MDCAT (UHS entry test) — 2018 · Solved Past Paper

Body: University of Health Sciences, Lahore (UHS) · **Post:** MDCAT (UHS entry test) · **Year:** 2018 · **Questions:** 220 in the original paper — **220 solved and verified**, none excluded · **Price:** Free

> **How to use this paper:** each question shows the stem, the four options, and the correct answer. Click “Why each option?” under a question to see all four options explained — one question teaches four topics. General Knowledge answers are as of the 2018 sitting.

Source note: mdcatguide.com compilation 'UHS MDCAT 2018' (28 pages, scanned, no text layer), Paper Code C, 220 MCQs, 150 minutes, 1100 marks (5 per correct, -1 per wrong), held Sunday 23 September 2018. Sections: Biology 88, Chemistry 58, Physics 44, English 30. The official UHS answer key is NOT in this compilation (last pages are mdcatguide library/ads pages, PDF pp. 23-28). Verification: official UHS answer-key table as printed on p. 2 of the MDCAT Study Buddy copy 'MDCAT 2018 With Answer Key' (public Google Drive folder 1x0NXX_b1DhZn-wShwlNpGrqizZYYUp8K), 220/220 rows; Learnospot/PLS Academy quiz 'UHS MDCAT Past Paper 2' (quiz id 268), correct answers extracted from the quiz scripts and mapped to paper letters by option text; textbook fact and worked derivations for every answer. 8 answers follow the official key over the Learnospot key (Q20, Q38, Q116, Q141, Q150, Q151, Q154, Q168). All 220 stems and options visually verified against the rendered pages of the source scan. Decisions by the assistant under the owner's 8 Nov 2026 delegation.

Question 1 Biology

The thickest chamber of human heart is

atrium

- B. Right atrium
- C. Right ventricle
- D. Left ventricle ✓ **Correct answer**

A. The left atrium is a thin-walled receiving chamber; it does not have the thickest wall.

B. The right atrium is also thin-walled; it receives deoxygenated blood from the body.

C. The right ventricle pumps blood only to the lungs, so its wall is much thinner than the left ventricle's.

D. The left ventricle pumps blood to the whole body against high pressure, so it has the thickest muscular wall of the four chambers.

Question 2 Biology

The enzymes required for Kreb cycle are found in _____.

- A. F1 particles
- B. Lysosomes
- C. Cytoplasm
- D. Matrix ✓ **Correct answer**

A. F1 particles (ATP synthase) sit on the inner mitochondrial membrane and make ATP in oxidative phosphorylation; they do not carry the Krebs cycle.

B. Lysosomes contain digestive enzymes, not Krebs cycle enzymes.

C. The cytoplasm hosts glycolysis, not the Krebs cycle.

D. The enzymes of the Krebs (citric acid) cycle are located in the mitochondrial matrix.

Question 3 Biology

Coccyx vertebrae are located in

- B. Lumbar region
- C. Pelvic region ✓ **Correct answer**
- D. Thoracic region

A. The cervical region is the neck (7 vertebrae), not the site of the coccyx.

B. The paper prints "Lumber" for lumbar (lower back); the coccyx lies below the lumbar region.

C. The coccyx (tailbone) is at the base of the vertebral column, in the pelvic region.

D. The thoracic region is the chest (12 vertebrae bearing ribs), not the site of the coccyx.

Note: Filed option B read "Lumber region" (misprint in the source reproduction); corrected to "Lumbar region" as documented in the reviewed file.

Question 4 Biology

Cell mediated immune response is given by:

- A. T lymphocytes ✓ **Correct answer**
- B. B lymphocytes
- C. Neutrophils
- D. Macrophages

A. T lymphocytes (cytotoxic and helper T cells) carry out cell-mediated immunity.

B. B lymphocytes give the humoral response (antibodies), not the cell-mediated response.

C. Neutrophils are phagocytes of innate immunity, not the cells of the cell-mediated response.

D. Macrophages are antigen-presenting phagocytes; they support but do not themselves give the cell-mediated response.

5 Biology

Crossing over takes place during _____ of meiosis.

- A. Prophase I ✓ **Correct answer**
- B. Telophase I
- C. Metaphase I
- D. Anaphase I

A. Crossing over (exchange of segments between non-sister chromatids) occurs in prophase I, at the pachytene stage.

B. In telophase I the two haploid nuclei reform; no crossing over occurs then.

C. In metaphase I homologous pairs align at the equator; crossing over has already happened.

D. In anaphase I homologous chromosomes separate to opposite poles; crossing over has already happened.

Question 6 Biology

During breathing air from Pharynx enters to

- A. Trachea ✓ **Correct answer**
- B. Bronchioles
- C. Alveoli
- D. Bronchi

A. Air passes from the pharynx through the larynx into the trachea.

B. Bronchioles come later, after the trachea branches into bronchi.

C. Alveoli are the air sacs at the very end of the airway, not the next stop after the pharynx.

D. The bronchi branch off the trachea, so air reaches them only after the trachea.

7 Biology

Gradual break down of the alveolar wall leads to which type of disease in a smoker?

- A. Coronary heart disease
- B. Bronchitis
- C. Emphysema ✓ **Correct answer**
- D. Asthma

A. Coronary heart disease affects the heart's blood vessels, not the alveolar walls.

B. The paper prints "Bronchitus" for bronchitis, an inflammation of the bronchi, not the breakdown of alveolar walls.

C. In emphysema the alveolar walls gradually break down, reducing the surface for gas exchange; it is the classic smoking-related lung disease.

D. Asthma is a reversible narrowing of the airways, not a breakdown of alveolar walls.

Note: Filed option B read "Bronchitus" (misprint in the source reproduction); corrected to "Bronchitis" as documented in the reviewed file.

Question 8 Biology

Which of the following holds the alpha helix of protein in its place

- A. R group
- B. Disulphide bond
- C. Amino group
- D. Hydrogen bond ✓ **Correct answer**

A. The R group is the side chain of an amino acid; it does not itself hold the helix in place.

B. Disulphide bonds stabilise the tertiary structure, not the alpha helix.

C. The amino group is part of every amino acid; it is not the bond holding the helix.

bonds between the carbonyl oxygen and the amide hydrogen of the backbone hold the alpha helix in its coiled shape.

Question 9 Biology

If molecule can bind to another site of the enzyme rather than the true active site, it is referred as—

- A. Competitive Inhibitors
- B. Allosteric inhibition
- C. Non competitive inhibitors ✓ **Correct answer**
- D. Irreversible inhibition

A. A competitive inhibitor binds to the active site itself, competing with the substrate — the opposite of what the stem describes.

B. Allosteric inhibition is the mechanism (binding at a site other than the active site), but the question asks what the molecule is called: a non-competitive inhibitor.

C. A molecule that binds to a site other than the active site is a non-competitive inhibitor.

D. Irreversible inhibition means the inhibitor binds permanently; the stem says nothing about permanence.

Question 10 Biology

_____ is the site of light independent reaction

- A. Thylakoid membrane
- B. Thylakoid space
- C. Stroma ✓ **Correct answer**
- D. Grana

A. The thylakoid membrane hosts the light-dependent reactions, not the light-independent ones.

thylakoid space (lumen) is where protons accumulate in the light reactions.

C. The light-independent reactions (Calvin cycle) take place in the stroma of the chloroplast.

D. Grana are stacks of thylakoids, the site of the light-dependent reactions.

Question 11 Biology

When a nerve impulse jumps from one node of Ranvier to the next in a myelinated neuron, its called _____

- A. synapses
- B. Saltatory conduction ✓ **Correct answer**
- C. Resting potential
- D. Membrane potential

A. A synapse is the junction between two neurons, not the jumping of an impulse along a myelinated axon.

B. The impulse jumping from node to node of Ranvier in a myelinated neuron is saltatory conduction.

C. Resting potential is the membrane potential of a neuron at rest, not impulse conduction.

D. Membrane potential is the general voltage across the membrane, not the name of this jumping conduction.

Question 12 Biology

The ability to distinguish between two separate points/objects is

- A. Magnification
- B. Fractionation
- C. Centrifugation

A. Magnification is the enlargement of an image, not the ability to separate two close points.

B. Fractionation is the separation of cell components by centrifugation, not an optical property.

C. Centrifugation separates materials by spinning, not by distinguishing points.

D. Resolution (resolving power) is the ability to distinguish two separate points or objects as distinct.

Question 13 Biology

The term "Loss of appetite" refers to disease:

- A. Botulism
- B. Anorexia nervosa ✓ **Correct answer**
- C. Obesity
- D. Bulimia nervosa

A. Botulism is food poisoning by Clostridium botulinum toxin, not loss of appetite.

B. The paper prints "Annorexia nervosa" for anorexia nervosa, the eating disorder marked by loss of appetite and refusal to eat.

C. Obesity is excessive body fat, the opposite of loss of appetite.

D. The paper prints "Bulimia nervous" for bulimia nervosa, an eating disorder of bingeing and purging, not primarily loss of appetite.

Note: Filed option B read "Annorexia nervosa" (misprint in the source reproduction); corrected to "Anorexia nervosa" as documented in the reviewed file. Filed option D read "Bulimia nervous" (misprint in the source reproduction); corrected to "Bulimia nervosa" as documented in the reviewed file.

14 Biology

Lipid synthesis or lipid metabolism is the function of:

- A. Smooth Endoplasmic Reticulum ✓ **Correct answer**
- B. mitochondria
- C. Golgi complex
- D. Rough Endoplasmic Reticulum

A. The smooth endoplasmic reticulum synthesises lipids (and detoxifies drugs).

B. Mitochondria generate ATP by respiration; they do not synthesise lipids.

C. The Golgi complex modifies, sorts and packages proteins and lipids, but does not synthesise them.

D. The rough endoplasmic reticulum (studded with ribosomes) synthesises proteins, not lipids.

Question 15 Biology

Salivary Amylase begins to digest Starch to shorter polysaccharides and then to

- A. Glucose
- B. Maltose ✓ **Correct answer**
- C. Sucrose
- D. Lactose

A. Glucose is the final product of complete starch digestion (by maltase in the intestine), not the product of salivary amylase.

B. Salivary amylase breaks starch into shorter polysaccharides and then to the disaccharide maltose.

C. The paper prints "Sucrous" for sucrose, a different disaccharide (glucose + fructose), not the product of amylase action.

the milk sugar (glucose + galactose), not a product of starch digestion.

Note: Filed option C read "Sucrous" (misprint in the source reproduction); corrected to "Sucrose" as documented in the reviewed file.

Question 16 Biology

Chemical nature of primer used in PCR process is _____

- A. RNA
- B. Protein
- C. Carbohydrate
- D. DNA ✓ **Correct answer**

A. RNA primers are used in DNA replication in cells, but PCR uses synthetic DNA primers.

B. No protein primer is used in PCR.

C. No carbohydrate primer is used in PCR.

D. The primer in PCR is a short single-stranded DNA oligonucleotide that anneals to the template.

Question 17 Biology

In viruses, a combined structure formed by core (Nucleic Acid) and capsid is :

- A. Nucleocapsid ✓ **Correct answer**
- B. Prion
- C. Envelope
- D. Capsomeres

A. The nucleic acid core together with its protein capsid is the nucleocapsid.

B. A prion is an infectious misfolded protein with no nucleic acid.

C. The envelope is the lipid membrane around some viruses, outside the capsid.

-es are the protein subunits that build the capsid, not the core-plus-capsid structure.

Question 18 Biology

Skull, vertebral column, ribs and sternum forms :

- A. Appendicular skeleton
- B. Hydrostatic Skeleton
- C. Exoskeleton
- D. Axial skeleton ✓ **Correct answer**

A. The appendicular skeleton is the limbs and their girdles, not the skull and rib cage.

B. A hydrostatic skeleton is a fluid-filled body cavity (as in worms), not bone.

C. An exoskeleton is an external skeleton (as in arthropods), not the human skull and spine.

D. The skull, vertebral column, ribs and sternum together form the axial skeleton, the central axis of the body.

Question 19 Biology

Synthesis of microtubules increases in

- A. M-phase
- B. S-phase
- C. G1-phase
- D. G2-phase ✓ **Correct answer**

A. In M phase the spindle is already assembled and functioning; tubulin synthesis does not peak then.

B. S phase is for DNA synthesis and chromosome doubling, not tubulin synthesis.

growth phase before DNA synthesis.

D. Microtubule (tubulin) synthesis increases in G2, preparing the cell for mitosis.

Question 20 Biology

The region of the chromosome or, more specifically, a length of the DNA molecule, which has a particular function is called _____

- A. Kinetochore
- B. Locus
- C. Allele
- D. Gene ✓ **Correct answer**

A. The kinetochore is the protein structure on the centromere where spindle fibres attach, not a length of DNA with a function.

B. A locus is the position of a gene on a chromosome, not the functional DNA length itself.

C. An allele is one variant form of a gene; the stem defines the gene itself. (Key: the Learnospot key lists C — Allele; corrected to D — the stem's wording, "a length of the DNA molecule, which has a particular function", is the textbook definition of a gene, and the official UHS key lists D.)

D. A gene is a length of DNA that carries a particular function (coding for a protein or RNA).

Question 21 Biology

Urea cycle is the detoxification of

- A. Creatinine
- B. Amino acids
- C. Carbon dioxide
- D. Ammonia ✓ **Correct answer**

e is a waste product of muscle metabolism excreted in urine; the urea cycle does not detoxify it.

B. Amino acids are deaminated to produce ammonia, but the urea cycle detoxifies the ammonia, not the amino acids themselves.

C. Carbon dioxide is removed by the lungs, not by the urea cycle.

D. The urea cycle (ornithine cycle) in the liver converts toxic ammonia into urea for excretion.

Question 22 Biology

Chitin which makes the Exoskeleton in insects is further hardened by

- A. Protein and Sodium Bicarbonate
- B. Protein and Calcium Carbonate ✓ **Correct answer**
- C. Protein and Potassium Carbonate
- D. Protein and Sodium Carbonate

A. Sodium bicarbonate does not harden the insect exoskeleton.

B. Chitin is hardened by protein and impregnation with calcium carbonate.

C. Potassium carbonate does not harden the insect exoskeleton.

D. Sodium carbonate does not harden the insect exoskeleton.

Question 23 Biology

Number of salivary glands found in human oral cavity.

- A. 4
- B. 3
- C. 6 ✓ **Correct answer**
- D. 2

not four salivary glands, the three pairs give six.

B. Three is the number of pairs (parotid, submandibular, sublingual), not the number of glands.

C. Humans have three pairs of salivary glands (parotid, submandibular and sublingual), i.e. six glands in total.

D. Two is not the number of salivary glands in the human oral cavity. (Note: options A and B are partly hidden by the pink watermark in the mdcatguide scan; they were read from the cleaner Study Buddy copy of the same Paper Code C paper, which shows A) 4 and B) 3.)

Question 24 Biology

Following group is the example of acoelomates

- A. Annelids
- B. Aschelminthes
- C. Molluscs
- D. Platyhelminthes ✓ **Correct answer**

A. Annelids (earthworms, leeches) are coelomates, with a true coelom.

B. Aschelminthes (roundworms) are pseudocoelomates, not acoelomates.

C. Molluscs are coelomates.

D. Platyhelminthes (flatworms) have no body cavity at all; they are acoelomates.

Question 25 Biology

Glycosidic bond is formed by the:

- A. Removal of Oxygen
- B. Addition of Oxygen

noval of Water ✓ **Correct answer**

- D. Addition of Water

A. No oxygen atom is removed when a glycosidic bond forms.

B. No oxygen is added when a glycosidic bond forms.

C. A glycosidic bond forms by a condensation (dehydration) reaction, with the removal of a water molecule between two monosaccharides.

D. Addition of water (hydrolysis) breaks a glycosidic bond; it does not form one.

Question 26 Biology

Which of the following statement is correct about the respiratory pigments

- A. Myoglobin and Haemoglobin has higher affinity for nitrogen
- B. Cyanide and Haemoglobin has low affinity for oxygen
- C. Myoglobin has more affinity for oxygen as compared to haemoglobin ✓ **Correct answer**
- D. Albumin ,Globulin and Globin proteins are present in respiratory pigments

A. Respiratory pigments bind oxygen, not nitrogen; "Heamoglobin" is the paper's spelling of haemoglobin.

B. Cyanide binds strongly to cytochrome oxidase and blocks respiration; it is not a statement about haemoglobin's oxygen affinity.

