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Biodiversity

Virus structure and HIV transmission — 2-3 Qs every year

Q1 *Biodiversity* — Easy — ⟳ High Repeat

Viruses were first discovered by:

A Louis Pasteur
B Dmitri Ivanovsky
C Robert Koch
D Alexander Fleming

Q2 *Biodiversity* — Easy — ⟳⟳ Very High Repeat

HIV causes which disease?

A Hepatitis
B AIDS
C Tuberculosis
D Malaria

Q3 *Biodiversity* — Moderate — ⟳ High Repeat

Viruses are classified on the basis of:

A Size only
B Color and shape
C Structure, strands, diseases and host
D Weight only

Q4 *Biodiversity* — Easy — ⟳⟳ Very High Repeat

HIV is transmitted through:

A Casual contact
B Air and water
C Contaminated blood and sexual contact
D Insect bites only

Q5 *Biodiversity* — Moderate — ⟳ High Repeat

Viruses that attack bacteria are called:

A Virophages
B Bacteriophages
C Retroviruses
D Prions

Q6 *Biodiversity* — Moderate — ⟳ High Repeat

Which of the following is NOT a characteristic of viruses?

A Contain nucleic acid
B Have ribosomes
C Obligate intracellular parasites
D Cannot reproduce independently

Q7 *Biodiversity* — Moderate — ⟳⟳ Very High Repeat

AIDS affects which type of cells primarily?

A Red blood cells
B CD4+ T helper cells
C B lymphocytes
D Neutrophils

Q8 *Biodiversity* — Hard — ⟳ High Repeat

The genetic material of HIV is:

A Double stranded DNA
B Single stranded DNA
C Single stranded RNA
D Double stranded RNA

Bioenergetics

ATP production and photosynthesis steps — 4-5 Qs every year

Q9 *Bioenergetics* — Moderate — ⟳⟳ Very High Repeat

Light-independent reactions occur in:

A Thylakoid membrane
B Stroma of chloroplast
C Cristae
D Cytoplasm

Q10 *Bioenergetics* — Easy — ⟳⟳ Very High Repeat

Net ATP gain from one glucose in aerobic respiration:

A 2
B 8
C 36-38
D 4

Q11 *Bioenergetics* — Moderate — ⟳⟳ Very High Repeat

ATP synthesis in photosynthesis is called:

A Substrate phosphorylation
B Photophosphorylation
C Oxidative phosphorylation
D Chemical phosphorylation

Q12 *Bioenergetics* — Moderate — ⟳⟳ Very High Repeat

Anaerobic respiration in animals converts pyruvate to:

A Ethanol and CO2
B Lactic acid
C CO2 and H2O
D Acetyl CoA

Q13 *Bioenergetics* — Moderate — ⟳⟳ Very High Repeat

End products of light reactions used in Calvin cycle:

A CO2 and H2O
B ADP and NADP+
C ATP and NADPH
D Glucose and O2

Q14 *Bioenergetics* — Easy — ⟳ High Repeat

Glycolysis occurs in:

A Mitochondria
B Nucleus
C Cytoplasm
D Chloroplast

Q15 *Bioenergetics* — Hard — ⟳ High Repeat

Which molecule is the primary CO2 acceptor in Calvin cycle?

A ATP
B RuBP (ribulose bisphosphate)
C NADPH
D G3P

Q16 *Bioenergetics* — Moderate — ⟳ High Repeat

Electron transport chain is located in:

A Cytoplasm
B Inner mitochondrial membrane
C Outer mitochondrial membrane
D Nucleus

Q17 *Bioenergetics* — Hard — ⟳ High Repeat

The first stable product of carbon fixation in C3 plants is:

A Oxaloacetate
B Pyruvate
C 3-phosphoglycerate (3-PGA)
D Glucose

Q18 *Bioenergetics* — Hard — ⟳ High Repeat

Cyclic photophosphorylation involves only:

A Photosystem I
B Photosystem II
C Both PS I and II
D Neither

Biological Molecules

Protein structure, carbohydrates, water properties — 3-4 Qs

Q19 *Biological Molecules* — Easy — ⟳⟳ Very High Repeat

Water is excellent biological solvent due to:

A Low specific heat
B High polarity
C Low density
D High boiling point

Q20 *Biological Molecules* — Easy — ⟳⟳ Very High Repeat

Sucrose is composed of:

A Glucose + Glucose
B Glucose + Fructose
C Glucose + Galactose
D Fructose + Galactose

Q21 *Biological Molecules* — Easy — ⟳⟳ Very High Repeat

Monomer of proteins is:

A Nucleotides
B Fatty acids
C Amino acids
D Monosaccharides

Q22 *Biological Molecules* — Easy — ⟳⟳ Very High Repeat

Bond linking amino acids in protein:

A Hydrogen
B Ionic
C Peptide
D Disulfide

Q23 *Biological Molecules* — Easy — ⟳⟳ Very High Repeat

Phospholipids are major components of:

A Cell walls
B Cell membranes
C Ribosomes
D Mitochondrial matrix

Q24 *Biological Molecules* — Moderate — ⟳ High Repeat

Which polysaccharide is storage form of glucose in animals?

A Starch
B Cellulose
C Glycogen
D Chitin

Q25 *Biological Molecules* — Moderate — ⟳ High Repeat

Denaturation of protein involves loss of:

A Primary structure
B Secondary and tertiary structure
C Amino acid sequence
D Peptide bonds

Q26 *Biological Molecules* — Easy — ⟳ High Repeat

Saturated fatty acids have:

A One double bond
B Multiple double bonds
C No double bonds
D A triple bond

Q27 *Biological Molecules* — Easy — ⟳ High Repeat

DNA and RNA are examples of:

A Lipids
B Proteins
C Nucleic acids
D Carbohydrates

Cell Structure

Organelle functions and membrane models — 4-5 Qs every year

Q28 *Cell Structure* — Moderate — ⟳⟳ Very High Repeat

Fluid mosaic model proposed by:

A Watson and Crick
B Singer and Nicolson
C Schleiden and Schwann
D Robert Hooke

Q29 *Cell Structure* — Easy — ⟳⟳ Very High Repeat

Organelle responsible for protein synthesis:

A Golgi apparatus
B Ribosome
C Lysosome
D Vacuole

Q30 *Cell Structure* — Easy — ⟳⟳ Very High Repeat

Powerhouse of the cell:

A Nucleus
B Golgi apparatus
C Mitochondria
D Chloroplast

Q31 *Cell Structure* — Easy — ⟳⟳ Very High Repeat

Absent in prokaryotic cells:

A Cell wall
B Ribosome
C Membrane-bound nucleus
D Cell membrane

Q32 *Cell Structure* — Easy — ⟳⟳ Very High Repeat

Function of lysosomes:

A Protein synthesis
B Intracellular digestion
C ATP production
D Photosynthesis

Q33 *Cell Structure* — Moderate — ⟳ High Repeat

Tonoplast surrounds the:

A Nucleus
B Vacuole
C Mitochondria
D Chloroplast

Q34 *Cell Structure* — Moderate — ⟳ High Repeat

Golgi apparatus functions in:

A Energy production
B Protein modification and packaging
C DNA replication
D Lipid breakdown

Q35 *Cell Structure* — Moderate — ⟳ High Repeat

Smooth endoplasmic reticulum is involved in:

A Protein synthesis
B Lipid synthesis and detoxification
C DNA replication
D Cellular respiration

Q36 *Cell Structure* — Easy — ⟳ High Repeat

Cell wall of plant cells is composed of:

A Chitin
B Peptidoglycan
C Cellulose
D Lignin only

Coordination & Control

Synapse, hormones, nervous system — 5-6 Qs most years

Q37 *Coordination & Control* — Easy — ⟳⟳ Very High Repeat

Junction between two neurons:

A Axon
B Synapse
C Dendrite
D Myelin sheath

Q38 *Coordination & Control* — Moderate — ⟳⟳ Very High Repeat

Resting membrane potential is approximately:

A +70 mV
B -70 mV
C +40 mV
D 0 mV

Q39 *Coordination & Control* — Moderate — ⟳⟳ Very High Repeat

Hormone secreted by posterior pituitary:

A FSH
B TSH
C Oxytocin
D ACTH

Q40 *Coordination & Control* — Moderate — ⟳⟳ Very High Repeat

Negative feedback controls:

A Labour contractions
B Blood calcium and temperature
C Only blood pressure
D Only glucose

Q41 *Coordination & Control* — Moderate — ⟳⟳ Very High Repeat

Cerebellum controls:

A Memory and learning
B Balance and coordination
C Hunger and thirst
D Vision

Q42 *Coordination & Control* — Moderate — ⟳ High Repeat

Myelin sheath is formed by:

A Neurons
B Schwann cells
C Astrocytes
D Oligodendrocytes

Q43 *Coordination & Control* — Hard — ⟳ High Repeat

Neurotransmitter released at neuromuscular junction:

A Dopamine
B Serotonin
C Acetylcholine
D Norepinephrine

Q44 *Coordination & Control* — Easy — ⟳ High Repeat

Which gland is known as master gland?

