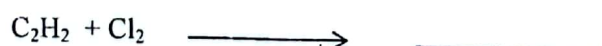
ENTRANCE EXAMINATION (11TH CLASS) – 2024

Fict:_____

Q/No. 1 (20)	Q/No. 2 (30)	Total (50)

PAPER PHYSICS
(Use same sheet for answers)   **(20)**

Q/No. 1:   **Tick (✓) the correct option:**

i.   A bird begins to accelerate at a constant rate of 0.3 m/s^2 for 3 sec. Its change in velocity is
(a) 1.5 m/s   (b) 0.9 m/s   (c) 2.4 m/s   (d) 1.95 m/s

ii.   The coefficient of friction has _____ unit.
(a) N   (b) J   (c) Kg m/s   (d) No unit

iii.   The formula for mass of earth, if its radius and acceleration due to gravity is given is:
(a) $\frac{g^2r}{G}$ (b) $\frac{gr^2}{G}$ (c) $\frac{Gr^2}{g}$ (d) $\frac{G^2r}{g}$

iv.   A wire of length 10m is stretched by 2m within elastic limit. The strain will be:
(a) $\frac{1}{2}$ N   (b) $\frac{2}{5}$ N   (c) 0.2   (d) None

v.   1 KWh is = _____.
(a) 746 W   (b) 3.6 J   (c) 746 hp   (d) 3.6 MJ

vi.   The heat energy required to raise the temperature of 1 Kg of water (with specific heat capacity = 4190 J/Kg/K) by 1°C is:
(a) 104750 J   (b) 100 J   (c) 4190 J   (d) 1 J

vii.   The thermal conductivity in solids varies _____ with length.
(a) Inversely   (b) directly   (c) Independently   (d) None of them

viii.   Work done will be zero when angle b/w force and displacement is:
(a) 30°   (b) 45°   (c) 60°   (d) 90°

ix.   The S.I unit and value of gravitational constant G is:
(a) 6.4x10^6 Nm^2/Kg^2 (b) 6.67x10^{-11} Nm^2/Kg^2 (c) 9.8 m/s^2 (d) None

x.   The torque in uniformly rotating fan having blade of length 0.5m is:
(a) 0Nm   (b) 0.5 Nm   (c) -0.5 Nm   (d) 2 Nm

xi.   Negative β(Beta) – decay changes a neutron into a _____ inside the nucleus with emission of Beta particle.
(a) Electron   (b) Proton   (c) big neutron   (d) None

xii.   1 T = _____
(a) Am/N   (b) N/Am   (c) NA/m   (d) Nm/A

xiii.   If 20A current flows through a resistor, which is connected to 40 volt battery, then resistance will be:
(a) 20 Ω   (b) 10 Ω   (c) 30 Ω   (d) 2 Ω

xiv.   The unit of electric potential is:
(a) Coulomb   (b) Volt   (c) Farad   (d) none of these

xv.   The focal length of concave mirror with radius of curvature 10cm is:
(a) +10 cm   (b) +5 cm   (c) -10 cm   (d) -5 cm   **(P.T.O)**

xvi. If the mass suspended from a simple pendulum is increases by 4 times, its time period will:
(a) increase by 2 times (b) decrease by 4 times (c) increase by 4 times (d) remains same

xvii. The frequency of a propeller of a plane, if it completes 250 cycles in 5 second is_____.
(a) 50 Hz   (b) 15 Hz   (c) Hz   (d) 25 Hz

xviii. The unit of sound intensity is:
(a) w/m^2 (b) Joule   (c) dbel   (d) None of these

xix. A reflected sound that arrives before 0.10 Sec is perceived as:
(a) Echo   (b) Reverberation   (c) ultrasonic   (d) infrasonic

xx. A.C generator works on the principle of:
(a) Mutual induction (b) D.C Motor   (c) Electromagnetic induction   (d) None of these

Q/No. 2:   **Give short answers to the following:**   **(10 x 3 = 30)**

i. For an object in free fall, how does acceleration vary with the distance travelled?

_____

_____

_____

_____

_____

ii. Since an object weighs less on the surface of the moon than on Earth's surface. Does it have less inertia on the moon's surface?

_____

_____

_____

_____

_____

iii. Show that about 786 W of power is expended when a 500-N barbell is lifted 2.2 m above the floor in 1.4 seconds.

_____

_____

_____

_____

_____

(P.T.O)

iv.   When Sunlight warms the land beside a cool body of water, a breeze begins to blow from the water towards the land. Explain

_____

_____

_____

_____

_____

v.   Why burns caused by steam at 100°C on the skin are often more severe than burns caused by water at 100°C? Explain.