C. Myoglobin (in muscle) binds oxygen more tightly than haemoglobin, so it takes up oxygen from haemoglobin and releases it only at very low oxygen levels.

D. Albumin and globulin are plasma proteins, not parts of respiratory pigments.

Note: Filed option A read "Myoglobin and Heamoglobin has higher affinity for nitrogen" (misprint in the source reproduction); corrected to "Myoglobin and Haemoglobin has higher affinity for nitrogen" as documented in the reviewed file.

27 Biology

Conversion of ammonium into nitrates is

- A. Nitrification ✓ **Correct answer**
- B. Nitrogen Fixation
- C. Ammonification
- D. Denitrification

A. Nitrification is the bacterial conversion of ammonium to nitrites and then nitrates.

B. Nitrogen fixation converts atmospheric nitrogen gas into ammonia, not ammonium into nitrate.

C. Ammonification is the release of ammonia from dead organic matter, the reverse direction.

D. Denitrification converts nitrates back to nitrogen gas.

Question 28 Biology

An area previously supporting life is made barren, the subsequent recolonization is called——

- A. Climax community
- B. Pioneer succession
- C. Primary succession
- D. Secondary succession ✓ **Correct answer**

A. A climax community is the stable final stage of succession, not the recolonization process.

B. Pioneer species are the first colonisers, not the name of the succession type.

C. Primary succession starts on bare rock or new land that never supported life.

D. When an area that previously supported life is made barren and then recolonised, the

condary succession (soil and seeds remain).

Question 29 Biology

In human female egg is fertilized in

- A. Ovary
- B. Vagina
- C. Oviduct ✓ **Correct answer**
- D. Uterus

A. The ovary releases the egg; fertilisation does not occur there.

B. The vagina receives the sperm; fertilisation does not occur there.

C. In humans the egg is fertilised in the oviduct (fallopian tube), usually in its upper part.

D. The uterus is where the fertilised egg implants and develops, not where fertilisation occurs.

Question 30 Biology

Which hormone is released in female in response to FSH from pituitary gland?

- A. Oestrogen ✓ **Correct answer**
- B. ADH
- C. Oxytocin
- D. Progesterone

A. FSH from the pituitary stimulates the ovarian follicles, which release oestrogen.

B. ADH (vasopressin) regulates water reabsorption in the kidney; it is not released in response to FSH.

C. Oxytocin causes uterine contraction and milk ejection; it is not released in response to FSH.

prints "Progestrone" for progesterone, which is released by the corpus luteum after ovulation (in response to LH), not in response to FSH.

Note: Filed option D read "Progestrone" (misprint in the source reproduction); corrected to "Progesterone" as documented in the reviewed file.

Question 31 Biology

In cross section each Centriole consist of nine (each in triplets) of

- A. Microfilaments
- B. Microvilli
- C. Microtubules ✓ **Correct answer**
- D. Intermediate filaments

A. Microfilaments are actin filaments of the cytoskeleton, not the units of centrioles.

B. Microvilli are finger-like projections of the cell surface, not centriole units.

C. In cross section a centriole shows nine triplets of microtubules (9+0 arrangement).

D. The paper prints "Intermediat filaments" for intermediate filaments, which support the cell but do not form centrioles.

Note: Filed option D read "Intermediat filaments" (misprint in the source reproduction); corrected to "Intermediate filaments" as documented in the reviewed file.

Question 32 Biology

In immunoglobulin /antibodies, Two light chains and two heavy chains are linked to each other by:

- A. Covalent bonds
- B. Hydrogen bonds
- C. Ionic bonds
- D. Disulphide bonds ✓ **Correct answer**

s are linked by a specific kind of covalent bond, the disulphide bond; the general term is not the expected answer.

B. Hydrogen bonds stabilise the folded shape of the chains, but they do not link the heavy and light chains together.

C. Ionic bonds do not link the heavy and light chains of an antibody.

D. The two heavy and two light chains of an immunoglobulin are linked to each other by disulphide bonds.

Question 33 Biology

In nervous system chemical messengers are called_____.

- A. Neurotransmitters ✓ **Correct answer**
- B. Hormones
- C. Chemoreceptors
- D. Enzymes

A. Chemical messengers that carry signals across synapses in the nervous system are neurotransmitters.

B. Hormones are chemical messengers of the endocrine system, carried in blood, not the nervous system's synaptic messengers.

C. The paper prints "Chemoreceptores" for chemoreceptors, which are sensory receptors, not messengers.

D. Enzymes are biological catalysts, not chemical messengers of the nervous system.

Note: Filed option C read "Chemoreceptores" (misprint in the source reproduction); corrected to "Chemoreceptors" as documented in the reviewed file.

34 Biology

The first part of the large intestine is

- A. Colon
- B. appendix
- C. Caecum ✓ **Correct answer**
- D. Rectum

A. The colon follows the caecum; it is not the first part of the large intestine.

B. The appendix is a small blind tube attached to the caecum, not the first part of the large intestine.

C. The caecum is the first (blind) part of the large intestine, where the small intestine joins it.

D. The rectum is the last part of the large intestine.

Question 35 Biology

Scapula is a

- A. Tail bone
- B. Hip bone
- C. Skull bone
- D. Shoulder bone ✓ **Correct answer**

A. The tail bone is the coccyx, not the scapula.

B. The hip bone is the pelvis (ilium, ischium, pubis), not the scapula.

C. Skull bones form the cranium, not the scapula.

D. The scapula is the flat triangular shoulder bone (shoulder blade).

36 Biology

A complete turn of the double helix of DNA comprises of:

- A. 34 nm
- B. 3.4 Angstrom
- C. 3.4 nm ✓ **Correct answer**
- D. 34 micrometer

A. 34 nm is ten times the length of one complete turn; one turn is 3.4 nm.

B. 3.4 Angstrom (0.34 nm) is the distance between two adjacent base pairs, not one full turn.

C. One complete turn of the DNA double helix is 3.4 nm long (10 base pairs).

D. 34 micrometres is far larger than the DNA helix dimensions.

Question 37 Biology

The enzymes required in Glycolysis are present in:

- A. Golgi Apparatus
- B. Cell cytoplasm ✓ **Correct answer**
- C. Inner Mitochondrial Membrane
- D. Matrix of Mitochondria

A. The Golgi apparatus modifies and packages proteins; glycolysis does not occur there.

B. The enzymes of glycolysis are present in the cell cytoplasm (cytosol).

C. The inner mitochondrial membrane hosts the electron transport chain, not glycolysis.

D. The mitochondrial matrix hosts the Krebs cycle, not glycolysis.

38 Biology

Which lipid is totally hydrophobic or insoluble

- A. Triglycerides ✓ **Correct answer**
- B. Phospholipids
- C. Waxes
- D. Terpenoids

A. Triglycerides (fats and oils) are non-polar and totally hydrophobic, insoluble in water.

B. Phospholipids are amphipathic (hydrophilic phosphate head and hydrophobic fatty-acid tails), so they are not totally hydrophobic. (Key: the Learnospot key lists B — Phospholipids; corrected to A — phospholipids are amphipathic by definition, and the official UHS key lists A.)

C. Waxes are also very hydrophobic, but the exam's intended answer (and the official key) is triglycerides, the textbook example of a totally hydrophobic lipid.

D. Terpenoids (e.g. rubber, steroids) are a diverse group, not the textbook example of a totally hydrophobic lipid.

Question 39 Biology

_____ hormone is released from posterior lobe of pituitary gland.

- A. Adrenaline
- B. Thyroid stimulating hormone
- C. FSH
- D. Antidiuretic hormone ✓ **Correct answer**

A. Adrenaline is released by the adrenal medulla, not the pituitary.

B. Thyroid stimulating hormone (TSH) is released by the anterior lobe of the pituitary.

C. FSH is released by the anterior lobe of the pituitary.

ic hormone (ADH, vasopressin) is released from the posterior lobe of the pituitary (it is made in the hypothalamus and stored in the posterior pituitary).

Question 40 Biology

Ribosomes are made up of _____ and _____.

- A. Proteins and carbohydrates
- B. RNA and Lipid
- C. RNA and proteins ✓ **Correct answer**
- D. RNA and carbohydrates

A. Ribosomes contain no carbohydrate.

B. Ribosomes contain no lipid.

C. Ribosomes are made of ribosomal RNA (rRNA) and proteins.

D. Ribosomes contain no carbohydrate.

Question 41 Biology

A non protein part essential for proper and essential functioning of enzyme is called

- A. Additional factor
- B. Co factor ✓ **Correct answer**
- C. Efficient co factor
- D. Extra factor

A. "Additional factor" is not the term for the non-protein part of an enzyme.

B. A non-protein part essential for an enzyme's proper functioning is a cofactor (a metal ion or a coenzyme).

C. "Efficient co factor" is not a term used for enzyme parts.

D. "Extra factor" is not the term for the non-protein part of an enzyme.

42 Biology

DNA made by joining pieces from two or more different sources

- A. Probes
- B. Restriction endonuclease
- C. Mutated DNA
- D. Recombinant DNA ✓ **Correct answer**

A. A probe is a labelled DNA fragment used to detect a gene, not DNA joined from different sources.

B. A restriction endonuclease is the enzyme that cuts DNA, not the joined DNA itself.

C. Mutated DNA is DNA with an altered sequence, not DNA joined from different sources.

D. DNA made by joining pieces from two or more different sources is recombinant DNA.

Question 43 Biology

The Harmone which control,s the uptake of the Sodium ions in kidney and its maintenance in blood plasma is

- A. Somatotrophic Hormone
- B. Aldosterone Hormone ✓ **Correct answer**
- C. Gonadotrophic Hormone
- D. Thyroxin hormone

A. Somatotrophic (growth) hormone promotes growth, not sodium uptake in the kidney.

B. Aldosterone (a mineralocorticoid) controls sodium reabsorption in the kidney and maintains sodium in the blood plasma.

C. Gonadotrophic hormones act on the gonads, not on sodium uptake in the kidney.

D. Thyroxin regulates the basal metabolic rate, not sodium uptake in the kidney.

44 Biology

which statement is correct about mitochondria and chloroplast

- A. Number of mitochondria and chloroplast are same in all cells
- B. chloroplast and mitochondria are single membrane structures
- C. chloroplast and mitochondria can not live independently ✓ **Correct answer**
- D. 70 S ribosome is attached with the inner membrane of mitochondria and chloroplast

A. The numbers of mitochondria and chloroplasts vary greatly between cell types; they are not the same in all cells.

B. Both mitochondria and chloroplasts are double-membrane structures.

C. Both are semi-autonomous organelles of endosymbiotic origin; neither can live independently outside the cell.

D. The 70S ribosomes of mitochondria and chloroplasts lie free in the matrix/stroma; they are not attached to the inner membrane.

Question 45 Biology

The capillaries of glomerulus rejoin to form an——

- A. Efferent arteriole ✓ **Correct answer**
- B. Afferent arteriole
- C. Peritubular capillaries
- D. Collecting duct

A. The glomerular capillaries rejoin to form the efferent arteriole, which leaves the glomerulus.

B. The afferent arteriole brings blood into the glomerulus; it is not formed by the rejoining capillaries.

nt arteriole later branches into the peritubular capillaries, but the capillaries rejoin first into the efferent arteriole.

D. The collecting duct collects urine from the nephrons; it has nothing to do with glomerular capillaries.

Question 46 Biology

How many sodium ions are pumped out in response to two potassium ions transported into the membrane?

- A. 2
- B. 3 ✓ **Correct answer**
- C. 4
- D. 1

A. Two sodium ions out for two potassium ions in would be a 1:1 exchange, which is not how the pump works.

B. The sodium–potassium pump expels three sodium ions for every two potassium ions it brings in (3 Na+ out : 2 K+ in).

C. Four sodium ions is not the pump's ratio.

D. One sodium ion is not the pump's ratio.

Question 47 Biology

Chance of a cross over between two loci is directly proportional to their

- A. Thickness
- B. Width
- C. Length
- D. Distance ✓ **Correct answer**

A. The thickness of a chromosome does not determine the chance of crossing over.

of a chromosome does not determine the chance of crossing over.

C. The length of the chromosome is not the direct measure; it is the distance between the loci that matters.

D. The chance of crossing over between two loci is directly proportional to the distance between them on the chromosome (the basis of gene mapping).

Question 48 Biology

Process ensuring the survival of species over long periods of time,even though individual members of the species die.

- A. Reproduction ✓ **Correct answer**
- B. Adaptability
- C. Mitosis
- D. Respiration

A. Reproduction produces new individuals, so the species survives even though individual members die.

B. Adaptability helps individuals survive in changing conditions, but it does not by itself ensure the species continues over time.

C. Mitosis produces new cells within an individual, not new individuals of the species.

D. Respiration releases energy for the individual; it does not ensure the survival of the species.

Question 49 Biology

Lysogenic Viruses are also known as

- A. Enveloped Phage
- B. Virulent Phage
- C. Prophage ✓ **Correct answer**

terlophage

A. An enveloped phage is a phage with a lipid envelope; it is not the name for a lysogenic virus.

B. A virulent phage causes the lytic cycle only; it is the opposite of a lysogenic (temperate) phage.

C. In the lysogenic cycle the viral genome integrates into the host chromosome as a prophage; the lysogenic virus is known as a prophage. (Note: the Learnospot twin phrases the same option as "Temperate phages" and agrees on letter C.)

D. A bacteriophage is any virus that infects bacteria, whether lytic or lysogenic.

Question 50 Biology

Organs Specialized to perform different functions but structurally alike are

- A. Analogous organs
- B. Homologous organs ✓ **Correct answer**
- C. Autologous organs
- D. Anuelogous organs

A. Analogous organs perform the same function but are structurally different (e.g. wings of insects and birds).

B. Homologous organs are structurally alike (same basic plan) but specialised to perform different functions (e.g. forelimbs of vertebrates).

C. "Autologous" is not a term used for such organs.

D. The paper prints "Anuelogous organs"; it is not a valid term.

Question 51 Biology

By PCR we means

- B. Polymerase chain reaction ✓ **Correct answer**
- C. Polymerase copy reaction
- D. Polymerase cross reaction

A. "Chronic" is not part of the name of PCR.

B. PCR stands for polymerase chain reaction, the technique for amplifying DNA.

C. "Copy reaction" is not the name of PCR.

D. "Cross reaction" is not the name of PCR.

Question 52 Biology

If lipopolysaccharides did not appear in the wall of bacteria on staining then it will be known as _____

- A. Gram negative
- B. Gram positive ✓ **Correct answer**
- C. Capsule
- D. Gram positive & gram negative

A. Gram-negative bacteria have lipopolysaccharides in their outer membrane; their absence points the other way.

B. Lipopolysaccharides are found in the outer membrane of Gram-negative bacteria only; a bacterium whose wall lacks them is Gram-positive.

C. A capsule is a slimy outer layer around some bacteria, not a staining class.

D. A bacterium cannot be both Gram-positive and Gram-negative.

Question 53 Biology

The low levels of Surfactant produced by Alveolar epithelium causes :

piratory distress syndrome ✓ **Correct answer**

- B. Emphysema
- C. Bronchitis
- D. Asthma

A. Low surfactant in the alveoli causes the alveoli to collapse, producing respiratory distress syndrome (notably in premature infants).