A Thyroid
B Adrenal
C Pituitary
D Pineal

Q45 *Coordination & Control* — Moderate — ⟳ High Repeat

Insulin is produced by _____ cells of pancreas:

A Alpha
B Beta
C Delta
D Gamma

Q46 *Coordination & Control* — Moderate — ⟳ High Repeat

Adrenaline is produced by:

A Thyroid gland
B Adrenal cortex
C Adrenal medulla
D Pituitary gland

Diversity Among Animals

Phyla characteristics — 1-2 Qs. Easy marks.

Q47 *Diversity Among Animals* — Moderate — ⟳ High Repeat

Phylum with notochord at some stage:

A Arthropoda
B Chordata
C Mollusca
D Echinodermata

Q48 *Diversity Among Animals* — Moderate — ⟳ High Repeat

Bilateral symmetry found in:

A Starfish
B Jellyfish
C Earthworm
D Hydra

Q49 *Diversity Among Animals* — Easy — ⟳ High Repeat

Insects belong to phylum:

A Chordata
B Annelida
C Arthropoda
D Mollusca

Q50 *Diversity Among Animals* — Moderate — Repeat

Which phylum contains the most species?

A Chordata
B Arthropoda
C Mollusca
D Echinodermata

✓ 50 done — 16% complete — 250 to go

Enzymes

Inhibition types and temperature effects — 5-7 Qs every year

Q51 *Enzymes* — Moderate — ⟳⟳ Very High Repeat

Competitive inhibitors bind to:

A Allosteric site
B Active site
C Substrate
D Product

Q52 *Enzymes* — Easy — ⟳⟳ Very High Repeat

Optimum temperature for human enzymes:

A 25C
B 37C
C 45C
D 50C

Q53 *Enzymes* — Moderate — ⟳⟳ Very High Repeat

Non-competitive inhibitors bind to:

A Active site
B Substrate site
C Allosteric site
D Product site

Q54 *Enzymes* — Easy — ⟳⟳ Very High Repeat

Above optimum temperature enzyme activity decreases due to:

A Saturation
B Inhibition
C Denaturation
D Composition

Q55 *Enzymes* — Moderate — ⟳ High Repeat

Lock and key model proposed by:

A Koshland
B Emil Fischer
C Watson
D Pasteur

Q56 *Enzymes* — Moderate — ⟳ High Repeat

Induced fit model of enzyme action proposed by:

A Emil Fischer
B Koshland
C Watson
D Darwin

Q57 *Enzymes* — Hard — ⟳ High Repeat

Cofactors that are organic molecules are called:

A Prosthetic groups
B Coenzymes
C Inhibitors
D Activators

Q58 *Enzymes* — Hard — ⟳ High Repeat

At Vmax all enzyme _____ are occupied:

A Allosteric sites
B Active sites
C Inhibitor sites
D Product sites

Q59 *Enzymes* — Moderate — ⟳ High Repeat

Pepsinogen is activated to pepsin by:

A Bile
B Hydrochloric acid
C Trypsin
D Enterokinase

Evolution

Darwin vs Lamarck, analogous vs homologous — 2-3 Qs

Q60 *Evolution* — Easy — ⟳⟳ Very High Repeat

Darwin's theory based on:

A Acquired characteristics
B Natural selection
C Mutation only
D Artificial selection

Q61 *Evolution* — Easy — ⟳⟳ Very High Repeat

Lamarck proposed:

A Natural selection
B Inheritance of acquired characteristics
C Genetic drift
D Punctuated equilibrium

Q62 *Evolution* — Moderate — ⟳ High Repeat

Analogous organs have:

A Same structure different function
B Different structure same function
C Same structure same function
D Different structure different function

Q63 *Evolution* — Moderate — ⟳ High Repeat

Homologous organs show:

A Convergent evolution
B Divergent evolution
C Parallel evolution
D Co-evolution

Q64 *Evolution* — Moderate — ⟳ High Repeat

Which is direct evidence of evolution?