_____

_____

_____

_____

_____

vi.   What is critical-damping, under-damping and over-damping in oscillations.

_____

_____

_____

_____

_____

vii.   Why don't you hear the sound of distant fireworks until after you see them?

_____

_____

_____

_____

_____

(P.T.O)

viii. If electrons were positive and protons were negative, discuss whether Coulombs law would be written the same or differently.

ix. Why does "Cell" in cell phone refers to?

x. How many protons are contained in a gold nucleus ($^{197}_{79}Au$) ?

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ENTRANCE EXAMINATION (11TH CLASS) – 2024

Fict:_____

QNo.1(10)	QNo. 2 (06)	QNo.3 (06)	QNo.4(08)	QNo.5(10)	QNo.6(10)	TOTAL(50)

PAPER ENGLISH
(Use same sheet for answers)

(10)

Q/No. 1:   Do as directed :-

i.   He is present.   (Underline the main verb in this sentence)

ii.   "Army" is an example of _____ noun.   (Concrete, Collective, Abstract)

iii.   _____ he is poor, yet he is honest.   (However, Despite, Although)

iv.   The crescent moon was _____ last night.   (Sited, Cited, Sighted)

v.   I will _____ my midnight oil for chasing my dreams.   (Let, Burn, Burnt)

vi.   Which one is the noun form of oppose?   (Oppose, Opposition, Opposite)

vii.   Find the feminine of "Stallion".   (Cow, Mare, Ram)

viii.   Encircle the correct spelt word.   (Assault, Asalt, Assalt)

ix.   The antonym of "chaos" is _____.   (Confusion, Peace, Violence)

x.   His _____ were present at the party.   (Sons-in-law, Son-in-laws, Son)

(06)

Q/No. 2:   Change the Voice:-

i.   The teacher teaches to the students.

_____

ii.   The match has been won.

_____

iii.   Who is driving the car?

_____

(06)

Q/No. 3:   Change the Narration:-

i.   Ali said, "How cunning I am!".

_____

ii.   They said to me, "What are you doing?".

_____

iii.   She said to me, " I do not like you".

_____

(08)

Q/No. 4:   Write the meaning of the given Proverbs.

i.   A bird in the hand is worth two in the bush.

_____

_____

(P.T.O)

ii. Actions speak louder than words.

_____

_____

iii. An apple a day keeps the doctor away.

_____

_____

iv. Do not count your chickens before they hatch.

_____

_____

Q/No. 5: **Use the following words in your own sentences.** (10)

i. Panacea:

_____

_____

ii. Scale(V):

_____

_____

iii. Resilience:

_____

_____

iv. Plight:

_____

_____

v. Inevitable:

_____

_____

Q/No. 6: **Write an Essay of about 120 words on the given topic:** (10)
"Deforestation – A threat to our environment"

_____

_____

_____

_____

_____ **(P.T.O)**

Fict:_____

Q/No. 1 (10)	Q/No. 2 (40)	Total (50)

PAPER BIOLOGY
(Use same sheet for answers)

Q/No. 1: Tick (✓) the correct option: **(10)**

(i). Which one of the following is not a macromolecule?
(a) Sucrose   (b) Fatty acid   (c) Protein   (d) Glucose

(ii). Malaria in humans is caused by:
(a) Bacteria   (b) Virus   (c) Plasmodium   (d) Fungi

(iii). _____ is the basic unit of classification:
(a) Genus   (b) species   (c) Family   (d) Order

(iv). Goiter is a disease which is caused by the deficiency of _____ in diet.
(a) Iodine   (b) Calcium   (c) Iron   (d) Sodium

(v). A person having blood group A, contains:
(a) Antigen A   (b) Antigen B   (c) Antigen A and B   (d) No Antigen

(vi). Chemical coordination takes place through certain chemicals called:
(a) Enzymes   (b) Hormones   (c) Inhibitors   (d) Fatty Acids

(vii). Which of the following is not a part of the axial skeleton:
(a) Sternum   (b) Vertebrae   (c) Skull   (d) Leg bones

(viii). The alternate forms of a gene are called its:
(a) Chromosomes   (b) Alleles   (c) Chromatids   (d) Centromeres

(ix). Predation helps to maintain balance in:
(a) Ecology   (b) Community   (c) Population   (d) Ecosystem

(x). The uncontrollable desire for drugs is known as:
(a) Vaccination   (b) Addiction   (c) Infection   (d) Hallucination