B. Emphysema is the breakdown of alveolar walls (see Q7), not a surfactant deficiency.

C. Bronchitis is inflammation of the bronchi, not a surfactant deficiency.

D. Asthma is a reversible narrowing of the airways, not a surfactant deficiency.

Question 54 Biology

Deficiency of enzyme _____ causes combined immunodeficiency syndrome

- A. Adenosine transcriptase
- B. Adenosine transaminase
- C. Adenosine polymerase
- D. Adenosine deaminase ✓ **Correct answer**

A. "Adenosine transcriptase" is not an enzyme of this pathway.

B. "Adenosine transaminase" is not an enzyme of this pathway.

C. "Adenosine polymerase" is not an enzyme of this pathway.

D. Deficiency of adenosine deaminase (ADA) causes severe combined immunodeficiency (SCID), the "bubble boy" disease.

Question 55 Biology

Site of protein synthesis in cells are

- A. Ribosomes ✓ **Correct answer**

oplasmic Reticulum

- C. Nucleolus
- D. Smooth Endoplasmic Reticulum

A. Ribosomes are the sites of protein synthesis in the cell.

B. The rough endoplasmic reticulum carries ribosomes, but the synthesis itself happens on the ribosomes.

C. The nucleolus makes ribosomal RNA, not proteins.

D. The smooth endoplasmic reticulum synthesises lipids, not proteins.

Question 56 Biology

Keeping correct balance of ions and water in our body is called as:

- A. Thermoregulation
- B. Osmoregulation ✓ **Correct answer**
- C. Excretion
- D. Selective reabsorption

A. Thermoregulation is the control of body temperature, not of ions and water.

B. Keeping the correct balance of ions and water in the body is osmoregulation.

C. Excretion is the removal of metabolic wastes, not the balancing of ions and water.

D. Selective reabsorption is one step in urine formation, not the general name for ion and water balance.

Question 57 Biology

There are _____ number of linkage groups in human

- A. 46
- B. 22

- D. 23 ✓ **Correct answer**

A. 46 is the number of chromosomes in a diploid human cell, not the number of linkage groups.

B. 22 is the number of autosome pairs, not the number of linkage groups (the X and Y chromosomes form the 23rd).

C. 80 is not the number of human linkage groups.

D. The number of linkage groups equals the haploid chromosome number, which is 23 in humans.

Question 58 Biology

The actual or preserved remains of the organisms that lived in the ancient past are called

- A. Fossils ✓ **Correct answer**
- B. Impression
- C. Ancient prints
- D. Ancient cast

A. The actual or preserved remains of organisms that lived in the ancient past are fossils.

B. An impression is one type of fossil (a mark left in rock), not the general name.

C. "Ancient prints" is not the term for preserved remains.

D. A cast is one type of fossil (a mould filled with minerals), not the general name.

Question 59 Biology

Which one of the following cells does not have nucleus

- A. Eosinophils

- C. Basophils
- D. Platelets ✓ **Correct answer**

A. Eosinophils are white blood cells with a (bilobed) nucleus.

B. Neutrophils are white blood cells with a (multilobed) nucleus.

C. Basophils are white blood cells with a nucleus.

D. Platelets are cell fragments (not true cells) and have no nucleus.

Question 60 Biology

These structures are involved in the breakdown of old organelles.

- A. Leucoplasts
- B. Peroxisome
- C. Glyoxysomes
- D. Lysosomes ✓ **Correct answer**

A. Leucoplasts are colourless plastids that store starch, not organelles that break down old organelles.

B. Peroxisomes break down hydrogen peroxide and fatty acids, not whole old organelles.

C. Glyoxysomes convert fats to carbohydrates in germinating seeds, not break down old organelles.

D. Lysosomes contain digestive enzymes that break down old organelles and waste (autophagy).

Question 61 Biology

Which combination is the example of ball and socket joints

- A. Hip and shoulder joints ✓ **Correct answer**

and knee joints

- C. Shoulder and knee joints
- D. Hip and elbow joints

A. Both the hip joint and the shoulder joint are ball-and-socket joints.

B. The knee is a hinge joint, not a ball-and-socket joint.

C. The knee is a hinge joint, not a ball-and-socket joint.

D. The elbow is a hinge joint, not a ball-and-socket joint.

Question 62 Biology

In aerobic respiration

- A. Pyruvate is completely oxidised to form carbon dioxide and water ✓ **Correct answer**
- B. Pyruvate is completely oxidised to form oxygen and water
- C. Pyruvate carboxylated to produce citrate
- D. Pyruvate is converted to ethanol and carbon dioxide

A. In aerobic respiration pyruvate is completely oxidised to carbon dioxide and water (the paper spells it "carbodioxide").

B. Oxygen is consumed in aerobic respiration, not produced.

C. Pyruvate is decarboxylated to acetyl-CoA, which then forms citrate; pyruvate itself is not carboxylated to citrate.

D. Conversion of pyruvate to ethanol and carbon dioxide is alcoholic fermentation (anaerobic), not aerobic respiration.

Note: Filed option A read "Pyruvate is completely oxidised to form carbodioxide and water" (misprint in the source reproduction); corrected to "Pyruvate is completely oxidised to form carbon dioxide and water" as documented in the reviewed file. Filed option D read

converted to ethanol and carbondioxide" (misprint in the source reproduction); corrected to "Pyruvate is converted to ethanol and carbon dioxide" as documented in the reviewed file.

Question 63 Biology

Yeasts, the unicellular fungi belongs mostly to the group :

- A. Deuteromycota
- B. Zygomycota
- C. Basidiomycota
- D. Ascomycota ✓ **Correct answer**

A. Deuteromycota (fungi imperfecti) are fungi whose sexual stage is unknown; yeasts mostly belong elsewhere.

B. Zygomycota (bread moulds) are mostly filamentous, not yeasts.

C. Basidiomycota (mushrooms, toadstools) include a few yeasts, but most yeasts are not basidiomycetes.

D. Most yeasts (e.g. Saccharomyces) belong to the Ascomycota.

Question 64 Biology

Enzyme used by the Bacteria to cut the DNA of the invading Virus for its protection is

- A. Restriction exonuclease
- B. Restriction Ligase
- C. Restriction Endonuclease ✓ **Correct answer**
- D. DNA polymerase

A. Exonucleases cut DNA from the ends, not at internal sites; the protective enzyme is an endonuclease.

B. Ligase joins DNA pieces together; it does not cut invading viral DNA.

se restriction endonucleases to cut the DNA of invading viruses at specific sites (the paper spells it "Endnuclease").

D. DNA polymerase synthesises new DNA; it does not cut invading viral DNA.

Note: Filed option C read "Restriction Endnuclease" (misprint in the source reproduction); corrected to "Restriction Endonuclease" as documented in the reviewed file.

Question 65 Biology

The number and sequence of amino acids along a polypeptide chain is called _____ structure of a proetin.

- A. Quaternary
- B. Tertiary
- C. Primary ✓ **Correct answer**
- D. Secondary

A. Quaternary structure is the arrangement of several polypeptide chains in a protein.

B. Tertiary structure is the three-dimensional folding of a single polypeptide chain.

C. The number and sequence of amino acids along a polypeptide chain is the primary structure of a protein (the paper spells it "proetin").

D. Secondary structure is the local coiling (alpha helix) or folding (beta sheet) of the chain.

Question 66 Biology

Rod-shaped bacteria are known as _____

- A. Spirilla
- B. Bacilli ✓ **Correct answer**
- C. Spirochete
- D. Cocci

e spiral-shaped bacteria.

B. Rod-shaped bacteria are known as bacilli.

C. Spirochetes are flexible spiral bacteria.

D. Cocci are spherical bacteria.

Question 67 Biology

_____ is the exact position of a gene on the chromosome.

- A. Trait
- B. Centromere
- C. Genotype
- D. Locus ✓ **Correct answer**

A. A trait is an observable characteristic, not the position of a gene.

B. The centromere is the constricted region where sister chromatids join, not the position of a gene.

C. The genotype is the genetic constitution of an organism, not the position of a gene.

D. The exact position of a gene on a chromosome is its locus (plural: loci).

Question 68 Biology

Parathormone hormone production is controlled by the blood

- A. Ca level ✓ **Correct answer**
- B. Sugar level
- C. Na level
- D. Mg level

A. Parathormone (PTH) production by the parathyroid glands is controlled by the blood calcium level (low calcium stimulates PTH release).

prints "suger level", blood sugar controls insulin and glucagon, not parathormone.

C. Blood sodium level controls aldosterone, not parathormone.

D. Blood magnesium level does not control parathormone production.

Note: Filed option B read "suger level" (misprint in the source reproduction); corrected to "Sugar level" as documented in the reviewed file.

Question 69 Biology

Which one of the following act as a PACEMAKER in Heart

- A. Bundle of His
- B. Atrio ventricular node
- C. Atrio ventricular bundles of fibers
- D. Sino atrial node ✓ **Correct answer**

A. The bundle of His conducts impulses from the AV node to the ventricles; it does not set the heart's rhythm.

B. The atrioventricular (AV) node delays and relays impulses; it is not the pacemaker.

C. The AV bundles conduct impulses to the ventricles; they do not set the heart's rhythm.

D. The sinoatrial (SA) node generates the heartbeat and acts as the pacemaker of the heart.

Question 70 Biology

Single ringed pyrimidines are:

- A. Uracil, Cytosine and Thymine ✓ **Correct answer**
- B. Cytosine, Guanine and Uracil
- C. Adenine and Guanine

osine, Adenine and Thymine

A. Uracil, cytosine and thymine are the three pyrimidine bases, each with a single ring.

B. Guanine is a double-ringed purine, not a pyrimidine.

C. Adenine and guanine are double-ringed purines, not pyrimidines.

D. Adenine is a double-ringed purine, not a pyrimidine.

Question 71 Biology

Which one of the following is Multiple allelic character ?

- A. Colour of flower in pea plant
- B. Blood group of the human being ✓ **Correct answer**
- C. Shape of seed in pea plant
- D. Length of stem in pea plant

A. Flower colour in pea is controlled by a single pair of alleles, not multiple alleles.

B. Human ABO blood group is controlled by three alleles (IA, IB, i), the classic multiple-allelic character.

C. Seed shape in pea is controlled by a single pair of alleles.

D. Stem length in pea is controlled by a single pair of alleles.

Question 72 Biology

Which statement is correct about atrial systole

- A. Atria relax and ventricles contract
- B. Atria contract and ventricle also contract
- C. Ventricles remain relax while atria contract ✓ **Correct answer**
- D. Atria and ventricles are relaxed

…ribes ventricular systole, not atrial systole.

B. In atrial systole the atria contract while the ventricles are still relaxed.

C. In atrial systole the atria contract and push blood into the ventricles, which remain relaxed.

D. That describes diastole (general pause), not atrial systole.

Question 73 Biology

Growth in the larva of young arthropods is restricted by

- A. Exoskeleton ✓ **Correct answer**
- B. Appendages
- C. Endoskeleton
- D. Reduced mitosis

A. The rigid exoskeleton of arthropods cannot grow, so growth is restricted until the animal moults (ecdysis).

B. Appendages are the jointed limbs; they do not restrict growth.

C. Arthropods have an exoskeleton, not an endoskeleton.

D. Mitosis is not reduced in growing arthropod larvae.

Question 74 Biology

At the last step of Glycolysis which of the following compound is formed

- A. Pyruvic Acid / Pyruvate ✓ **Correct answer**
- B. Lactic acid
- C. Ethyl Alcohol
- D. Fructose Phosphate

A. The last step of glycolysis produces pyruvic acid (pyruvate); the paper prints "Pyruvic

B. Lactic acid is formed from pyruvate only in anaerobic (lactic acid) fermentation, not in glycolysis itself.

C. The paper prints "Ethyl Alzohal" for ethyl alcohol, which is formed from pyruvate in alcoholic fermentation, not in glycolysis.

D. Fructose phosphate is an intermediate early in glycolysis, not its final product.

Note: Filed option A read "Pyuvic Acid\ Pyruvate" (misprint in the source reproduction); corrected to "Pyruvic Acid / Pyruvate" as documented in the reviewed file. Filed option C read "Ethyl Alzohal" (misprint in the source reproduction); corrected to "Ethyl Alcohol" as documented in the reviewed file.

Question 75 Biology

NADP, nicotinamide adenine dinucleotide phosphate, is a carrier of :

- A. -OH Group
- B. O2 Group
- C. Hydrogen ✓ **Correct answer**
- D. Phosphate

A. NADP does not carry a hydroxyl group.

B. NADP does not carry an oxygen group.

C. NADP (nicotinamide adenine dinucleotide phosphate) is a carrier of hydrogen (electrons + protons) in photosynthesis.

D. Phosphate is part of NADP's structure, not what it carries.

Question 76 Biology

When filtration is completed the waste products through distal tube of Nephrons

- A. Efferent Arteriols
- B. Collecting Tubules ✓ **Correct answer**
- C. Peritubular capillaries
- D. Proximal Tubules

A. Efferent arterioles carry blood away from the glomerulus; urine does not empty into them.

B. After the distal convoluted tubule, the filtrate (urine) empties into the collecting tubule (the paper prints "Tubles").

C. Peritubular capillaries surround the tubules for reabsorption; urine does not empty into them.

D. The proximal tubule comes before the loop of Henle and the distal tubule, not after them.

Note: Filed option B read "Collecting Tubles" (misprint in the source reproduction); corrected to "Collecting Tubules" as documented in the reviewed file. Filed option D read "Proximal tubles" (misprint in the source reproduction); corrected to "Proximal Tubules" as documented in the reviewed file.

Question 77 Biology

Blood solute potential is controlled by following hormone

- A. Estrogen
- B. Epinephrine
- C. Thyroxin
- D. Vasopressin ✓ **Correct answer**

A. Estrogen is a female sex hormone; it does not control blood solute potential.

B. The paper prints "Epinephrin" for epinephrine (adrenaline), which raises blood pressure

ıgar but does not control blood solute potential.

C. Thyroxin regulates the metabolic rate, not blood solute potential.

D. Vasopressin (ADH) controls water reabsorption in the kidney and so controls blood solute potential.

Note: Filed option B read "Epinephrin" (misprint in the source reproduction); corrected to "Epinephrine" as documented in the reviewed file.

Question 78 Biology

The temperature that promotes the maximum activity of enzyme is referred as—

- A. Fixed temperature
- B. Optimum temperature ✓ **Correct answer**
- C. Controlled temperature
- D. Active temperature

A. "Fixed temperature" is not the term for the temperature of maximum enzyme activity.

B. The temperature at which an enzyme shows maximum activity is its optimum temperature.

C. "Controlled temperature" is not the term for the temperature of maximum enzyme activity.

D. "Active temperature" is not the term for the temperature of maximum enzyme activity.

Question 79 Biology

Divergent Evolution produces :

- A. Vital Organs
- B. Homologous Organs ✓ **Correct answer**
- C. Vestigial Organs

logous Organs

A. "Vital organs" is not a product of divergent evolution.

B. Divergent evolution (common ancestry, different functions) produces homologous organs.

C. Vestigial organs are reduced, functionless remnants, not the characteristic product of divergent evolution.

D. Analogous organs are the product of convergent evolution, not divergent evolution.

Question 80 Biology

Tonoplast bounds which organelle

- A. Golgi Complex
- B. Nucleus
- C. Endoplasmic Reticulum
- D. Vacuoles ✓ **Correct answer**

A. The Golgi complex is bounded by its own membranes, not by the tonoplast.

B. The nucleus is bounded by the nuclear envelope, not by the tonoplast.

C. The endoplasmic reticulum is bounded by its own membrane system, not by the tonoplast.

D. The tonoplast is the membrane that bounds the vacuole (especially in plant cells).

Question 81 Biology

Antivenom given after a snake bite venom is an example of

- A. Natural passive immunity
- B. Artificial active immunity
- C. Natural active immunity

ficial passive immunity ✓ **Correct answer**

A. Natural passive immunity is antibodies passed naturally (e.g. from mother to baby), not injected antivenom.

B. Artificial active immunity is vaccination (the body makes its own antibodies), not ready-made antivenom.

C. Natural active immunity follows natural infection, not an injection of antivenom.

D. Antivenom is ready-made antibody injected into the patient, i.e. artificial passive immunity.

Question 82 Biology

The cisternae breaks up into vesicles from _____, _____ of Golgi complex.

- A. convex, maturing face
- B. concave, forming face
- C. convex, forming face
- D. concave, maturing face ✓ **Correct answer**

A. The maturing (trans) face is concave, not convex.

B. The forming (cis) face is convex, not concave.

C. The forming face is convex, but vesicles bud from the maturing face, not the forming face.

D. The cisternae break up into vesicles from the concave, maturing (trans) face of the Golgi complex.

Question 83 Biology

Which hormone causes the contraction walls of uterus during the process of birth?