A Comparative anatomy
B Fossil record
C Embryology
D Biogeography

Q65 *Evolution* — Hard — ⟳ High Repeat

Neo-Darwinism combines Darwin's natural selection with:

A Lamarckism
B Genetics and mutation
C Fossil record
D Comparative anatomy

Life Processes

Heart, digestion, immunity, osmosis — 6-8 Qs every year

Q66 *Life Processes* — Easy — ⟳⟳ Very High Repeat

Aorta originates from:

A Right ventricle
B Left ventricle
C Right atrium
D Left atrium

Q67 *Life Processes* — Moderate — ⟳⟳ Very High Repeat

Intrinsic factor needed for absorption of:

A Vitamin C
B Vitamin B12
C Iron
D Calcium

Q68 *Life Processes* — Moderate — ⟳⟳ Very High Repeat

Osmosis — water moves from:

A Low to high water potential
B High to low water potential
C Low solute to high solute
D Equal concentrations

Q69 *Life Processes* — Moderate — ⟳⟳ Very High Repeat

Antibody producing cells:

A T-lymphocytes
B Plasma B-cells
C Neutrophils
D Macrophages

Q70 *Life Processes* — Hard — ⟳ High Repeat

Surfactant in lungs prevents:

A Gas exchange
B Alveolar collapse by reducing surface tension
C Blood clotting
D Infection

Q71 *Life Processes* — Easy — ⟳ High Repeat

Water absorbed into root hair by:

A Active transport
B Osmosis
C Diffusion of solutes
D Pressure flow

Q72 *Life Processes* — Moderate — ⟳ High Repeat

Pepsin works optimally at pH:

A 7.4
B 8.0
C 2.0
D 6.5

Q73 *Life Processes* — Easy — ⟳ High Repeat

Which blood cells carry oxygen?

A Leucocytes
B Thrombocytes
C Erythrocytes
D Monocytes

Q74 *Life Processes* — Easy — ⟳ High Repeat

Normal human heart rate at rest:

A 40-50 bpm
B 72-80 bpm
C 100-110 bpm
D 120-130 bpm

Q75 *Life Processes* — Easy — ⟳ High Repeat

Gas exchange in lungs occurs across:

A Bronchi walls
B Trachea walls
C Alveolar walls
D Pleural membrane

Q76 *Life Processes* — Easy — ⟳ High Repeat

Bile is produced by:

A Pancreas
B Gallbladder
C Liver
D Small intestine

Q77 *Life Processes* — Moderate — ⟳ High Repeat

Pulmonary vein carries:

A Deoxygenated blood from lungs
B Oxygenated blood to lungs
C Oxygenated blood from lungs
D Deoxygenated blood to lungs

Prokaryotes

Bacterial structure and importance — 1-2 Qs

Q78 *Prokaryotes* — Easy — ⟳⟳ Very High Repeat

Bacterial cell wall composed of:

A Cellulose
B Chitin
C Peptidoglycan
D Lignin

Q79 *Prokaryotes* — Moderate — ⟳ High Repeat

Smallest known bacteria:

A Streptococcus
B Mycoplasma
C Escherichia
D Bacillus

Q80 *Prokaryotes* — Moderate — ⟳ High Repeat

Bacteria resistance to heat provided by:

A Granules
B Cysts
C Endospores
D Plasmids

Q81 *Prokaryotes* — Moderate — Repeat

Nitrogen fixation in soil done by bacteria such as:

A E. coli
B Rhizobium
C Salmonella
D Mycoplasma

Reproduction

Hormones of reproduction and menstrual cycle — 4-5 Qs

Q82 *Reproduction* — Easy — ⟳⟳ Very High Repeat

Spermatogenesis occurs in:

A Epididymis
B Vas deferens
C Seminiferous tubules
D Prostate gland

Q83 *Reproduction* — Moderate — ⟳⟳ Very High Repeat

Ovulation triggered by surge of:

A FSH
B LH
C Estrogen
D Progesterone

Q84 *Reproduction* — Easy — ⟳⟳ Very High Repeat

Fertilized egg implants into:

A Cervix
B Fallopian tube
C Myometrium
D Endometrium

Q85 *Reproduction* — Moderate — ⟳⟳ Very High Repeat

Progesterone after ovulation secreted by:

A Anterior pituitary
B Corpus luteum
C Ovarian follicle
D Hypothalamus

Q86 *Reproduction* — Moderate — ⟳ High Repeat

Which hormone maintains pregnancy?