Q/No.2 Attempt all questions: **(8 x 5 = 40)**

i. Differentiate between Prokaryotes and Eukaryotes:

P.T.O

ii. Why small cell is metabolically more active than large cell?

iii. Define Autonomic nervous system and its two types?

iv. What is the short sightedness and how it can be rectified?
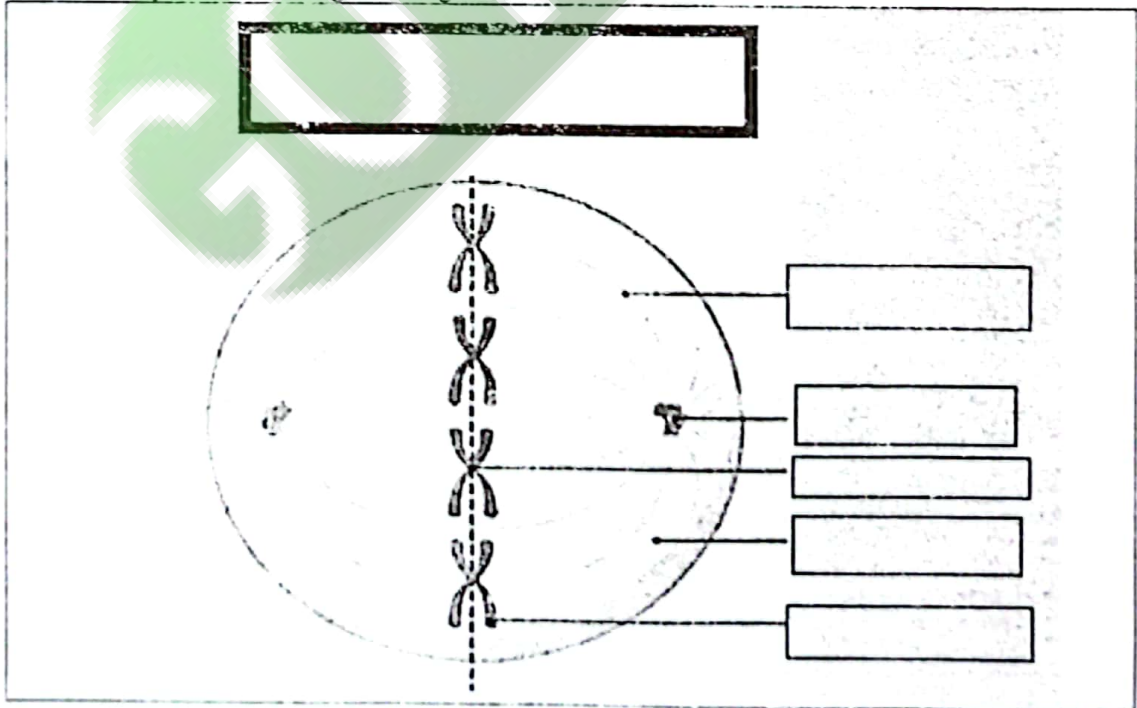
v. Draw a di hybrid cross up to F_2 generation

vi. Write down the taxonomic hierarchy of Man.

vii. Differentiate between epigeal and hypogeal germination.

viii. Identify and label the given diagram.

Q/No. 1 (10)	Q/No. 2 (10)	Q/No. 3 (10)	Q/No. 4 (10)	Q/No. 5 (10)	Total (50)

PAPER MATHEMATICS
(Use same sheet for answers)

(10)

Q/No. 1   Tick (✓) the correct answer :-

i. $\sqrt{1 - Cos^2\theta}$ = _____.
    a. $Cos\,\theta$ b. $Sin^2\theta$ c. $Tan\,\theta$ d. $Sin\,\theta$

ii.   If $b^2 - 4ac < 0$, there will be _____ real roots.
    a.   One   b.   Two   c.   No   d.   Three

iii.   The most frequent occurring observation in a data is called _____.
    a.   Mean   b.   Median   c.   Mode   d.   H.M

iv.   Through how many non-collinear points can a circle pass?
    a.   One   b.   Two   c.   Three   d.   None

v. π radians = _____ degree.
    a. $45°$ b. $90°$ c. $180°$ d. $60°$

vi.   In the Quadratic equation $2X^2 - 4X + 5 = 0$, sum of roots = _____
    a. $\frac{1}{2}$ b. $\frac{5}{2}$ c. $\frac{2}{5}$ d. 2

vii.   A line which is perpendicular to a radial segment of a circle at its outer end is called:
    a.   Secant   b.   Tangent   c.   Chord   d.   Diameter

viii.   0.23987 can be written in Scientific notation as:
    a. 2.3987×10^{-1} b. 2.3987×10^{1} c. 2.3987×10^{-2} d. 23.987×10^{-1}

ix.   For any two non-empty sets A and B, $A' \cup B'$ = _____.
    a. $A' \cap B'$ b. $(A \cup B)'$ c. $(A \cap B)'$ d.   None of these

x.   If $Sin\,\theta = \frac{1}{2}$, then θ = _____
    a. $30°$ b. $45°$ c. $60°$ d. $90°$