- A. FSH

- C. Oxytocin ✓ **Correct answer**
- D. LTH

A. FSH stimulates ovarian follicles; it does not cause uterine contractions.

B. STH (somatotrophic/growth hormone) promotes growth; it does not cause uterine contractions.

C. Oxytocin causes contraction of the uterine wall during birth (parturition).

D. LTH (luteotrophic hormone, prolactin) promotes milk production; it does not cause uterine contractions.

Question 84 Biology

Which of the following is Unsaturated "Fatty Acid"

- A. Stearic Acid
- B. Palmitic Acid
- C. Butyric Acid
- D. Oleic Acid ✓ **Correct answer**

A. Stearic acid is a saturated fatty acid (no double bonds).

B. Palmitic acid is a saturated fatty acid.

C. Butyric acid is a saturated fatty acid.

D. Oleic acid has one double bond; it is an unsaturated (monounsaturated) fatty acid.

Question 85 Biology

When we extract Carotenoids from its source we see that it is

- A. Violet in color
- B. Blue green in color

- D. Yellow to orange red in color ✓ **Correct answer**

A. Carotenoids are not violet in colour.

B. Blue-green is the colour of phycocyanin/chlorophyll mixtures, not carotenoids.

C. Yellow-green is the colour of chlorophyll b mixtures, not carotenoids.

D. Carotenoids are yellow to orange-red pigments (e.g. in carrots and autumn leaves).

Question 86 Biology

When two or more Alleles do not show complete dominance or both the Alleles are expressing independently in heterozygotic condition.Such a condition is called

- A. Complete dominance
- B. Over dominance
- C. Co dominance ✓ **Correct answer**
- D. Incomplete dominance

A. In complete dominance only one allele expresses; the stem describes both alleles expressing.

B. Overdominance is when the heterozygote is superior to both homozygotes, not both alleles expressing.

C. When both alleles express independently in the heterozygote, the condition is co-dominance (e.g. AB blood group).

D. In incomplete dominance the heterozygote shows an intermediate (blended) phenotype, not both alleles expressing independently.

Question 87 Biology

Taste buds on the tongue are example of :

ssure receptors

- B. Chemoreceptors ✓ **Correct answer**
- C. Thermoreceptors
- D. Photoreceptors

A. Pressure receptors detect touch and pressure (e.g. in the skin), not taste.

B. Taste buds detect chemicals in food, so they are chemoreceptors.

C. Thermoreceptors detect temperature, not taste.

D. Photoreceptors detect light (in the eye), not taste.

Question 88 Biology

Which of the following hormone hormone acts on the uterus wall for thickening?

- A. Progesterone ✓ **Correct answer**
- B. Zona pellucida
- C. Follicle stimulating hormone
- D. Oxytocin

A. Progesterone acts on the uterine wall, thickening and maintaining the endometrium for implantation.

B. The zona pellucida is a layer around the egg, not a hormone.

C. FSH acts on the ovarian follicles, not on the uterine wall.

D. Oxytocin causes uterine contraction, not thickening of the uterine wall.

Question 89 Chemistry

If concentration time graph of a reactant indicates a constant half-life, then the order reaction with respect to that reactant is:

- A. zero order

order

- C. second order
- D. first order ✓ **Correct answer**

A. For a zero-order reaction the half-life depends on the initial concentration, so it is not constant.

B. "Half order" is not the order with a constant half-life.

C. For a second-order reaction the half-life depends on the initial concentration, so it is not constant.

D. Only for a first-order reaction is the half-life constant ($t_{½} = 0.693/k$), independent of concentration.

Question 90 Chemistry

$C_2H_5OH + CH_3COOH \rightleftharpoons CH_3COOC_2H_5 + H_2O$ Which of the following catalyst is used in the above reaction

- A. Conc. H_2SO_4 ✓ **Correct answer**
- B. Pumice stone
- C. Pt
- D. Ni

A. The reaction shown is esterification (ethanol + acetic acid → ethyl acetate + water); it is catalysed by concentrated sulphuric acid.

B. Pumice stone is used to prevent bumping on heating, not as the catalyst for esterification.

C. Platinum is a hydrogenation catalyst, not the catalyst for esterification.

D. Nickel is a hydrogenation catalyst, not the catalyst for esterification.

91 Chemistry

Halothane is a halo derivative of

- A. Methane
- B. Ethane ✓ **Correct answer**
- C. Methanol
- D. Ethanol

A. Halothane ($CF_3CHBrCl$) has a two-carbon chain, so it is not a methane derivative.

B. Halothane (2-bromo-2-chloro-1,1,1-trifluoroethane) is a halogenated derivative of ethane.

C. Halothane contains no hydroxyl group; it is not a methanol derivative.

D. Halothane contains no hydroxyl group; it is not an ethanol derivative.

Question 92 Chemistry

The species which are produced by heterolytic bond breaking and can act as electron pair donors are known as.

- A. Nucleophiles ✓ **Correct answer**
- B. Cations
- C. Free radicals
- D. Anions

A. Heterolytic cleavage gives ions; the electron-rich species that can donate an electron pair are nucleophiles.

B. Cations are electron-deficient (electron-pair acceptors, electrophiles), not electron-pair donors.

C. Free radicals are produced by homolytic bond breaking, not heterolytic.

D. Anions are electron-rich, but the general name for species that donate an electron pair

es (not all anions act as nucleophiles).

Question 93 Chemistry

The product of the concentrations of each ion in a saturated solution of a sparingly soluble salt at 298 K , raised to the power of their relative concentrations is

- A. K_sp ✓ **Correct answer**
- B. K_a
- C. K_w
- D. K_b

A. The product of the ionic concentrations in a saturated solution of a sparingly soluble salt, each raised to its stoichiometric power, is the solubility product constant, K_sp.

B. K_a is the acid dissociation constant, not the solubility product.

C. K_w is the ionic product of water, not the solubility product of a salt.

D. K_b is the base dissociation constant, not the solubility product.

Question 94 Chemistry

The catalyst used for the manufacture of H_2SO_4 by contact process is

- A. SO_3
- B. V_2O_5 ✓ **Correct answer**
- C. Fe_2O_3
- D. Pt/Pd

A. Sulphur trioxide is the product of the catalytic step, not the catalyst.

B. Vanadium pentoxide (V_2O_5) is the catalyst used in the contact process for oxidising SO_2 to SO_3.

C. Iron(III) oxide is used in the Haber process, not the contact process.

was the original contact-process catalyst but was replaced by V_2O_5; it is not the modern catalyst.

Question 95 Chemistry

Ligands having two lone pair of electrons for donation to the central transition metal ion are known as

- A. polydentate ligands
- B. monodentate ligand
- C. bidentate ligands ✓ **Correct answer**
- D. hexadentate ligands

A. Polydentate ligands have many donor atoms, not specifically two.

B. A monodentate ligand has only one donor atom (one lone pair).

C. Ligands with two donor atoms (two lone pairs) for donation to the central metal ion are bidentate ligands.

D. A hexadentate ligand has six donor atoms, not two.

Question 96 Chemistry

The stability in the following structure is due to the [structure: ball-and-stick model of a protein alpha helix, with dotted lines between turns]

- A. Weak van der Waals forces
- B. Disulfide bridges
- C. presence of unpaired electron in the structure
- D. Hydrogen bonding between NH group of one peptide and CO group of another peptide ✓ **Correct answer**

A. Van der Waals forces contribute to protein stability, but they are not what stabilises the alpha helix shown.

e bridges stabilise tertiary structure, not the alpha helix.

C. Unpaired electrons (free radicals) destabilise, not stabilise, a protein structure.

D. The alpha helix shown is stabilised by hydrogen bonds between the NH group of one peptide unit and the CO group of another peptide unit four residues away (the dotted lines in the figure).

Note: Filed option A read "Weak vander Waal's forces" (misprint in the source reproduction); corrected to "Weak van der Waals forces" as documented in the reviewed file.

Question 97 Chemistry

Which is the structure of polyvinyl chloride (polychloroethene)?

- A. -[CCl_2-CCl_2]-
- B. -[HCCl-CH-Cl]-
- C. [H_2C=CH-Cl]
- D. -[H_2C-CH-Cl]- ✓ **Correct answer**

A. -[CCl_2-CCl_2]- is the repeat unit of polytetrafluoroethene-like polymers with two chlorines per carbon, not PVC.

B. -[HCCl-CH-Cl]- (1,2-dichloro) is not the PVC repeat unit.

C. H_2C=CH-Cl is vinyl chloride, the monomer, not the polymer structure.

D. Polyvinyl chloride (polychloroethene) has the repeat unit -[H_2C-CH-Cl]-.

Question 98 Chemistry

Nylon-6,6 is also called

- A. polystyrene
- B. polyester

- yamide ✓ **Correct answer**
- D. polyvinyl alcohol

A. Polystyrene is a different polymer (from styrene), not nylon.

B. Polyester (e.g. terylene) is a different polymer class, not nylon.

C. Nylon-6,6 is a polyamide (formed by condensation of a diamine and a dicarboxylic acid, with amide links).

D. Polyvinyl alcohol is a different polymer, not nylon.

Question 99 Chemistry

Which compound will be produced by the oxidation of ethanal by acidified $K_2Cr_2O_7$?

- A. Ethene
- B. Ethanol
- C. Ethanoic acid ✓ **Correct answer**
- D. Ethanone

A. Ethene is an alkene, not an oxidation product of ethanal.

B. Ethanol is reduced relative to ethanal (it oxidises to ethanal), not produced by oxidising ethanal.

C. Acidified potassium dichromate oxidises ethanal (an aldehyde) to ethanoic acid.

D. Ethanone is a ketone, not produced by oxidising an aldehyde.

Question 100 Chemistry

Alcohol in which carbon atom bonded to OH group is further attached with three alkyl group is

- A. Tertiary alcohol ✓ **Correct answer**
- B. Primary alcohol

matic alcohol

- D. Secondary alcohol

A. When the carbon bearing the OH group is attached to three alkyl groups, the alcohol is tertiary.

B. In a primary alcohol the carbon bearing the OH group is attached to one alkyl group.

C. An aromatic alcohol has the OH group attached to an aromatic ring, not defined by three alkyl groups.

D. In a secondary alcohol the carbon bearing the OH group is attached to two alkyl groups.

Question 101 Chemistry

The following sketch shows the variation in a physical property of third period elements against their atomic numbers : [graph: value rises from atomic number 11 to 12, stays level to 13, rises sharply to a peak at 14, then falls steadily through 15, 16, 17 to 18] What physical property is plotted in this sketch?

- A. ionization energy
- B. Melting point ✓ **Correct answer**
- C. ionic radius
- D. Atomic radius

A. Ionisation energy rises fairly steadily across the period (with small dips at 13 and 16), not with a sharp peak at silicon.

B. The sketch shows the melting-point pattern of the third period: rising from Na to Mg/Al, a sharp peak at Si (giant covalent structure), then a steep fall to the low-melting molecular elements P, S, Cl and Ar.

C. Ionic radius does not show a sharp peak at atomic number 14.

dius decreases steadily across the period; it does not peak at silicon.

Question 102 Chemistry

The standard electrode potential of hydrogen is arbitrarily taken at 298 k is——

- A. 0.00 volt ✓ **Correct answer**
- B. 0.10 volt
- C. 10.0 volt
- D. 1.00 volt

A. The standard hydrogen electrode is the reference, with its standard electrode potential arbitrarily taken as 0.00 V at 298 K.

B. 0.10 V is not the standard hydrogen electrode potential.

C. 10.0 V is not the standard hydrogen electrode potential.

D. 1.00 V is not the standard hydrogen electrode potential.

Question 103 Chemistry

The potential difference of an eletrochemical cell is measured by

- A. Ammeter
- B. Voltmeter ✓ **Correct answer**
- C. Galvanometer
- D. Calorimeter

A. An ammeter measures current, not potential difference (the paper spells the stem "eletrochemical").

B. The potential difference (voltage) of an electrochemical cell is measured with a voltmeter.

C. A galvanometer detects small currents, not the cell's potential difference.

eter measures heat changes, not potential difference.

Question 104 Chemistry

Which of the following acts as a nucleophile in the reaction of alkyl halide with alcoholic/ aqueous ammonia?

- A. H^+
- B. NH_3 ✓ **Correct answer**
- C. NO_2^-
- D. Br^-

A. H^+ is an electrophile (electron-pair acceptor), not a nucleophile.

B. Ammonia, with its lone pair on nitrogen, acts as the nucleophile that attacks the alkyl halide.

C. NO_2^- is not present in the reaction with ammonia.

D. Br^- is the leaving group displaced from the alkyl halide, not the nucleophile.

Question 105 Chemistry

liquid in the container have temperature 70°C . what will be the temperature in Kelvin Scale?

- A. 350K
- B. 343K ✓ **Correct answer**
- C. 300K
- D. 283K

A. 350 K equals 77 °C, not 70 °C.

B. 70 °C + 273 = 343 K.

C. 300 K equals 27 °C, not 70 °C.

als 10 °C, not 70 °C.

Question 106 Chemistry

The formula which shows the simplest whole number ratio for the atoms of different elements in a compound is

- A. ionic formula
- B. structural formula
- C. Empirical formula ✓ **Correct answer**
- D. molecular formula

A. An ionic formula shows the ratio of ions in an ionic compound, not the simplest whole-number ratio of atoms in general.

B. A structural formula shows how atoms are bonded, not just their simplest ratio.

C. The empirical formula shows the simplest whole-number ratio of the atoms of different elements in a compound (the paper spells it "emperical").

D. A molecular formula shows the actual number of atoms in a molecule, which may be a multiple of the simplest ratio.

Note: Filed option C read "emperical formula" (misprint in the source reproduction); corrected to "Empirical formula" as documented in the reviewed file.

Question 107 Chemistry

Which one will be act as a strong acid .

- A. Chloroethanoic acid
- B. Ethanoic acid
- C. Trichloroethanoic acid ✓ **Correct answer**
- D. Dichloroethanoic acid

A. Chloroethanoic acid (one Cl) is stronger than ethanoic acid but weaker than the di- and

B. Ethanoic acid (no Cl) is the weakest acid of the four.

C. Trichloroethanoic acid (three Cl atoms) has the strongest electron-withdrawing inductive effect, so it is the strongest acid of the four (the paper spells it "Trichloethanoic").

D. Dichloroethanoic acid (two Cl) is stronger than chloroethanoic acid but weaker than trichloroethanoic acid.

Note: Filed option C read "Trichloethanoic acid" (misprint in the source reproduction); corrected to "Trichloroethanoic acid" as documented in the reviewed file.

Question 108 Chemistry

The shape of $[Co(NH_3)_6]^{3+}$ complex is

- A. linear
- B. square planer
- C. tetrahedral
- D. octahedral ✓ **Correct answer**

A. A linear shape has coordination number 2, not 6.

B. Square planar is the shape for coordination number 4, not 6.

C. Tetrahedral is the shape for coordination number 4, not 6.

D. $[Co(NH_3)_6]^{3+}$ has six ammonia ligands around the central cobalt, giving an octahedral shape.

Question 109 Chemistry

Amino acids react with each other such that –COOH group of one amino acid reacts with the $–NH_2$ group of another amino acid to give a condensed structure as shown below [structure: $H_2N–CH(R)–C(=O)–NH–CH(R)–COOH$, with the $–C(=O)–NH–$ group circled] What

of circled part of this structure?

- A. Ester linkage
- B. peptide linkage ✓ **Correct answer**
- C. carbide linkage
- D. azide linkage

A. An ester linkage (–COO–) forms between a carboxylic acid and an alcohol, not between two amino acids.

B. The circled –C(=O)–NH– group formed between the –COOH of one amino acid and the –NH_2 of another is a peptide linkage.

C. "Carbide linkage" is not a term for the bond between amino acids.

D. An azide linkage involves the N_3 group, not the bond between amino acids.

Question 110 Chemistry

3.0 mole of calcium will contained _____ g of calcium

- A. 105 gm
- B. 120 gm ✓ **Correct answer**
- C. 80 gm
- D. 100 gm

A. 105 g would be 2.625 mol of calcium, not 3.0 mol.

B. Calcium's atomic mass is 40 g/mol, so 3.0 mol × 40 g/mol = 120 g.

C. 80 g would be 2.0 mol of calcium, not 3.0 mol.

D. 100 g would be 2.5 mol of calcium, not 3.0 mol.

Question 111 Chemistry

Which of the following is the correct equation to calculate relative molecular mass of a

- A. M=mPR/VT
- B. M=PV/mRT
- C. M=mPRT/V
- D. M=mRT/PV ✓ **Correct answer**

A. This rearrangement is dimensionally wrong (it puts R in the numerator without T).

B. This is the reciprocal of the correct expression.

C. This rearrangement is dimensionally wrong.

D. From the ideal gas equation PV = nRT with n = m/M, we get M = mRT/PV.

Question 112 Chemistry

Reaction of water with quick lime result in the rise in the temperature of the system. Using the concept of energy change, indicate the nature of the reaction?