A FSH
B LH
C Progesterone
D Estrogen

Q87 *Reproduction* — Moderate — ⟳ High Repeat

Sperm maturation occurs in:

A Seminiferous tubules
B Epididymis
C Vas deferens
D Urethra

Q88 *Reproduction* — Easy — ⟳ High Repeat

Menstrual cycle length is typically:

A 14 days
B 21 days
C 28 days
D 35 days

Q89 *Reproduction* — Hard — ⟳ High Repeat

GnRH is released by:

A Anterior pituitary
B Posterior pituitary
C Hypothalamus
D Ovary

Support & Movement

Muscle contraction, joint types, cartilage — 4-5 Qs

Q90 *Support & Movement* — Easy — ⟳⟳ Very High Repeat

Most abundant cartilage in body:

A Fibrocartilage
B Elastic cartilage
C Hyaline cartilage
D Calcified cartilage

Q91 *Support & Movement* — Moderate — ⟳⟳ Very High Repeat

Sliding filament theory — contraction involves:

A Actin sliding over myosin
B Both filaments shortening
C Sarcomere elongation
D Myosin dissolving

Q92 *Support & Movement* — Hard — ⟳⟳ Very High Repeat

Calcium ions in muscle contraction bind to:

A Myosin
B Actin
C Troponin
D Tropomyosin

Q93 *Support & Movement* — Moderate — ⟳ High Repeat

Ball and socket joint allows movement in:

A One plane
B Two planes
C All planes
D No movement

Q94 *Support & Movement* — Moderate — ⟳ High Repeat

Cardiac muscle differs from skeletal by having:

A Striations
B Intercalated discs
C Multiple nuclei
D Voluntary control

Q95 *Support & Movement* — Moderate — ⟳ High Repeat

Sarcoplasmic reticulum stores:

A ATP
B Calcium ions
C Myosin
D Actin

Q96 *Support & Movement* — Moderate — ⟳ High Repeat

Cartilage heals slowly because it is:

A Too hard
B Avascular
C Too elastic
D Acellular

Q97 *Support & Movement* — Moderate — ⟳ High Repeat

Intervertebral discs are example of:

A Fibrous joints
B Synovial joints
C Cartilaginous joints
D Gliding joints

Variation & Genetics

Mendel's laws, sex linkage, blood groups — 5-6 Qs every year

Q98 *Variation & Genetics* — Easy — ⟳⟳ Very High Repeat

Mendel's law of segregation: alleles separate during:

A Mitosis
B Gamete formation
C Fertilisation
D Growth

Q99 *Variation & Genetics* — Hard — ⟳⟳ Very High Repeat

Dihybrid AaBb x AaBb phenotypic ratio:

A 3:1
B 9:3:3:1
C 1:2:1
D 1:1:1:1

Q100 *Variation & Genetics* — Moderate — ⟳⟳ Very High Repeat

Haemophilia is:

A Autosomal dominant
B X-linked recessive
C Y-linked
D Autosomal recessive

✓ 100 done — 33% complete — 200 to go

Q101 *Variation & Genetics* — Moderate — ⟳⟳ Very High Repeat

Crossing over occurs during:

A Mitosis
B Meiosis I Prophase I
C Meiosis II
D S phase

Q102 *Variation & Genetics* — Hard — ⟳⟳ Very High Repeat

Carrier woman x normal man — affected son probability:

A 0%
B 25%
C 50%
D 100%

Q103 *Variation & Genetics* — Moderate — ⟳ High Repeat

Co-dominance example:

A Tall x short = medium
B AB blood group
C Blue x yellow = green
D Bb brown eyes

Q104 *Variation & Genetics* — Moderate — ⟳ High Repeat

Multiple alleles example in humans:

A Eye color
B Hair color
C ABO blood groups
D Height

Q105 *Variation & Genetics* — Hard — ⟳ High Repeat

A gene linked to X chromosome — father passes it to:

A All sons
B All daughters
C All children
D No children

Q106 *Variation & Genetics* — Moderate — ⟳ High Repeat

Law of independent assortment applies when genes are:

A On same chromosome
B On different chromosomes
C Linked
D Codominant

Q107 *Variation & Genetics* — Easy — ⟳ High Repeat

Genotype AA is:

A Heterozygous dominant
B Homozygous dominant
C Heterozygous recessive
D Homozygous recessive

Biological Molecules

Protein structure, carbohydrates, water properties — 3-4 Qs

Q108 *Biological Molecules* — Easy — ⟳ High Repeat

Which RNA carries amino acids to ribosome?