(10)

Q/No. 2   Fill in the blanks:-
i.   If $2^{2x} = 16$, then x = _____.

ii. $2 + (6 + 3) = (2 + 6) + 3$ is _____ property w.r.t addition.

iii. $Sec^2\theta$ = _____.

iv. $\frac{x}{x-y} + \frac{x}{x+y}$ = _____.

v. $\frac{6}{\sqrt{2}}$ = _____.

vi.   If f: A → B and Range of f = B, then f is an _____ function.

vii.   If $B \subseteq A$, then $A \cap B$ = _____.

viii.   The square of standard deviation is called _____.

ix.   If $Sin\theta < 0$, $Cos\theta > 0$, then θ lies in _____ Quadrant.

x.   The solution set of $x^2 - 2x + 1 = 0$ is _____.

(P.T.O

Q/No. 3:   **Prove that** $\left(-1 + i\sqrt{3}\right)^{4}\left(-1 - i\sqrt{3}\right)^{5} = 512w^{2}$ (10)

Q/No. 4:   Find x, if $\sqrt{5x + 21} = x + 3$, Also verify your answer.   (10)

Q/No. 5:   Solve $\dfrac{x}{x+1} + \dfrac{x+1}{x} = \dfrac{13}{6}$ (10)

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Fict:_____

Q/No. 1(20)	Q/No. 2 (30)	Total (50)

PAPER CHEMISTRY
(Use same sheet for answers)

Q/No. 1   Tick (✓) the correct option: (20)

(i).   An atom carrying charge is called_____.
(a) an ion   (b) a cation   (c) an anion   (d)   all of these

(ii).   Which among the following is an Alkali metal_____.
(a) H   (b) Mg   (c) Ca   (d   None of these

(iii).   _____ has greater electronegativity among the following.
(a) Fe   (b) Fe^{+2} (c) Fe^{+3} (d) Fe^{+1}

(iv).   _____ is not property of a gas.
(a) Diffusion   (b) Effusion   (c) Compressibility   (d) Melting

(v).   The conversion of gases into solid is called _____.
(a) Reverse Sublimation   (b) Condensation   (c) Evaporation   (d) Deposition

(vi).   The Oxidation number of Nitrogen in NH_4^+ is _____
(a) +3   (b) +4   (c).   -3   (d) -4

(vii).   Natural gas is a mixture of _____ molecular mass hydrocarbons.
(a) High   (b) Low   (c) Intermediate   (d) both a and b

(viii). General formula of cycloalkane is similar to that of _____.
(a) Alkane   (b) Alkene   (c) Alkynes   (d) None of these

(ix).   Which among the following is heterocyclic organic compound?
(a) Anthracene   (b) Napthalene   (c) Thiopene   (d) all of these

(x).   Stone Cancer is caused by _____
(a) Ozone layer Depletion (b) UV Radiations   (c) Global warming (d) Acid Rain

(xi).   Which among the following is not a hydrocarbon:
(a) CH_3Cl (b) CH_4 (c) C_2H_2 (d) None of these

(xii).   Chloride ion(Cl^-) is conjugate base of _____.
(a) CH_3Cl (b) NH_4Cl (c) HCl (d) Both b and c

(xiii). Acetic Acid (CH_3COOH) and Nitric Acid (HNO_3) are _____ acids.
(a) Monobasic   (b) Weak and Strong   (c) Strong and weak   (d) both a and c

(xiv). The empirical formula of $C_6H_{12}O_6$ is _____.
(a) $C_3H_6O_3$ (b) $C_2H_4O_2$ (c) CH_2O (d) All of these

(xv).   Electron affinity _____when we move from right to left in period of periodic table.
(a) increase   (b) decrease   (c) constant   (d) None

(xvi). Peptide linkage exists in _____
(a) Amino Acid   (b) Protien   (c) Fats   (d) Nuclic Acid

(P.T.O)

(xvii). The solubility of a solute doesn't depends upon_____
    (a) Nature of Solvent   (b) Nature of Solute   (c) Pressure   (d) None of these