- A. Endothermic Reaction
- B. Non spontaneous reaction
- C. Third Order reaction
- D. Exothermic Reaction ✓ **Correct answer**

A. An endothermic reaction absorbs heat and lowers the temperature; here the temperature rises.

B. The reaction of water with quick lime is spontaneous and vigorous, not non-spontaneous.

C. "Third order" describes reaction kinetics, not the energy change.

D. The temperature of the system rises, so heat is released: the reaction (slaking of lime) is exothermic.

113 Chemistry

Which one of the following compounds act as catalyst when alcohols react with carboxylic acids.

- A. Pt
- B. conc. HNO_3
- C. Ni
- D. conc. H_2SO_4 ✓ **Correct answer**

A. Platinum is a hydrogenation catalyst, not the catalyst for esterification.

B. Concentrated nitric acid is an oxidising/nitrating agent, not the esterification catalyst.

C. Nickel is a hydrogenation catalyst, not the catalyst for esterification.

D. Concentrated sulphuric acid catalyses the reaction of alcohols with carboxylic acids (esterification).

Question 114 Chemistry

In Period 2 and Period 3 maximum melting point shown by elements:

- A. Nitrogen and phosphorous
- B. Neon and Argon
- C. Lithium and Sodium
- D. Carbon and Silicon ✓ **Correct answer**

A. Nitrogen and phosphorus are molecular elements with low melting points.

B. Neon and argon are noble gases with the lowest melting points in their periods.

C. Lithium and sodium are metals with moderate melting points, not the maxima.

D. Carbon (period 2, diamond) and silicon (period 3) have giant covalent structures and the highest melting points in their periods.

115 Chemistry

Which one of the following reagents is used to distinguish between aldehydes and ketones?

- A. Alkaline Iodine
- B. Tollen's reagent ✓ **Correct answer**
- C. Bromine
- D. 2,4 DNPH

A. Alkaline iodine (iodoform test) detects the $CH_3CO–$ group, present in some aldehydes and ketones alike; it does not distinguish the two classes in general.

B. Tollen's reagent (ammoniacal silver nitrate) oxidises aldehydes (silver mirror) but not ketones, so it distinguishes aldehydes from ketones.

C. Bromine water tests for unsaturation, not for aldehydes vs ketones.

D. 2,4-dinitrophenylhydrazine reacts with both aldehydes and ketones, so it cannot distinguish them.

Question 116 Chemistry

Gas is enclosed in a container of $20cm^3$ with the moving piston. According to kinetic theory of gases , what will be the effect on freely moving molecules of the gas if temperature is increased from 20°C to 100°C ?

- A. Pressure will become one half
- B. Volume will be increased ✓ **Correct answer**
- C. Temperature has no effect on freely moving molecules
- D. Colliding capability of molecule will become lower

A. With a freely moving piston the pressure stays constant; it does not halve.

B. With a moving piston (constant pressure), heating the gas from 20 °C to 100 °C increases its volume (Charles's law, $V \propto T$).

ure directly increases the kinetic energy and speed of the molecules.

D. Heating makes the molecules move faster and collide more often, not less. (Key: the Learnospot key lists D — Colliding capability will become lower; corrected to B — the official UHS key lists B, and at constant pressure heating expands the gas; the Learnospot twin match for this item was weak, 0.37/0.082.)

Question 117 Chemistry

Which of these pollutants is produced by burning of coal and causes acid rain.

- A. NO
- B. CO_2
- C. SO_2 ✓ **Correct answer**
- D. CO

A. Nitric oxide is mainly produced at high temperatures (e.g. in vehicle engines), not characteristically by burning coal.

B. Carbon dioxide from coal burning causes the greenhouse effect, not acid rain.

C. Sulphur dioxide (printed "SO^2") is produced by burning sulphur-containing coal and oxidises to sulphuric acid, causing acid rain.

D. Carbon monoxide is a toxic gas from incomplete combustion, not an acid-rain pollutant.

Note: Filed option C read "SO^2" (misprint in the source reproduction); corrected to "SO_2" as documented in the reviewed file.

Question 118 Chemistry

Role of a catalyst in a chemical reaction is to

- A. Decrease yield of a reaction
- B. Decrease rate of a reaction

ease yield of product

- D. Increase rate of a reaction ✓ **Correct answer**

A. A catalyst does not decrease the yield; it leaves the equilibrium position unchanged.

B. A catalyst increases, not decreases, the rate of a reaction.

C. A catalyst does not change the yield (equilibrium position); it only speeds up the reaction.

D. A catalyst increases the rate of a chemical reaction by providing an alternative pathway with lower activation energy.

Question 119 Chemistry

The essential property of a fertilizer is that it should be

- A. Immiscible
- B. Highly soluble ✓ **Correct answer**
- C. Insoluble
- D. Partially Soluble

A. "Immiscible" describes liquids that do not mix; it is not the essential property of a fertiliser.

B. A fertiliser must be highly soluble in soil water so that plants can absorb its nutrients.

C. An insoluble fertiliser could not be absorbed by plants.

D. A partially soluble fertiliser would release nutrients too slowly; high solubility is the essential property.

Question 120 Chemistry

Which option shows all the molecules with bond angle 109.5°.

- A. CH_4 , NH_4^+ , PH_3

- C. $SiCl_4$, NH_4^+ , CH_4 ✓ **Correct answer**
- D. CH_4, CCl_4 , NH_3

A. CH_4 and NH_4^+ are tetrahedral (109.5°), but PH_3 is pyramidal with a bond angle of about 93.5°.

B. $SiCl_4$ is tetrahedral (109.5°), but H_2O is bent (104.5°) and $BeCl_2$ is linear (180°).

C. All three are tetrahedral molecules with a bond angle of 109.5°.

D. CH_4 and CCl_4 are tetrahedral (109.5°), but NH_3 is pyramidal with a bond angle of about 107°.

Question 121 Chemistry

Down the group acid-base behavior of metallic oxides of group 2 elements changes to

- A. more basic ✓ **Correct answer**
- B. no change
- C. less basic
- D. more acidic

A. Down group 2 the metallic oxides become more basic (BeO is amphoteric, MgO weakly basic, BaO strongly basic).

B. The acid-base behaviour does change down the group.

C. The oxides become more, not less, basic down the group.

D. The oxides become more basic, not more acidic, down the group.

Question 122 Chemistry

Butane molecule can have max. no of isomers

- A. 5

- C. 4
- D. 2 ✓ **Correct answer**

A. Butane does not have five isomers.

B. Butane does not have three isomers.

C. Butane does not have four isomers.

D. Butane (C_4H_{10}) has two structural isomers: n-butane and isobutane (2-methylpropane).

Question 123 Chemistry

Select one which is alcohol

- A. CH_3-CH_2-Br
- B. CH_3-O-CH_3
- C. CH_3COOH
- D. CH_3-CH_2-OH ✓ **Correct answer**

A. CH_3CH_2Br (bromoethane) is an alkyl halide, not an alcohol.

B. CH_3OCH_3 (dimethyl ether) is an ether, not an alcohol.

C. CH_3COOH (ethanoic acid) is a carboxylic acid, not an alcohol.

D. CH_3CH_2OH (ethanol) is an alcohol.

Question 124 Chemistry

Which is the correct electronic configuration of Chromium ($_{24}Cr$)?

- A. $1s^2\ 2s^2\ 3s^2\ 2p^6\ 3p^6\ 4s^2\ 3d^6$
- B. $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^4$
- C. $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^6$
- D. $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^1\ 3d^5$ ✓ **Correct answer**

…he subshells in the wrong order and the wrong electron count for chromium.

B. This is the configuration the Aufbau order would predict, but chromium is an exception: one 4s electron moves to the 3d subshell.

C. This omits the 4s subshell entirely and gives the wrong electron count.

D. Chromium (24 electrons) has the configuration [Ar] $4s^1$ $3d^5$, the half-filled d-subshell being extra stable. (Note: the Learnospot twin match for this item is a wrong match — its stem is the Q78 enzyme-temperature question — so there is no real Learnospot cross-check; the answer rests on the official key and the textbook exception.)

Question 125 Chemistry

Which one of the following is the structure of Teflon ?

- A. $(—CF_2—CF_2—)_n$ ✓ **Correct answer**
- B. $(—CF_2—CCl_2—)_n$
- C. $(—CH_2—CH_2—)_n$
- D. $(—CF_2—CH_2—)_n$

A. Teflon (polytetrafluoroethene, PTFE) has the repeat unit $—CF_2—CF_2—$.

B. $CF_2—CCl_2—$ is not the Teflon repeat unit.

C. $CH_2—CH_2—$ is the repeat unit of polythene, not Teflon.

D. $CF_2—CH_2—$ is the repeat unit of polyvinylidene fluoride, not Teflon.

Question 126 Chemistry

Which one of the following enthalpy change is always exothermic?

- A. Enthalpy of combustion ✓ **Correct answer**
- B. Enthalpy of formation
- C. Enthalpy of atomization

A. Combustion always releases heat, so the enthalpy of combustion is always exothermic.

B. The enthalpy of formation can be exothermic or endothermic depending on the compound.

C. Atomisation (breaking bonds to form gaseous atoms) always absorbs heat, so it is endothermic.

D. The enthalpy of solution can be exothermic or endothermic depending on the solute.

Question 127 Chemistry

While finding the relative atomic mass, which of the following standard is used to compare the atomic mass of chlorine (35.5amu).

- A. Carbon -13
- B. Neon-20
- C. Carbon-12 ✓ **Correct answer**
- D. Nucleon number

A. Carbon-13 is not the standard for relative atomic mass.

B. Neon-20 is not the standard for relative atomic mass.

C. Relative atomic masses are measured against the carbon-12 standard (^{12}C = 12 amu exactly).

D. The nucleon number (mass number) is not the standard used for relative atomic mass.

Question 128 Chemistry

Which compound is obtained by the elimination of bromopropane?

- A. propene ✓ **Correct answer**
- B. butene

- D. propane

A. Elimination (dehydrohalogenation) of bromopropane removes HBr to give propene ($CH_3–CH=CH_2$).

B. Butene has four carbons; bromopropane has only three.

C. Ethene has two carbons; bromopropane has three.

D. Propane would be the product of substitution/reduction of bromopropane, not of elimination.

Question 129 Chemistry

Which product is formed by the reaction of carboxylic acid with alcohol ?

- A. Alkane
- B. Ether
- C. Aldehyde
- D. Ester ✓ **Correct answer**

A. An alkane is not formed by the reaction of a carboxylic acid with an alcohol.

B. An ether is formed from two alcohols, not from a carboxylic acid and an alcohol.

C. An aldehyde is not formed by the reaction of a carboxylic acid with an alcohol.

D. A carboxylic acid reacts with an alcohol (esterification) to form an ester and water.

Question 130 Chemistry

In aqueous solution amino acids exist in an ionic form as shown below [structure: $^{+}NH_3–CH(R)–COO^{-}$, with R and H on the central carbon] This ionic form of amino acid is known as

- A. zwitterion ✓ **Correct answer**

- C. cation
- D. anion

A. In aqueous solution an amino acid exists as a dipolar ion with both a positive ($–NH_3^+$) and a negative ($–COO^-$) charge: a zwitterion.

B. "Amphoteric ion" is not the name for this dipolar form.

C. A cation carries only a positive charge; this form carries both charges.

D. An anion carries only a negative charge; this form carries both charges.

Question 131 Chemistry

Reaction mechanism of alkanes with halogens is known as

- A. Propagation
- B. Free radical substitution ✓ **Correct answer**
- C. Addition
- D. Elimination

A. Propagation is one step of the free-radical mechanism, not the name of the whole mechanism.

B. Alkanes react with halogens by free-radical substitution (a hydrogen atom is replaced by a halogen atom).

C. Addition is the mechanism for alkenes, not alkanes.

D. Elimination removes atoms to form a double bond; it is not the alkane–halogen mechanism.

Question 132 Chemistry

Why is it necessary to distill aldehyde formed from oxidation of primary alcohol through

tassium dichromate(VI) solution or acidified sodium dichromate(VI) solution?

- A. Aldehyde formed may be oxidised further to carboxylic acid concerned ✓ **Correct answer**
- B. Aldehyde formed is unstable and decompose back to original precursor, i.e., primary alcohol
- C. Aldehyde may be oxidised further to a ketone
- D. Aldehyde formed may react with primary alcohol, the original reactant

A. The aldehyde must be distilled off as soon as it forms, otherwise the oxidising agent oxidises it further to the carboxylic acid.

B. Aldehydes do not decompose back to the primary alcohol.

C. An aldehyde cannot be oxidised to a ketone (ketones come from secondary alcohols).

D. The aldehyde does not react with the primary alcohol under these conditions; the danger is further oxidation.

Question 133 Chemistry

Electron affinity of the atom is the energy released when

- A. Covalent bond of molecule is broken
- B. Electron is added to gaseous atom ✓ **Correct answer**
- C. Electron is removed from gaseous atom
- D. Covalent bond is formed between the atoms

A. Breaking a covalent bond is bond dissociation, not electron affinity.

B. Electron affinity is the energy released when an electron is added to an isolated gaseous atom to form a negative ion.

C. Removing an electron from a gaseous atom is ionisation energy, not electron affinity.

D. Forming a covalent bond releases bond energy, not electron affinity.

134 Chemistry

Which mechanism of reactions is shown by carbonyl compounds?

- A. Electrophilic addition
- B. Electrophilic substitution
- C. Free radical substitution
- D. Nucleophilic addition ✓ **Correct answer**

A. Electrophilic addition is the mechanism of alkenes, not carbonyl compounds.

B. Electrophilic substitution is the mechanism of benzene, not carbonyl compounds.

C. Free-radical substitution is the mechanism of alkanes with halogens, not carbonyl compounds.

D. Carbonyl compounds (aldehydes and ketones) characteristically undergo nucleophilic addition at the polar C=O bond.

Question 135 Chemistry

Which of following compound is solid and room temperature?

- A. Ethanol
- B. Butane
- C. Methanol
- D. Phenol ✓ **Correct answer**

A. Ethanol is a liquid at room temperature.

B. Butane is a gas at room temperature.

C. Methanol is a liquid at room temperature.

D. Phenol (melting point 41 °C) is a solid at room temperature.

136 Chemistry

Halogens are being used as fire extinguisher, mild antiseptic, CFCs and many other organic chemicals. Which of the following halogen is used to kill the bacteria in drinking water

- A. Bromine
- B. Fluorine
- C. Chlorine ✓ **Correct answer**
- D. Iodine

A. Bromine is not used to disinfect drinking water.

B. Fluorine is added to water in tiny amounts for teeth, not to kill bacteria.

C. Chlorine is used to kill bacteria in drinking water (chlorination).

D. Iodine is used as an antiseptic, not to disinfect drinking water supplies.

Question 137 Chemistry

Which of the following acts as a electrophile in the electrophilic substitution of benzene with bromine?

- A. Br^{+} ✓ **Correct answer**
- B. $FeCl_4^{-}$
- C. Fe^{+2}
- D. Fe^{+3}

A. The bromonium ion Br^{+} is the electrophile that attacks the benzene ring in bromination.

B. $FeCl_4^{-}$ (tetrachloroferrate) is a by-product anion of the catalyst system, not the electrophile.

C. Fe^{2+} is not the electrophile in benzene bromination.

D. Fe^{3+} (as $FeBr_3$) is the catalyst, not the electrophile itself.

138 Chemistry

According to Lowry - Bronsted Acid & Base Concept, H_2O is

- A. An Acid
- B. A Base
- C. An Amphoteric Species ✓ **Correct answer**
- D. A Salt

A. Water can act as an acid, but it is not only an acid.

B. Water can act as a base, but it is not only a base.

C. According to the Lowry–Brønsted concept water is amphoteric: it can donate a proton (acting as an acid) or accept a proton (acting as a base).

D. Water is not a salt.

Question 139 Chemistry

Which one of the following compounds is known as tertiary alcohol?

- A. 1-Propanol
- B. 2-methyl-2-propanol ✓ **Correct answer**
- C. 2-methyl-1-propanol
- D. 2-Propanol

A. 1-Propanol is a primary alcohol.

B. 2-Methyl-2-propanol (tert-butanol) has the OH-bearing carbon attached to three alkyl groups: a tertiary alcohol.

C. 2-Methyl-1-propanol is a primary alcohol.

D. 2-Propanol is a secondary alcohol.

140 Chemistry

Which of the following molecule has largest number of shared pair of electrons?

- A. C_2H_4 ✓ **Correct answer**
- B. N_2
- C. CO_2
- D. NH_3

A. Ethene has six shared pairs of electrons (one C=C double bond = 2 pairs, plus four C–H bonds = 4 pairs), more than any other option.

B. Nitrogen has three shared pairs (the triple bond).

C. Carbon dioxide has four shared pairs (two C=O double bonds).

D. Ammonia has three shared pairs (three N–H bonds).

Question 141 Chemistry

Nitrogen is present in air as a major constituent. It is an inactive gas in comparison with oxygen which is the next major constituent of air. Nonreactive nature of nitrogen is due to the reason;

- A. there is one lone pair of electron on each nitrogen atom in its molecule
- B. there is a triple covalent bond in nitrogen molecule which is very strong and molecule is non polar ✓ **Correct answer**
- C. nitrogen have three unpaired electrons in its 2p orbital which is comparatively stable electronic configuration
- D. there is a triple covalent bond in nitrogen molecule which is very strong and molecule is polar

A. Each nitrogen atom does carry a lone pair, but that is not what makes nitrogen unreactive.

B. Nitrogen is unreactive because the N≡N triple bond is very strong (high bond energy)

ecule is non-polar.

C. Nitrogen's atoms do not have three unpaired electrons in the N_2 molecule (they are paired in the triple bond and lone pairs).

D. The triple bond is strong, but the nitrogen molecule is non-polar, not polar. (Key: the Learnospot key lists D; corrected to B — N_2 is non-polar, and the official UHS key lists B; the Learnospot twin match was weak, 0.375/0.249.)

Question 142 Chemistry

The dilute solution of _____ is called vinegar

- A. Formic acid
- B. Oxalic acid
- C. Benzoic acid
- D. Acetic acid ✓ **Correct answer**

A. Formic acid is the acid of ant stings, not vinegar.

B. Oxalic acid is found in rhubarb and spinach, not vinegar.

C. Benzoic acid is a food preservative, not vinegar.

D. A dilute (about 5%) solution of acetic acid is vinegar (the paper spells it "Acetc acid").

Note: Filed option D read "Acetc acid" (misprint in the source reproduction); corrected to "Acetic acid" as documented in the reviewed file.

Question 143 Chemistry

Percentage of nitrogen by volume in air is

- A. 78% ✓ **Correct answer**
- B. 50%
- C. 20%

A. Nitrogen makes up about 78% of air by volume.

B. Nitrogen is far more than 50% of air.

C. About 20% (21%) is the proportion of oxygen, not nitrogen.

D. Nitrogen is not 98% of air.

Question 144 Chemistry

Bromination of alkene is shown in the following reaction. This reaction is used for

[reaction: $CH_2=CH_2 + Br_2 \rightarrow CH_2Br–CH_2Br$ (1,2-dibromoethane)]

- A. Detection of ketones
- B. Detection of double bond ✓ **Correct answer**
- C. Identification of Primary and secondary alcohols
- D. Detection of Aldehydes

A. Bromination of an alkene does not detect ketones.

B. Addition of bromine across a C=C double bond (decolourisation of bromine water) is the test for a double bond (unsaturation).

C. Primary and secondary alcohols are distinguished by oxidation tests, not by bromination.

D. Aldehydes are detected by Tollen's or Fehling's test, not by bromination.

Question 145 Chemistry

What is the order of increasing reactivity of alkyl halides?

- A. fluoroalkane>chloroalkane>bromoalkane>iodoalkane
- B. iodoalkane<bromoalkane>chloroalkane>fluoroalkane
- C. iodoalkane<bromoalkane<chloroalkane<Fluoroalkane

roalkane<chloroalkane<bromoalkane<iodoalkane ✓ **Correct answer**

A. This is the order of decreasing reactivity, not increasing.

B. This order is inconsistent (it reverses direction).

C. This puts iodoalkane as the least reactive, which is wrong.

D. Reactivity increases as the C–X bond gets weaker and the halide becomes a better leaving group: F < Cl < Br < I.

Question 146 Chemistry

Which of the following would react with ozone in the atmosphere?

- A. F•
- B. O_2
- C. O•
- D. Cl• ✓ **Correct answer**

A. Fluorine radicals are not the species that destroy atmospheric ozone.

B. Molecular oxygen does not react with ozone in this way.

C. Atomic oxygen does react with ozone, but the classic ozone-destroying radical of the question is chlorine.

D. Chlorine free radicals (from CFCs) react with ozone, catalytically destroying it in the stratosphere.

Question 147 Physics

A 5 watt LED bulb converts 80% of the power into light photons of wavelength 660 nm. What is the number of photons emitted from the bulb in one second.

- A. 5.8×10^{34}
- B. 7.5×10^{18}

- D. 1.3 x 10^{19} ✓ **Correct answer**

A. This is far too large; it does not follow from the photon energy.

B. This is about half the correct value (it would follow from using only 40% of the power, or a longer wavelength).

C. This is far too small for a 4 W light source.

D. Light power = 0.80 × 5 W = 4 W; photon energy $E = hc/\lambda = (6.63\times10^{-34} \times 3\times10^{8})/(660\times10^{-9}) \approx 3.0\times10^{-19}$ J; number per second = $4/(3.0\times10^{-19}) \approx 1.3\times10^{19}$.

Question 148 Physics

If Cv = 5/2 R , Cp will be

- A. 2/5 R
- B. 2/7 R
- C. 5/2 R
- D. 7/2 R ✓ **Correct answer**

A. 2/5 R is the reciprocal of the given Cv, not Cp.

B. 2/7 R has no meaning here.

C. 5/2 R is the given Cv, not Cp.

D. For an ideal gas Cp − Cv = R, so Cp = 5/2 R + R = 7/2 R.

Question 149 Physics

The rate at which work is being done is called

- A. Power ✓ **Correct answer**
- B. Energy
- C. Density

A. Power is the rate of doing work (P = W/t).

B. Energy is the capacity to do work, not the rate of doing it.

C. Density is mass per unit volume, not the rate of doing work.

D. Force is a push or pull, not the rate of doing work.

Question 150 Physics

An input voltage Vin of 0.50 V is applied to an op-amp connected as shown in the diagram. What is the output voltage Vout? [diagram: non-inverting amplifier; Vin = 0.50 V at the non-inverting (+) input; the inverting (−) input has a 2.5 kΩ resistor to ground and a 10 kΩ feedback resistor to the output; supply ±5.0 V]

- A. 8.0 V
- B. 1.2 V
- C. 2.5 V ✓ **Correct answer**
- D. 4.9 V

A. 8.0 V exceeds the ±5.0 V supply and does not follow from the gain.

B. 1.2 V does not follow from the resistor values.

C. For a non-inverting amplifier the gain is $1 + Rf/R_1 = 1 + 10\ k\Omega/2.5\ k\Omega = 5$, so Vout = 5 × 0.50 V = 2.5 V (within the ±5.0 V supply, so no saturation).

D. 4.9 V would be the saturated output near the +5.0 V rail; the calculated 2.5 V does not saturate. (Note: the Learnospot key lists B — 1.2 V; corrected to C — the diagram's gain is 1 + 10/2.5 = 5 and the official UHS key lists C; the Learnospot twin match was weak, 0.359/0.351.)

151 Physics

A signal of -80 mV is applied to the inverting terminal of the amplifier while the non-inverting terminal is grounded. The gain of the amplifier is 25 using Rin (R1) equal to 3 Ω and Rf (R2) equal to 75 Ω. What would be the value of output signal?

- A. 200 mV
- B. -3 V
- C. 2 V ✓ **Correct answer**
- D. 3 V

A. 200 mV is the magnitude without the gain applied correctly (it is 80 mV × 2.5, not × 25).

B. −3 V has the wrong sign and the wrong magnitude.

C. For an inverting amplifier Vout = −(Rf/Rin) × Vin = −25 × (−80 mV) = +2000 mV = 2 V (Rf/Rin = 75/3 = 25, as given).

D. 3 V does not follow from the given gain and input. (Note: the Learnospot key lists D — 3 V; corrected to C — the arithmetic gives −25 × −80 mV = +2 V and the official UHS key lists C; the Learnospot twin match was weak, 0.354/0.021.)

Question 152 Physics

When the frequency of the applied force becomes equal to one of natural frequencies of body then the body oscillates with maximum displacement this phenomenon is called

- A. Heating
- B. Resonance ✓ **Correct answer**
- C. Reverberation
- D. Damping

A. Heating is the transfer of thermal energy, not the maximum oscillation of a body at its natural frequency.

B. When the applied frequency equals a natural frequency, the body oscillates with

nplitude. resonance.

C. Reverberation is the persistence of sound by repeated reflections, not resonance.

D. Damping reduces the amplitude of oscillations, the opposite of the maximum displacement described.

Question 153 Physics

Force is a derived quantity, its derived unit can be expressed in terms of the base units as,

- A. $kgms^{-2}$ ✓ **Correct answer**
- B. $kgcms^{-2}$
- C. kgm^2s^{-2}
- D. $kgms^2$

A. Force = mass × acceleration, so the newton in base units is $kg{\cdot}m{\cdot}s^{-2}$.

B. The centimetre is not an SI base unit; the newton uses metres.

C. $kg{\cdot}m^2{\cdot}s^{-2}$ is the joule (energy), not the newton.

D. $kg{\cdot}m{\cdot}s^2$ has the wrong powers of the units for force.

Question 154 Physics

e/m of an electron is given by the relationship,

- A. $e/m = 2V/(B^2r^2)$ ✓ **Correct answer**
- B. $e/m = V/(Br)^2$
- C. e/m = V r B
- D. e/m = VB/r

A. From $eV = \frac{1}{2}mv^2$ and the magnetic deflection $r = mv/Be$, eliminating v gives $e/m = 2V/(B^2r^2)$.

missing the factor 2 (it would follow from an incorrect energy balance).

C. This is dimensionally wrong for e/m.

D. This is dimensionally wrong for e/m. (Key: the Learnospot key lists D — e/m = VB/r; corrected to A — the derivation gives e/m = $2V/(B^2r^2)$ and the official UHS key lists A.)

Question 155 Physics

Lenz's law in electromagnetic induction is the direct consequence of the principle of conservation of

- A. energy ✓ **Correct answer**
- B. charge
- C. momentum
- D. mass

A. Lenz's law (the induced current opposes the change producing it) follows from the conservation of energy.

B. Conservation of charge underlies Kirchhoff's current law, not Lenz's law.

C. Conservation of momentum is not the basis of Lenz's law.

D. Conservation of mass is not the basis of Lenz's law.

Question 156 Physics

Which material will follow the below stress-strain curve. [graph: force against extension — a straight line from the origin that bends only slightly near the top before ending, with no long plastic region]

- A. Copper
- B. Iron
- C. Lead
- D. Glass ✓ **Correct answer**

ductile, its curve has a long plastic region before fracture, unlike the graph shown.

B. Iron is ductile; its curve has a long plastic region before fracture, unlike the graph shown.

C. Lead is very ductile and soft; its curve has a long plastic region, unlike the graph shown.

D. Glass is brittle: its force–extension graph is almost linear right up to fracture, with virtually no plastic region, as shown.

Question 157 Physics

A wheel starts rotating from rest with angular acceleration of 2 rad s^{-2} till its angular speed becomes 6 rad/s.The angular displacement of the wheel will be equal to

- A. 4 rad
- B. 9 rad ✓ **Correct answer**
- C. 12 rad
- D. 7 rad

A. 4 rad does not satisfy $\omega^2 = \omega_0^2 + 2\alpha\theta$.

B. Using $\omega^2 = \omega_0^2 + 2\alpha\theta$ with $\omega = 6$ rad/s, $\omega_0 = 0$ and $\alpha = 2$ rad/s^2: $36 = 2 \times 2 \times \theta$, so $\theta = 9$ rad.

C. 12 rad does not satisfy $\omega^2 = \omega_0^2 + 2\alpha\theta$.

D. 7 rad does not satisfy $\omega^2 = \omega_0^2 + 2\alpha\theta$.

Question 158 Physics

Coulombs law is given by the formula $F=k\ q_1\ q_2\ /r^2$ The magnitude of k having the unit of N m^2 C^{-2} for free space is equal to

- A. 9×10^7
- B. 6×10^7

- D. 9×10^{9} ✓ **Correct answer**

A. 9×10^{7} is two orders of magnitude too small for Coulomb's constant.

B. 6×10^{7} is not Coulomb's constant.

C. 10×10^{9} is close but not the value of Coulomb's constant.

D. Coulomb's constant in free space is $k = 1/(4\pi\varepsilon_0) = 9\times10^{9}\ N\cdot m^2\cdot C^{-2}$.

Question 159 Physics

Simple Harmonic Motion of a body is described by which statements mentioned below: K: K.E is maximum when displacement x = 0 L: P.E is maximum when x = 0 M: P.E is maximum when $x = \pm x_0$

- A. K and L
- B. K and M ✓ **Correct answer**
- C. K, L and M
- D. L and M

A. K is true but L is false: potential energy is minimum (zero) at x = 0.

B. K is true (kinetic energy is maximum at the mean position, x = 0) and M is true (potential energy is maximum at the extreme positions, $x = \pm x_0$).

C. L is false, so this combination is wrong.

D. L is false, so this combination is wrong.

Question 160 Physics

Which of the following gives the relationship between linear velocity and angular velocity?

- A. $v = r\omega$ ✓ **Correct answer**

- C. v = sω
- D. v = sθ

A. Linear velocity equals radius times angular velocity (v = rω).

B. rθ is the arc length s, not the linear velocity.

C. sω has the wrong dimensions for velocity.

D. sθ has the wrong dimensions for velocity.

Question 161 Physics

A torch is rated 2.2 V, 0.25 A. Calculate the charge passing through the bulb in one second and energy transferred by the passage of each coulomb of charge.

- A. 2.5 C and 0.55 J
- B. 0.25 C and 2.2 J ✓ **Correct answer**
- C. 0.25 C and 2.2 V
- D. 0.25 C and 0.55 J

A. The charge in one second is 0.25 C, not 2.5 C.

B. Charge Q = It = 0.25 A × 1 s = 0.25 C; the energy transferred per coulomb is the potential difference, 2.2 J per coulomb (2.2 J).

C. The energy per coulomb is 2.2 J, not 2.2 V.

D. 0.55 J is the total energy in one second (P = VI = 0.55 W), not the energy per coulomb.

Question 162 Physics

Energy consumed by 60 watt bulb in 2 minutes is equal to

- A. 7.2 kilo joules ✓ **Correct answer**
- B. 720 joules

joules

- D. 72000 joules

A. Energy = power × time = 60 W × 120 s = 7200 J = 7.2 kJ.

B. 720 J would be the energy in 12 seconds, not 2 minutes.

C. 120 J is the energy in 2 seconds, not 2 minutes.

D. 72000 J is ten times too large.

Question 163 Physics

If one mole of an ideal gas is heated at constant pressure, then the first law of thermodynamics can be written as:

- A. $C_p \Delta T = C_v \Delta T + P\Delta V$ ✓ **Correct answer**
- B. $C_v \Delta T = C_p \Delta T + P\Delta V$
- C. $C_p \Delta T = C_v \Delta T + V\Delta P$
- D. $\Delta C_p T = \Delta C_v T - P\Delta V$

A. At constant pressure the heat supplied ($C_p\Delta T$) equals the change in internal energy ($C_v\Delta T$) plus the work done ($P\Delta V$): the first law $\Delta Q = \Delta U + \Delta W$.

B. This swaps Cp and Cv, which is wrong.

C. At constant pressure $\Delta P = 0$, and the work term is $P\Delta V$, not $V\Delta P$.

D. This is dimensionally and algebraically wrong.

Question 164 Physics

The de Broglie wave length of an electron travelling with a speed of 1.0×10^{7} m/s is equal to, ($h = 6.6 \times 10^{-34}$ Js and $m_e = 9.1 \times 10^{-31}$ kg)

- A. 7.3×10^{11} m
- B. 7.3×10^{8} m

- D. 7.3×10^{-13} m

A. 7.3×10^{11} m has the wrong sign of the exponent.

B. 7.3×10^{8} m is far too large for an electron's wavelength.

C. $\lambda = h/mv = 6.6 \times 10^{-34}/(9.1 \times 10^{-31} \times 1.0 \times 10^{7}) \approx 7.3 \times 10^{-11}$ m.

D. 7.3×10^{-13} m is a hundred times too small.

Question 165 Physics

Find the mean translational kinetic energy of ideal hydrogen gas at 17°C.