(xviii). The sour taste of cold drinks is due to _____
    (a) Bases   (b)   Carbon monoxide   (c)   Carbonic Acid   (d) Salts

(xix). Which among the following cause the temporary hardness of water
    (a) $CaCl_2$ (b) $MgCO_3$ (c) $Ca(HCO_3)_2$ (d) $CaSO_4$

(xx). Carbonization is conversion of _____
    (a) Coal into wood (b) Coal into Coal gas   (c) wood into coal (d) Wood in coal tar

Q/No. 2   **Write short answers of the following:-**   (3 x 10 = 30)
  i.   Can you predict the products if $KMnO_4$ solution react with alkenes.

ii.   Why organic compounds are volatile? Give reason.

iii.   What is the chemistry of acid rain?

iv.   Increase in concentration of CO_2 cause greenhouse effect. Justify it.

(P.T.O)

Why NH_3 is Lewis base. Justify it.

_____

_____

_____

_____

_____

vi.   Calculate the pH of 0.2 M   NaOH solution.

_____

_____

_____

_____

_____

vii.   Assign the oxidation number of Phosphorous (P) and Sulphur (S) in the compounds?
       H_3PO_4 , P_2O_5 and H_2SO_4

_____

_____

_____

_____

_____

_____

viii. Why HF form hydrogen bond but C_3H_8 not?

_____

_____

_____

_____

_____

ix.   Differentiate between free radicals and ions. Give examples?

_____

_____

_____

_____

x.   Prove that $P_1V_1 = P_2V_2$

_____

_____

_____

_____

ENTRANCE EXAMINATION (11TH CLASS) – 2023

Fict:_____

Q/No. 1 (20)	Q/No. 2 (30)	Total (50)

PAPER PHYSICS
(*Use same sheet for answers*)

(20)

Q/No. 1   **Tick (✓) the correct option:**

i.   Which one of the following is the smallest quantity:
(a) 00.01 g   (b) 2 mg   (c) 100 µg   (d) 5000 ng

ii.   A moving car at velocity of 30 m.s^{-1} slows down uniformly to 15 m.s^{-1} in 5 s. The acceleration produced is?
(a) 3 m.s^{-2} (b) -3 m.s^{-2} (c) 5 m.s^{-2} (d) -5 m.s^{-2}

iii.   The line parallel to time axis on v-t graph represents?
(a) constant acceleration (b) constant speed (c) variable acceleration (d) zero distance

iv.   Which of the following is the unit of momentum?
(a) N.m   (b) kg.m.s^{-2} (c) N.s   (d) N.s^{-1}

v.   The angle at which the horizontal and vertical components of a force becomes equal is?
(a) 45°   (b) 60°   (c) 90°   (d) 30°

vi.   When the distance between two objects is increased by a factor of 2 then the gravitational force is?
(a) increased by a factor of 4   (b) decreased by a factor of 4
(c) increased by a factor of 16   (d) decreased by a factor of 16

vii.   Which type of energy weightlifter used to lift weight?
(a) mechanical energy   (b) chemical energy   (c) heat energy   (d) All of them

viii.   The density of a substance can be found with the help of:
(a) Pascal's law   (b) Hook's law (c) Archimedes principle   (d) Principle of floatation

ix.   Cooling in refrigerator is produced by the process of:
(a) condensation   (b) boiling   (c) evaporation   (d) sublimation

x.   The mode of heat transfer which does not require material medium is called:
(a) convection   (b) radiation   (c) conduction   (d) all of them

xi.   When a wave enters from one medium into another medium, which of the following remains constant?
(a) speed   (b) frequency   (c) amplitude   (d) wavelength

xii.   The characteristic of sound waves by which we can distinguish between shrill and grave sounds is called:
(a) pitch   (b) quality   (c) loudness   (d) none of them

xiii.   A convex lens with focal length 8.00 cm has the power of lens?
(a) 2.05 D   (b) 4.00 D   (c) 12.5 D   (d) 16.0 D

xiv.   To get maximum value of capacitance having five (5) capacitors, they must be connected in?
(a) series combination   (b) parallel combination
(c) both are equally applicable   (d) none of these

xv.   A 35.0 V battery is connected to a 10.0 Ω resistor. Amount of current in the circuit is:
(a) 0.3 A   (b) 3.0 A   (c) 3.5 A   (d) 35 A   **(P.T.O)**

xvi. One kWh is the unit of electricity for which the tariff is decided by WAPDA is equal to?
(a) 36 MJ   (b) 3.6 MJ   (c) 3.6 J   (d) 3.6 GJ

xvii. The unit of inductance is henry which is equal to?
(a) VA/s   (b) Vs/A   (c) V/As   (d) VA/m

xviii. The electronic circuit that gives high (1) output when all its inputs are high (1) is called?
(a) AND gate   (b) OR gate   (c) NAND gate   (d) NOR gate

xix. Software that allows users to interact with the computer system is:
(a) hardware   (b) application   (c) operating system   (d) program

xx. Electromagnetic waves as light from sun reached the earth due to:
(a) nuclear fission   (b) nuclear fusion   (c) burning of gases   (d) none of these