- A. 6.21×10^{-21} J
- B. 5×10^{-21} J
- C. 6.21×10^{-12} J
- D. 6×10^{-21} J ✓ **Correct answer**

A. 6.21×10^{-21} J is the value at 300 K (27 °C), not at 17 °C.

B. 5×10^{-21} J does not follow from (3/2)kT at 290 K.

C. 6.21×10^{-12} J has the wrong power of ten.

D. Mean translational kinetic energy = (3/2)kT with T = 17 + 273 = 290 K: (3/2)(1.38×10^{-23})(290) ≈ 6.0×10^{-21} J.

Question 166 Physics

Calculate the activity (decaying atom per unit time)of radioactive strontium-90 having 6.7 × 10^{21} atoms at t=0. decay constant of strontium-90 is 8.3 × 10^{-10} s^{-1}.

- A. 8.01×10^{10} Bq
- B. 5.6×10^{11} s^{-1}
- C. 5.6×10^{12} Bq ✓ **Correct answer**

$< 10^{9}$ Bq

A. 8.01×10^{10} Bq does not follow from λN.

B. This has the right digits but is one order of magnitude too small.

C. Activity $A = \lambda N = (8.3\times10^{-10}\ s^{-1})(6.7\times10^{21}) \approx 5.6\times10^{12}$ decays per second = 5.6×10^{12} Bq.

D. 12×10^{11} Bq does not follow from λN.

Question 167 Physics

If the time period of the oscillation is 20 micro-sec, than what will be the frequency of that oscillating body?

- A. 5000 Hz
- B. 50000 Hz ✓ **Correct answer**
- C. 20000 Hz
- D. 1000 Hz

A. 5000 Hz would be the frequency for a period of 200 μs, not 20 μs.

B. Frequency $f = 1/T = 1/(20\times10^{-6}\ s) = 50{,}000$ Hz.

C. 20000 Hz would be the frequency for a period of 50 μs, not 20 μs.

D. 1000 Hz would be the frequency for a period of 1 ms, not 20 μs.

Question 168 Physics

In photo-emission from a metal, if light of λ is replaced by light of wavelength λ/4, the maximum kinetic energy of the photo-electrons

- A. decreases by an amount equal to half of an incident photon of wavelength λ
- B. increases by an amount equal to four times energy of an incident photon of wavelength λ ✓ **Correct answer**
- C. increases by an amount equal to the work function of the metal

reases by an amount equal to the energy of an incident photon of wavelength λ

A. Shorter wavelength means higher photon energy, so the maximum kinetic energy increases, not decreases.

B. The new photon energy is $hc/(\lambda/4) = 4hc/\lambda$, four times the old photon energy, so the maximum kinetic energy increases (the paper's intended answer; the exact increase is $3hc/\lambda$, the new photon energy being four times the old).

C. The work function does not change when the wavelength changes.

D. The maximum kinetic energy increases, not decreases. (Note: the Learnospot key lists D; corrected to B — the official UHS key lists B and the photon energy quadruples; the Learnospot twin match was weak, 0.373/0.107.)

Question 169 Physics

A cyclist is traveling at $15ms^{-1}$. she applies brakes so that she doesn't collide with the wall in front of her at a distance of 18m. Calculate the magnitude of deceleration.

- A. 6.3 m/s^2 ✓ **Correct answer**
- B. 5.3 m/s^2
- C. 13 m/s^2
- D. 12.5 m/s^2

A. Using $v^2 = u^2 + 2as$ with v = 0, u = 15 m/s and s = 18 m: $a = -u^2/2s = -225/36 \approx -6.3$ m/s^2 (the paper prints the unit as ms^{-1}).

B. 5.3 m/s^2 does not satisfy $v^2 = u^2 + 2as$ for the given values.

C. 13 m/s^2 does not satisfy $v^2 = u^2 + 2as$ for the given values.

D. 12.5 m/s^2 does not satisfy $v^2 = u^2 + 2as$ for the given values.

Note: Filed option A read "6.3 ms^{-1}" (misprint in the source reproduction); corrected to

documented in the reviewed file. Filed option B read "5.3 ms^{-1}" (misprint in the source reproduction); corrected to "5.3 m/s^2" as documented in the reviewed file. Filed option C read "13ms^{-1}" (misprint in the source reproduction); corrected to "13 m/s^2" as documented in the reviewed file. Filed option D read "12.5 ms^{-1}" (misprint in the source reproduction); corrected to "12.5 m/s^2" as documented in the reviewed file.

Question 170 Physics

In a practical transformer mutual induction between primary and secondary coils takes place. In such transformer what can be deduced about the power

- A. power output = power input
- B. power out put > power input
- C. power output ≥ power input
- D. power output < power input ✓ **Correct answer**

A. That holds only for an ideal (100% efficient) transformer, not a practical one.

B. The output power can never exceed the input power.

C. The output power cannot equal or exceed the input power in a practical transformer.

D. A practical transformer has losses (copper, eddy current, hysteresis), so the output power is less than the input power.

Question 171 Physics

If slope of velocity time graph is not constant at different points then body is moving with

- A. uniform velocity
- B. increasing acceleration ✓ **Correct answer**
- C. average acceleration
- D. constant acceleration

elocity gives a velocity–time graph of zero slope (a horizontal line), not a changing slope.

B. The slope of a velocity–time graph is the acceleration; a slope that is not constant means the acceleration is changing (increasing), i.e. the body moves with increasing acceleration.

C. "Average acceleration" is a single value over an interval, not the description of the motion.

D. Constant acceleration gives a velocity–time graph of constant slope, the opposite of what the stem describes.

Question 172 Physics

Electric potential due to 2 μc charge at distance of one meter is equal to

- A. 18×10^4 volt
- B. 1.8×10^6 volt
- C. 1.8×10^9 volt
- D. 1.8×10^4 volt ✓ **Correct answer**

A. 18×10^4 V is ten times too large.

B. 1.8×10^6 V is a hundred times too large.

C. 1.8×10^9 V would be the potential for a 0.2 C charge, not 2 μC.

D. $V = kq/r = (9\times10^9)(2\times10^{-6})/1 = 1.8\times10^4$ V.

Question 173 Physics

Kirchhoffs firs tlaw is manifestation of

- A. Law of conservation momentum
- B. Law of conservation mass

of conservation of energy

- D. Law of conservation of charge ✓ **Correct answer**

A. Conservation of momentum is not what Kirchhoff's first law expresses.

B. Conservation of mass is not what Kirchhoff's first law expresses.

C. Conservation of energy underlies Kirchhoff's second (voltage) law, not the first.

D. Kirchhoff's first (current) law — the sum of currents entering a junction equals the sum leaving it — is a manifestation of the conservation of charge.

Question 174 Physics

Light photons, each of energy 3.5×10^{-19} J falls on the cathode of a photocell. The current through the cell is reduced to zero by taking the cathode to a potential +0.25 V relative to anode. The work function of the cathode is:

- A. 3.35×10^{-19} J
- B. 3.5×10^{-19} J
- C. 3.25×10^{-19} J
- D. 3.1×10^{-19} J ✓ **Correct answer**

A. 3.35×10^{-19} J would follow from a stopping energy of 0.15×10^{-19} J, not 0.4×10^{-19} J.

B. 3.5×10^{-19} J is the photon energy, not the work function (the electrons carry away some kinetic energy).

C. 3.25×10^{-19} J would follow from a stopping energy of 0.25×10^{-19} J, not 0.4×10^{-19} J.

D. Maximum kinetic energy = $eV_0 = (1.6\times10^{-19}\ C)(0.25\ V) = 0.4\times10^{-19}$ J; work function $\varphi = E - KE_{max} = 3.5\times10^{-19} - 0.4\times10^{-19} = 3.1\times10^{-19}$ J.

Question 175 Physics

A diffraction grating has 500 lines per mm, its grating element d is equal to

- 0⁻⁶ meter ✓ **Correct answer**
- B. 2×10^{-2} meter
- C. 2×10^{-2} cm
- D. 2×10^{-6} cm

A. The grating element d = 1/(number of lines per unit length) = 1/500 mm = 0.002 mm = 2×10^{-6} m.

B. 2×10^{-2} m is ten thousand times too large.

C. 2×10^{-2} cm = 2×10^{-4} m, a hundred times too large.

D. 2×10^{-6} cm = 2×10^{-8} m, a hundred times too small. (Note: the Learnospot twin match for this item is a wrong match — its stem is the Q78 enzyme-temperature question — so there is no real Learnospot cross-check; the answer rests on the official key and the calculation.)

Question 176 Physics

In the case of linear deformation, the ratio of tensile stress to tensile strain is called

- A. energy stored in a stretched wire
- B. young's double slit phenomenon
- C. Bulk modulus
- D. Young's modulus ✓ **Correct answer**

A. The energy stored in a stretched wire is (1/2) × stress × strain × volume, not the ratio of stress to strain.

B. Young's double-slit experiment is about light interference, not stress and strain.

C. Bulk modulus is the ratio of volume stress to volume strain, not tensile stress to tensile strain.

D. In linear deformation the ratio of tensile stress to tensile strain is Young's modulus.

177 Physics

What is name of the energy which is released when an atom is formed from its constituent particles?

- A. Atomic Energy
- B. Radioactive Energy
- C. Nuclear Energy
- D. Binding Energy ✓ **Correct answer**

A. "Atomic energy" is a general term, not the energy released when an atom forms from its particles.

B. Radioactive energy is released in radioactive decay, not when an atom is formed.

C. Nuclear energy is the energy of the nucleus, not specifically the energy released when an atom is formed from its constituent particles.

D. The energy released when an atom (or nucleus) is formed from its constituent particles is the binding energy.

Question 178 Physics

Calculate the half life of bismuth-214 which has a decay constant of $4.3 \times 10^{3}\ s^{-1}$.

- A. 2.9×10^{-3} s
- B. 1.6×10^{-4} s ✓ **Correct answer**
- C. 3.9×10^{3} s
- D. 2.9×10^{3} s

A. 2.9×10^{-3} s does not follow from $T½ = 0.693/\lambda$ with $\lambda = 4.3\times10^{3}\ s^{-1}$.

B. Half-life $T½ = 0.693/\lambda = 0.693/(4.3\times10^{3}) \approx 1.6\times10^{-4}$ s.

C. 3.9×10^{3} s does not follow from $T½ = 0.693/\lambda$.

D. 2.9×10^{3} s does not follow from $T½ = 0.693/\lambda$.

179 Physics

What is the main feature required by the optical fiber for the propagation of light in an optical fiber?

- A. Optical glass should be cleaned
- B. Light should be totally confined within the fiber. ✓ **Correct answer**
- C. They are cheaper than copper wire
- D. LED light must be used

A. Clean glass is good practice, but it is not the main feature required for propagation.

B. Light propagates in an optical fibre by total internal reflection, so it must be totally confined within the fibre.

C. Cost is an advantage of optical fibre, not the feature that makes light propagate in it.

D. An LED is one possible light source, not a requirement for propagation.

Question 180 Physics

Two long, parallel conductors which are free to move are arranged 1.0 cm apart. A steady current of 20 A flows in each of the conductor in the same direction. The conductors

- A. remain stationary
- B. move towards each other ✓ **Correct answer**
- C. move away from each other
- D. move at right angles to each other

A. The conductors exert magnetic forces on each other, so they do not remain stationary.

B. Two parallel conductors carrying current in the same direction attract each other, so they move towards each other.

C. Conductors carrying current in opposite directions repel; here the currents are in the

D. The force between parallel conductors acts along the line joining them, not at right angles.

Question 181 Physics

A stone of mass 2.0 kg is dropped from a rest position 5.0m above the ground. What is its velocity at a height of 3.0m above the ground?

- A. 12.5m/s
- B. 6.3m/s ✓ **Correct answer**
- C. 9.3m/s
- D. 16.0m/s

A. 12.5 m/s would be the speed after falling about 7.8 m, not 2.0 m.

B. The stone falls 5.0 − 3.0 = 2.0 m; $v^2 = 2gh = 2 \times 10 \times 2.0 = 40$, so $v \approx 6.3$ m/s (using $g = 10$ m/s^2).

C. 9.3 m/s does not follow from $v^2 = 2gh$ for a 2.0 m fall.

D. 16.0 m/s does not follow from $v^2 = 2gh$ for a 2.0 m fall.

Question 182 Physics

In case of half wave rectification the resistance of diode during negative half of A.C is

- A. very high ✓ **Correct answer**
- B. very low
- C. a few ohms
- D. Negative

A. During the negative half-cycle the diode is reverse-biased and offers very high resistance, so (ideally) no current flows.

esistance is the diode's forward-biased state, not the negative half-cycle.

C. A few ohms is the forward resistance, not the reverse resistance.

D. Resistance cannot be negative for a diode in this context.

Question 183 Physics

Newton first law of motion is also known as

- A. law of inertia ✓ **Correct answer**
- B. law of electromagnetism
- C. law of universal gravity
- D. law of conservation of momentum

A. Newton's first law (a body remains at rest or in uniform motion unless acted on by a force) is also called the law of inertia.

B. Electromagnetism is a different branch of physics, not Newton's first law.

C. The law of universal gravitation is Newton's law of gravitation, not his first law of motion.

D. Conservation of momentum follows from Newton's laws, but it is not the name of the first law.

Question 184 Physics

When a potential difference is applied across the ends of a uniform wire of length l and radius r, a current I flows in the wire. If same potential difference is applied to the ends of another wire of the same material but of length 2l and radius 2r, the current in the wire is

- A. I/4
- B. 2I ✓ **Correct answer**
- C. I

A. I/4 would follow if the resistance quadrupled; it actually halves.

B. Resistance R = ρL/A: doubling L doubles R, but doubling r quadruples A, so $R_2 = \rho(2l)/(4\pi r^2) = R_1/2$; with the same voltage, $I_2 = V/R_2 = 2I$.

C. The resistance changes, so the current does not stay I.

D. I/2 would follow if the resistance doubled; it actually halves.

Question 185 Physics

A shock wave is produced due to an earthquake which makes the buildings move in the direction of the shock wave. Which progressive wave would this be?

- A. longitudinal wave ✓ **Correct answer**
- B. transverse wave
- C. material wave
- D. particle wave

A. The buildings move in the direction of the wave (back and forth along the direction of travel), which is a longitudinal wave (the P-wave of an earthquake).

B. In a transverse wave the particles move at right angles to the direction of travel, not in it.

C. "Material wave" is not the name for this wave.

D. "Particle wave" is not the name for this wave.

Question 186 Physics

A neutron having mass equal to a proton (mn= 1.6×10^{-27} kg) is moving in a magnetic field of intensity 1.20×10^{-3} T with a speed of 2.0×10^{7} ms^{-1}. what is the maximum force experienced by the neutron.

- B. 0 ✓ **Correct answer**
- C. 3.84×10^{-12} N
- D. 38.4×10^{-15} N

A. This is the value qvB would give for a proton (charge 1.6×10^{-19} C), but a neutron has no charge.

B. The magnetic force F = qvB sin θ is zero for a neutron because its charge q = 0, whatever its speed or the field.

C. This is a thousand times the proton value and does not apply to a neutron.

D. This is ten times the proton value and does not apply to a neutron.

Question 187 Physics

In S H M the kinetic energy of the body is maximum when

- A. The body is at mean position ✓ **Correct answer**
- B. The body is at extreme position from the mean
- C. The body is exactly half way down between mean and extreme position
- D. The body is some where between mean and extreme position.

A. In SHM the speed (and so the kinetic energy) is maximum at the mean position.

B. At the extreme position the body momentarily stops, so its kinetic energy is zero (minimum).

C. Halfway between mean and extreme the kinetic energy is half its maximum, not maximum.

D. Between mean and extreme the kinetic energy is less than its maximum.

188 Physics

The different magnitudes of same physical quantities are measured by comparing them to:

- A. available scale
- B. standard size ✓ **Correct answer**
- C. each other
- D. other physical quantities

A. An available scale is an instrument, not the reference for measurement.

B. Magnitudes of a physical quantity are measured by comparing them to a standard (the standard unit/size) of that quantity.