Q/No. 2   **Give short answers to the following:**   (10 x 3 = 30)

i. Why is the surface of conveyor belt made rough?

ii. Explain why door handles are not put near hinges.

iii. Can centripetal force ever do work on an object? Explain.

iv.   Pressure at one depth acts equally in all directions. Explain.

_____

_____

_____

_____

_____

_____

v.   Why is ice at 0°C a better coolant of soft drinks than water at 0°C?

_____

_____

_____

_____

_____

_____

vi.   Will a nearsighted person who wears corrective lenses in her glasses be able to see clearly underwater when wearing those glasses?

_____

_____

_____

_____

_____

vii.   Compare the coulomb's force with gravitational force.

_____

_____

_____

_____

_____

_____

(P.T.O)

viii. Can an electron at rest be set into motion with magnetic field?

ix. What is the function of an accelerating anode in an electronic gun?

x. The atomic number of one particular isotope is equal to its mass number. Which isotope is it?

ENTRANCE EXAMINATION (11TH CLASS) – 2023

Fict:_____

QNo.1(10)	QNo. 2 (06)	QNo.3 (06)	QNo.4 (08)	QNo.5 (10)	QNo.6 (10)	TOTAL(50)

PAPER ENGLISH
(Use same sheet for answers)

Q/No. 1:   **Do as directed :-**   (10)

i.   "Intelligence" is an example of _____noun. (collective, concrete, abstract)

ii.   I **admire** your courage.

     The underline word is a / an_____verb.(transitive, intransitive, irregular)

iii.   _____she is clever, she often makes mistakes.   (since, although, despite)

iv.   I am exhausted, let's_____ a day.   (call it, call at, call off)

v.   The colour of the walls in my room has faded _____   (away, up, down)

vi.   Write nouns of the words: (Brave:_____, Honest:_____)

vii.   _____ sun rises in _____ east.   (a, an, the)

viii.   There is **something** happening outside.

     The underline word is a / an _____ pronoun. (relative, indefinite, reflexive)

ix.   Afidevit, Affidavit, Affidevit.   (Write the correct spelling: _____)

x.   The word that is opposite in meaning to "dearth" is _____

                                        (abundance, shortage, famine)

Q/No. 2:   **Change the Voice:-**   (06)

i.   Who is drawing the picture?

     _____

ii.   Make your lives extraordinary.

     _____

iii.   Has the servant washed the dishes?

     _____

Q/No. 3:   **Change the Narration:-**   (06)

i.   The teacher said to us, "If you wrote properly, I would award you with good marks".

     _____

ii.   She said to me, "Do you like history books?"

     _____

iii.   The student said, "What an easy paper it was!"

     _____ (P.T.O)

Q/No. 4:   Give meaning of the given Proverbs.   (08)

    i.   Better late than never.

_____

    ii.   After a storm comes a calm.

_____

    iii.   When in Rome do as the Romans do.

_____

    iv.   Every cloud has a silver lining.

_____

Q/No. 5:   Use the following words in your own sentences: (05)

    i.   Valiant: _____

    ii.   Secluded: _____

    iii.   Dispel: _____

    i.v.   Clog: _____

    v.   Trait: _____

Q/No. 6   Write an Essay of about 120 words on the given topic: (15)

       " Uneasy lies the head that wears the crown "

_____

_____

_____

_____

_____

_____

_____

_____

_____(P.T.O)

ENTRANCE EXAMINATION (11TH CLASS) – 2023

Fict:_____

Q/No. 1 (10)	Q/No. 2 (10)	Q/No. 3 (10)	Q/No. 4 (10)	Q/No. 5 (10)	Total (50)

PAPER MATHEMATICS
(Use same sheet for answers)

Q/No. 1   Tick (✓) the correct answer :-   **(10)**

iii.   If $5^x = 1$, then x = _____ .
   a.   1   b.   2   c.   0   d.   5

iv.   If set A has m elements and set B has n elements, then number of binary relations in A×B are:
   a.   m × n   b. 2^m c. $2^{m \div n}$ d. $2^{m \times n}$

iii.   1 radian = _____ .
   a. $\left(\frac{180}{\pi}\right)^o$ b. $\left(\frac{\pi}{180}\right)^o$ c. 180° d. π

iv.   In the given set of data   5, 7, 7, 5, 3, 7, 2, 5, 8, 12,   mode is _____ .
   a.   7   b.   5   c.   both 5 and 7   d.   None

v. $\tan 90^o$ = _____ .
   a.   1   b.   0   c.   undefined   d. $\sqrt{3}$

vi.   Which of the following represent the sides of triangle:
   a.   3, 4 and 5   b.   3, 4 and 7   c.   3, 4 and 8   d.   3, 4 and 1

vii.   Factor of $2 + 5t - 12t^2$ are _____ .
   a.   1+4t, 2-3t   b.   1+4t, 2+3t   c.   1-4t, 2-3t   d.   1-4t, 2+3t

viii.   If $16 \times 2^m = 4^{n-8}$ then m = _____ if n = 8.
   a.   -4   b.   -2   c.   0   d.   1

ix. $\frac{1}{a+b} + \frac{b}{a^2-b^2}$ = _____ .
   a. $\frac{b+1}{a^2-b^2}$ b. $\frac{a}{a^2-b^2}$ c. $\frac{b}{a^2-b^2}$ d. $\frac{b+a}{a^2-b^2}$

x.   The solution set of $\left|\frac{4x}{3}\right| = 4$ is _____ .
   a.   { 3 }   b.   { ±4 }   c.   { ±3 }   d.   { -3 }

Q/No. 2   Fill in the blanks:-   **(10)**

i. $\frac{Cos\theta}{Sin\theta}$ = _____ .

ii. $(3-i)(4+i)$ = _____ .

iii.   Product of Complex cube roots of unity is _____ .

iv. $a^3 - b^3$ = _____ .

v.   The sum of interior angles of a regular Hexagon is ____ .

vi.   If $log_3(5x + 1) = 2$, then x is _____ .

vii.   If w is complex cube root of unity then w^{-16} = _____ .

viii.   Product of matrix $[1 \ -5]\begin{bmatrix} -6 \\ 8 \end{bmatrix}$ = _____ .

ix.   Complement of empty set $(\emptyset')$ = _____ .

x.   Mean proportional of 32 and 2 is _____ .   **(P.T.O)**

Q/No. 3: Prove that $\sec^2\theta + \tan^2\theta = \dfrac{1+\sin^2\theta}{1-\sin^2\theta}$ (10)

Q/No. 4: (5+5)

(a) Find the Mean Proportion of $a^2 - b^2$ and $\dfrac{a+b}{a-b}$	(b) Solve for x, if $4\,|5x-2|+3 = 11$

Q/No. 5: For what value of K, the sum of roots of $2x^2 + Kx + 6 = 0$ is equal to the product of its roots. (10)

Fict:_____

Q/No. 1 (18)	Q/No. 2 (32)	Total (50)

PAPER BIOLOGY
(Use same sheet for answers)

Q/No. 1:   Tick (✓) the correct option: (18)

(i).   Paleontology is the study of:
     a. Heart   b. Fossils   c. Embryo   d. Tissues

(ii).   The possible answer to biological problem is called
     a. Observation   b. Deduction   c. Law   d. Hypothesis

(iii).   Euglena belongs to the kingdom:
     a. Prokaryote   b. Protista   c. Fungi   d. Plantae

(iv).   The organelle involved in protein synthesis is:
     a. Centriole   b. Golgi apparatus   c. Mitochondria   d. Ribosomes

(v).   Chromosomes duplication occur in:
     a. G1 Phase   b. S Phase   c. G2 Phase   d. Telo phase

(vi).   The enzyme _____ speed up the digestion of cellulose.
     a. Cellulase   b. Hydrolase   c. Transferase   d. Protease

(vii).   One Cardiac cycle completes in _____ seconds?
     a. 0.5 s   b. 0.8 s   c. 0.3 s   d. 0.1 s

(viii).   The deficiency of _____ cause chlorosis:
     a. Carbon   b. Iron   c. Nitrogen   d. Oxygen

(ix).   The number of cartilaginous rings in trachea are?
     a. 12 to 14   b. 14 to 18   c. 16 to 20   d. 20 to 24

(x).   The loss of water from the surface of plants in the form of vapors is called_____
     a. Guttation   b. Translocation   c. Transpiration   d. Excretion