C. Comparing magnitudes to each other does not give a measurement.

D. Different physical quantities cannot be compared to measure a magnitude.

Question 189 Physics

Force experienced per unit positive test charge at a point in an electric field is the definition of:

- A. Electric potential energy
- B. Electric field strength ✓ **Correct answer**
- C. Electric potential
- D. Electric field

A. Electric potential energy is the work done to bring a charge to the point, not the force per unit charge.

B. Electric field strength E is defined as the force per unit positive test charge (E = F/q).

C. Electric potential is the work done per unit charge, not the force per unit charge.

D. The electric field is the region itself, the quantity defined as force per unit charge is its

Question 190 Physics

A metal rod of length 10.0 cm is moving at a speed of 0.5 ms^{-1} in a direction perpendicular to a 0.20 T magnetic field. Find the emf produced in the rod.

- A. 2.0 x 10^{-3} V
- B. 0.50 x 10^{-2} V
- C. 1.0 x 10^{-2} V ✓ **Correct answer**
- D. 1.0 x 10^{-3} V

A. 2.0×10^{-3} V is five times too small.

B. 0.50×10^{-2} V is half the correct value.

C. Motional emf ε = BLv = 0.20 T × 0.10 m × 0.5 m/s = 0.01 V = 1.0×10^{-2} V.

D. 1.0×10^{-3} V is ten times too small.

Question 191 English

That is just an example of what I complain _____.

- A. Of ✓ **Correct answer**
- B. Off
- C. To
- D. With

A. The idiomatic construction is "complain of (something)": "That is just an example of what I complain of."

B. "Complain off" is not an idiomatic construction.

C. "Complain to" takes a person (complain to someone), not the thing complained about.

D. "Complain with" is not the idiomatic construction for the thing complained about.

192 English

The region _____ which they were passing was known as the Land of Thirst and Death

- A. Through ✓ **Correct answer**
- B. By
- C. In
- D. From

A. "The region through which they were passing" is the correct relative construction.

B. "The region by which they were passing" is not idiomatic.

C. "The region in which they were passing" is not idiomatic.

D. "The region from which they were passing" is not idiomatic.

Question 193 English

I know how to _____ a throat for inspection.

- A. Force
- B. Prepare
- C. Expose ✓ **Correct answer**
- D. Open

A. "Force a throat" is not an idiomatic medical construction.

B. "Prepare a throat" is not the idiomatic construction for making it visible for examination.

C. A doctor exposes a throat for inspection (makes it visible for examination).

D. "Open a throat" would mean surgery, not inspection.

194 English

It is better for me to _____ than to shed the blood of an innocent boy.

- A. Died
- B. Die ✓ **Correct answer**
- C. Had died
- D. Have died

A. "It is better for me to died" is ungrammatical (the infinitive "to" needs the base form).

B. "It is better for me to die than to shed the blood of an innocent boy" is correct (parallel infinitives).

C. "It is better for me to had died" is ungrammatical.

D. "It is better for me to have died" breaks the parallel infinitive construction.

Question 195 English

Part - II: SPOT THE ERROR: In the following sentences some segments of each sentence are underlined. Your task is to identify that underlined segment of the sentence, which contains the mistake that needs to be corrected. SPOT THE ERROR: The most important and the most difficult thing to achieve is a desire between individuals to limit the size of family. [The underlined segments are: A "The most", B "and the most", C "is a desire", D "between individuals".]

- A. The most
- B. and the most
- C. is a desire
- D. between individuals ✓ **Correct answer**

A. "The most important" is correct.

B. "and the most difficult" is correct.

e" agrees with the singular subject "thing" and is correct.

D. "Between" is used for two things; for a desire shared by people in general the correct word is "among" — so the error is in segment D.

Question 196 English

SPOT THE ERROR: There is terror from the outset, and there are all the components necessary to create a melodrama— a dimly-lit bus station, the storm accompanied by flashes of lighting, and the promise of violent action or emotion [The underlined segments are: A "from the outset", B "there are all", C "the storm accompanied", D "the promise of violent".]

- A. from the outset
- B. there are all
- C. the storm accompanied ✓ **Correct answer**
- D. the promise of violent

A. "Terror from the outset" is correct.

B. "There are all the components" agrees with the plural "components" and is correct.

C. The error lies in this segment: the flashes are of "lightning", not "lighting" — the storm is accompanied by flashes of lightning.

D. "The promise of violent action or emotion" is correct.

Question 197 English

SPOT THE ERROR: The king feels disturbed and on hearing these words he could not control his tears [The underlined segments are: A "feels disturbed", B "and on", C "these words", D "could not control".]

- A. feels disturbed ✓ **Correct answer**
- B. and on

- D. could not control

A. The sentence is narrated in the past tense ("he could not control his tears"), so the present-tense "feels" is wrong; it should be "felt".

B. "And on hearing these words" is correct.

C. "These words" is correct.

D. "Could not control his tears" is correct past-tense narration.

Question 198 English

SPOT THE ERROR: He had earned the reputation of being a great jester, and jests were expected from him. [The underlined segments are: A "of being", B "a great jester", C "jests were", D "from him".]

- A. of being
- B. a great jester
- C. jests were
- D. from him ✓ **Correct answer**

A. "The reputation of being a great jester" is correct.

B. "A great jester" is correct.

C. "Jests were expected" is correct subject-verb agreement.

D. The idiom is "expected of him", not "expected from him" — so the error is in segment D.

Question 199 English

SPOT THE ERROR: He glances back at the door, then turns his attention once more towards the paper and begins going through it casually. [The underlined segments are:

es", B "at the door", C "towards the paper", D "through it casually".]

- A. He glances
- B. at the door
- C. towards the paper ✓ **Correct answer**
- D. through it casually

A. "He glances back" is correct present-tense narration, consistent with "turns" and "begins".

B. "Glances back at the door" is correct.

C. The idiom is "turns his attention to the paper"; "towards" is the error in this segment.

D. "Going through it casually" is correct.

Question 200 English

SPOT THE ERROR: However, by being so long in lowest form I gained an immense advantage over the cleverer boys. [The underlined segments are: A "However", B "lowest", C "an immense", D "cleverer boys".]

- A. However
- B. lowest ✓ **Correct answer**
- C. an immense
- D. cleverer boys

A. "However" is correct at the start of the sentence.

B. The superlative needs the article: "in the lowest form" — the missing "the" makes segment B the error.

C. "An immense advantage" is correct.

D. "The cleverer boys" is correct comparative usage.

201 English

Choose the CORRECT sentence:

- A. The manager looked on me in some alarm.
- B. The manager looked on me with some alarm.
- C. The manager looked at me with some alarm
- D. The manager looked at me in some alarm. ✓ **Correct answer**

A. "Looked on" means watched or regarded, not the intended "looked at".

B. "Looked on" is the wrong verb, and "with some alarm" is less idiomatic.

C. "Looked at" is right, but the idiom is "in some alarm", not "with some alarm".

D. "Looked at me in some alarm" is the correct idiom (the paper prints two full stops after "alarm").

Note: Filed option D read "The manager looked at me in some alarm.." (misprint in the source reproduction); corrected to "The manager looked at me in some alarm." as documented in the reviewed file.

Question 202 English

Choose the CORRECT sentence:

- A. There is no clearly defined plot nor is there an attempt to establish a strong"hero figure" ✓ **Correct answer**
- B. There is neither clearly defined plot not is there an attempt to establish a strong"hero figure"
- C. There is not clearly defined plot nor is there any attempt to establish a strong"hero figure"
- D. There is not either clearly defined plot nor is there an attempt to establish a strong"hero figure"

A. "No ... nor" is the correct correlative construction.

. not" is wrong, it should be "neither ... nor".

C. "There is not clearly defined plot" is ungrammatical (it needs "no" or "a").

D. "Not either ... nor" is the wrong correlative.

Question 203 English

Choose the CORRECT sentence:

- A. I lost my little plough in a furrow and I cried and cried until he had made me another plough
- B. I lost my little plough in a furrow and I have cried and cried until he made me another plough
- C. I lost my little plough in a furrow and I had cried and cried until he made me another plough
- D. I lost my little plough in a furrow and I cried and cried until he made me another plough. ✓ **Correct answer**

A. "Had made" (past perfect) is wrong: the making follows the crying, so the simple past is needed.

B. "Have cried" (present perfect) breaks the past-tense sequence.

C. "Had cried" (past perfect) is wrong for the simple sequence of past events.

D. The simple past is used consistently throughout ("lost", "cried", "made"); the paper prints a lowercase "i" in this option.

Note: Filed option D read "I lost my little plough in a furrow and i cried and cried until he made me another plough." (misprint in the source reproduction); corrected to "I lost my little plough in a furrow and I cried and cried until he made me another plough." as documented in the reviewed file.

204 English

Choose the CORRECT sentence:

- A. A common cause of failure is a mistaking ambition for the boy on the part of the parents.
- B. A common cause of failure is a mistook ambition for the boy on the part of the parents.
- C. A common cause of failure is a mistaken ambition for the boy on the part of the parents. ✓ **Correct answer**
- D. A common cause of failure is a mistake ambition for the boy on the part of the parents.

A. "Mistaking" (present participle) cannot modify "ambition" here.

B. "Mistook" is a past-tense verb, not an adjective.

C. "Mistaken" is the correct adjective: a mistaken ambition.

D. "Mistake" is a noun, not the adjective needed here.

Question 205 English

Choose the CORRECT sentence:

- A. In my experience ,the awakening of that clear judgement as to what the college is for,is not as difficult as is often supposed.
- B. In my experience ,the awakening of a clear judgement as for what the college is for,is not as difficult as is often supposed
- C. In my experience ,the awakening of a clear judgement as to what the college is for,is not as difficult as is often supposed ✓ **Correct answer**
- D. In my experience ,the awakening of a clear judgement as to what the college is for,is not as much as difficult asoften supposed.

A. "That clear judgement" is the wrong determiner here; the correct form uses "a clear

B. "As for what the college is for" is the wrong preposition; it should be "as to what".

C. Correct: "a clear judgement as to what the college is for" and "not as difficult as is often supposed".

D. "Not as much as difficult" is ungrammatical.

Question 206 English

Choose the CORRECT sentence:

- A. Oppressive it was, too , with the heaviness of a storm. ✓ **Correct answer**
- B. Oppressive it was, too, in the heaviness of a storm.
- C. Oppressive it was,too, up the heaviness of a storm.
- D. Oppressive it was, off the heaviness of a storm.

A. "With the heaviness of a storm" is the correct idiomatic preposition.

B. "In the heaviness" is not the idiom.

C. "Up the heaviness" is not idiomatic.

D. "Off the heaviness" is not idiomatic.

Question 207 English

Choose the CORRECT sentence:

- A. I leaned over the parapet and looked down.
- B. I leaned at the parapet and looked down.
- C. I leaned against the parapet and looked down. ✓ **Correct answer**
- D. I leaned down the parapet and looked down.

A. "Leaned over the parapet" means bending over it, not the intended resting against it.

t" is not idiomatic.

C. "Leaned against the parapet" is the correct idiom for resting one's weight on it.

D. "Leaned down the parapet" is not idiomatic.

Question 208 English

Choose the CORRECT sentence:

- A. Towards the end of the month he took to his bed. ✓ **Correct answer**
- B. Towards the end of the month he took into his bed.
- C. Toward end of month he took to his bed.
- D. Towards the end of month he took to his beds .

A. Correct: "towards the end of the month" (with articles) and "took to his bed" (became ill and went to bed).

B. "Took into his bed" is not the idiom.

C. Missing the articles "the" before "end" and "month".

D. Missing "the" before "month" and "beds" should be singular "bed".

Question 209 English

Choose the CORRECT sentence:

- A. China is now the fashion around the world. ✓ **Correct answer**
- B. China is now the fusion around the world
- C. China is now the function around the world.
- D. China is now fissure around the world .

A. "The fashion around the world" is the correct idiom (China is now fashionable worldwide).

B. "Fusion" makes no sense in this sentence.

' makes no sense in this sentence.

D. "Fissure" (a crack) makes no sense in this sentence.

Question 210 English

Choose the CORRECT sentence:

- A. The sufferer becomes depressed and feels very ill. ✓ **Correct answer**
- B. The sufferer becomes depress and feels very ill .
- C. The sufferer becomes depressed and feeling very ill.
- D. The sufferer become depressed and feels very ill.

A. Correct: "becomes depressed" (adjective) and "feels" agrees with the singular subject.

B. "Becomes depress" is wrong; the adjective "depressed" is needed.

C. "Feeling" breaks the parallel verb forms ("becomes ... and feels").

D. "Become" does not agree with the singular subject "sufferer".

Question 211 English

Part - IV: In each of the following questions, four alternative meanings of a word are given. You have to select the NEAREST CORRECT MEANING of the given word. Ilk

- A. Breed ✓ **Correct answer**
- B. Civilization
- C. Origin
- D. Culture

A. "Ilk" means kind, sort or type — nearest to "breed".

B. "Civilization" is not the meaning of "ilk".

C. "Origin" is not the meaning of "ilk".

is not the meaning of "ilk".

Question 212 English

Dunce

- A. Brainy
- B. Intellectual
- C. Cautious
- D. Oaf ✓ **Correct answer**

A. "Brainy" means clever, the opposite of a dunce.

B. "Intellectual" means clever, the opposite of a dunce.

C. "Cautious" means careful, not the meaning of "dunce".

D. A dunce is a stupid person; "oaf" (a stupid, clumsy person) is the nearest meaning.

Question 213 English

Hiatus

- A. Lull ✓ **Correct answer**
- B. Longing
- C. Heretical
- D. Veneration

A. A hiatus is a pause or break in a sequence; "lull" is the nearest meaning.

B. "Longing" means a strong desire, not the meaning of "hiatus".

C. "Heretical" means against accepted belief, not the meaning of "hiatus".

D. "Veneration" means deep respect, not the meaning of "hiatus".

214 English

Buffers

- A. Shocks
- B. Shield ✓ **Correct answer**
- C. Support
- D. Window

A. "Shocks" are the impacts a buffer absorbs, not the buffer itself.

B. Buffers are things that cushion or shield against shock; "shield" is the nearest meaning.

C. "Support" is a prop, not the meaning of "buffers" here.

D. "Window" is not the meaning of "buffers".

Question 215 English

Encumber

- A. Clear
- B. Spacious
- C. Convenient
- D. Strained ✓ **Correct answer**

A. "Clear" (to free from burden) is the opposite of "encumber".

B. "Spacious" means roomy, not the meaning of "encumber".

C. "Convenient" means handy, not the meaning of "encumber".

D. To encumber is to burden or weigh down; "strained" (under a burden) is the nearest meaning.

216 English

Hector

- A. Harass ✓ **Correct answer**
- B. Helpmate
- C. Hellish
- D. Hefty

A. To hector is to bully or harass someone.

B. A "helpmate" is a helpful companion, not the meaning of "hector".

C. "Hellish" means like hell, not the meaning of "hector".

D. "Hefty" means heavy or strong, not the meaning of "hector".

Question 217 English

Nexus

- A. Focal point ✓ **Correct answer**
- B. Success
- C. Hinterland
- D. Politics

A. A nexus is a connection or central point where things meet; "focal point" is the nearest meaning.

B. "Success" is not the meaning of "nexus".

C. "Hinterland" is the remote area behind a coast, not the meaning of "nexus".

D. "Politics" is not the meaning of "nexus".

218 English

Perpetuate

- A. Skulk
- B. Eternize ✓ **Correct answer**
- C. Deviate
- D. Perish

A. "Skulk" means to lurk, not the meaning of "perpetuate".

B. To perpetuate is to make something continue forever; "eternize" is the nearest meaning.

C. "Deviate" means to depart from a course, not the meaning of "perpetuate".

D. "Perish" means to die, the opposite of "perpetuate".

Question 219 English

August

- A. Local
- B. Old
- C. Venerable ✓ **Correct answer**
- D. Foreign

A. "Local" means of a particular place, not the meaning of "august".

B. "Old" alone does not carry the respect implied by "august".

C. "August" means respected and impressive; "venerable" is the nearest meaning.

D. "Foreign" is not the meaning of "august".

220 English

Lampoon

- A. Appreciate
- B. Burlesque ✓ **Correct answer**
- C. Approve
- D. Annoy

A. "Appreciate" means to value, the opposite of a lampoon.

B. A lampoon is a satirical parody; "burlesque" is the nearest meaning.

C. "Approve" is the opposite of a lampoon.

D. "Annoy" means to irritate, not the meaning of "lampoon".

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