(xi).   The brain is surrounded by three layers of membranes called:
     a. Meninges   b. Peritoneum   c. Pericardium   d. Tympanic

(xii).   The vertebral column consists of _____ vertebrae :
     a. 31   b. 33   c. 35   d. 38

(xiii).   In Parthenogenesis a new animal develops from:
     a. sperm   b. Fertilized egg   c. unfertilized egg   d. Body cell

(xiv).   The combination of the alleles of a gene pair which represent genetic makeup of an organism is called:
     a. Phenotype   b. Genotype   c. Homozygous   d. Heterozygous

(xv).   A group of similar organisms that can interbreed and produce fertile off springs is called:
     a. species   b. Population   c. community   d. variety

(xvi).   Mitosis does not occur in _____
     a. Humans   b. Earth worm   c. Star fish   d. Bacteria

(xvii).   The enzyme required to cut the DNA in specific sequence is _____
     a. Ligase   b. Protease   c. Endonuclease   d. DNA ase   **(P.T.O)**

(xviii).Any preparation intended to produce immunity to a disease by simulating the production of antibodies is:

    a. antibodies   b. Antigens   c. Sedatives   d. vaccines
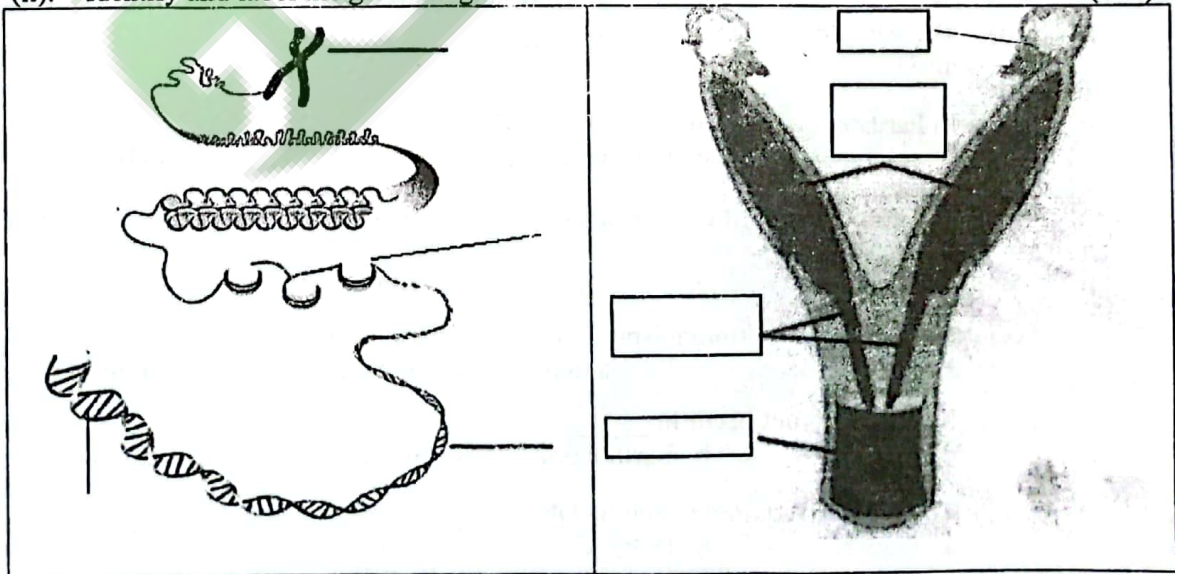
Q/No. 2:   Write brief answers: (32)

(i).   Differentiate between the following:

(a) Lock and model	Induce fit hypothesis (04)

(b) Genotype	Phenotype (04)

(ii).   Identify and label the given diagrams: (4+4)

(P.T.O)

(iii). Draw a monohybrid cross up to F2 generation. (04)

(iv). Write down the reactants and products. (04)

Reactants   **Products**

Sunlight

Light Reaction
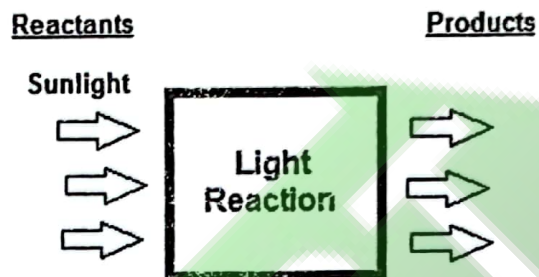
(v). What is the long sight ness? How it can be corrected? (04)

(vi). Describe the structure of typical nephron. (04)