A mRNA
B tRNA
C rRNA
D hnRNA

Prokaryotes

Bacterial structure and importance — 1-2 Qs

Q109 *Prokaryotes* — Easy — ⟳ High Repeat

Bacterial flagella function is:

A Protection
B Attachment
C Locomotion
D Reproduction

Reproduction

Hormones of reproduction and menstrual cycle — 4-5 Qs

Q110 *Reproduction* — Moderate — ⟳ High Repeat

Placenta hormone maintaining pregnancy:

A FSH
B LH
C HCG
D Oxytocin

Support & Movement

Muscle contraction, joint types, cartilage — 4-5 Qs

Q111 *Support & Movement* — Easy — ⟳ High Repeat

Arthritis is inflammation of:

A Muscles
B Bones
C Joints
D Tendons

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Fundamental Concepts

Moles, stoichiometry, limiting reagent — 3-4 Qs

Q112 *Fundamental Concepts* — Easy — ⟳⟳ Very High Repeat

Moles of CO2 in 44g (M=44 g/mol):

A 0.5
B 1
C 2
D 44

Q113 *Fundamental Concepts* — Easy — ⟳⟳ Very High Repeat

Limiting reagent determines:

A Reaction speed
B Maximum product
C Molecular mass
D Temperature

Q114 *Fundamental Concepts* — Moderate — ⟳ High Repeat

Actual 8g theoretical 10g — percentage yield:

A 80%
B 70%
C 90%
D 75%

Q115 *Fundamental Concepts* — Easy — ⟳ High Repeat

Avogadro's number is:

A 6.02 x 10^22
B 6.02 x 10^23
C 6.02 x 10^24
D 3.01 x 10^23

Q116 *Fundamental Concepts* — Easy — ⟳ High Repeat

Empirical formula shows:

A Actual number of atoms
B Simplest whole number ratio
C 3D arrangement
D Molecular mass

Q117 *Fundamental Concepts* — Easy — ⟳ High Repeat

Molar mass of H2O:

A 16 g/mol
B 18 g/mol
C 20 g/mol
D 17 g/mol

Atomic Structure

Quantum numbers, orbitals, electronic config — 4-5 Qs

Q118 *Atomic Structure* — Easy — ⟳⟳ Very High Repeat

Shape of p-orbital:

A Spherical
B Dumbbell-shaped
C Cloverleaf
D Toroidal

Q119 *Atomic Structure* — Easy — ⟳⟳ Very High Repeat

Electronic configuration of Na (Z=11):

A 1s2 2s2 2p6 3s1
B 1s2 2s2 2p5
C 1s2 2s2 2p6 3s2
D 1s2 2s2 2p6

Q120 *Atomic Structure* — Moderate — ⟳⟳ Very High Repeat

Quantum number determining shape of orbital:

A Principal n
B Azimuthal l
C Magnetic m
D Spin s

Q121 *Atomic Structure* — Moderate — ⟳⟳ Very High Repeat

Hund's rule: fill degenerate orbitals:

A Pairs first
B Singly parallel spins first
C Randomly
D Antiparallel spins

Q122 *Atomic Structure* — Moderate — ⟳ High Repeat

Pauli exclusion principle states no two electrons can have:

A Same energy
B Same spin
C All four quantum numbers same
D Same orbital

Q123 *Atomic Structure* — Easy — ⟳ High Repeat

Aufbau principle: electrons fill orbitals in order of:

A Decreasing energy
B Increasing energy
C Random order
D Alphabetical order

Q124 *Atomic Structure* — Hard — ⟳ High Repeat

For l=2 total values of magnetic quantum number:

A 3
B 5
C 7
D 10

Gases

Gas laws and ideal gas equation — 3-4 Qs

Q125 *Gases* — Easy — ⟳⟳ Very High Repeat

Boyle's Law: at constant T pressure and volume are:

A Directly proportional
B Inversely proportional
C Equal
D Independent

Q126 *Gases* — Easy — ⟳⟳ Very High Repeat

Ideal gas equation:

A PV=nT
B PV=nRT
C PV=RT
D P=nRT/V

Q127 *Gases* — Moderate — ⟳ High Repeat

Gas 4L at 300K. Volume at 600K constant pressure:

A 2L
B 4L
C 8L
D 6L

Q128 *Gases* — Hard — ⟳ High Repeat

Both T and V doubled — pressure:

A Cannot be predicted
B Halved
C Unchanged
D Doubled

Q129 *Gases* — Moderate — ⟳ High Repeat

Kinetic molecular theory: gas molecules have:

A Zero kinetic energy
B Average kinetic energy proportional to temperature
C Equal speeds
D No collisions

Q130 *Gases* — Moderate — ⟳ High Repeat

Real gases deviate from ideal at:

A Low pressure high temperature
B High pressure low temperature
C Standard conditions
D Low temperature only

Liquids

Hydrogen bonding and vapor pressure — 2-3 Qs

Q131 *Liquids* Easy ⟳⟳ Very High Repeat

Hydrogen bonding: H bonded to:

A Carbon
B N O or F
C Chlorine
D Sulfur

Q132 *Liquids* Easy ⟳⟳ Very High Repeat

Vapor pressure increases with:

A Decreasing temperature
B Increasing temperature
C Stronger intermolecular forces
D Decreasing surface area

Q133 *Liquids* Easy ⟳ High Repeat

Water density maximum at:

A 0C
B 4C
C 100C
D 25C

Q134 *Liquids* Moderate ⟳ High Repeat

Boiling point of ethers less than alcohols because ethers lack:

A Carbon atoms
B Hydrogen bonding with itself
C Polar bonds
D Functional groups

Q135 *Liquids* Moderate ⟳ High Repeat

Ice cubes stick together when pressed due to:

A Dipole-dipole forces
B Covalent bonds
C Van der Waals forces
D Hydrogen bonding

Solids

Lattice energy and crystal types — 2 Qs

Q136 *Solids* Moderate ⟳ High Repeat

Lattice energy: ionic compound formed from gaseous ions:

A Solid ions
B Liquid ions
C Gaseous ions
D Aqueous ions

Q137 *Solids* Hard ⟳ High Repeat

NaF higher lattice energy than NaCl because F- has:

A Higher charge
B Smaller ionic radius
C Greater mass
D Lower electronegativity

Q138 *Solids* Moderate ⟳ High Repeat

NaCl crystal: each Na+ surrounded by _____ Cl- ions:

A 4
B 6
C 8
D 12

Q139 *Solids* Easy ⟳ High Repeat

Metals are good conductors due to:

A Layered structure
B Freely moving electrons
C Loosely held atoms
D Vibrational movement

Chemical Equilibrium

Le Chatelier, Haber process, buffers — 4-5 Qs

Q140 *Chemical Equilibrium* Easy ⟳⟳ Very High Repeat

Le Chatelier: disturbed system shifts to:

A Remain unchanged
B Oppose the disturbance
C Enhance disturbance
D Break down

Q141 *Chemical Equilibrium* — Moderate — ⟳⟳ Very High Repeat

High pressure in Haber's process favors NH3 because:

A Temperature increases
B Fewer moles on product side
C Catalyst better
D Cheaper

Q142 *Chemical Equilibrium* — Easy — ⟳⟳ Very High Repeat

Buffer resists changes in:

A Temperature
B pH
C Pressure
D Volume

Q143 *Chemical Equilibrium* — Moderate — ⟳ High Repeat

Increasing concentration of reactant shifts equilibrium:

A Toward reactants
B Toward products
C No effect
D Depends on temperature

Q144 *Chemical Equilibrium* — Moderate — ⟳ High Repeat

Solubility product Ksp applies to:

A All ionic compounds
B Slightly soluble ionic compounds
C Covalent compounds
D Gases only

Reaction Kinetics

Activation energy, catalysts, rate factors — 3-4 Qs

Q145 *Reaction Kinetics* — Easy — ⟳⟳ Very High Repeat

Activation energy is minimum energy for:

A Products to form
B Effective collision
C Breaking all bonds
D Reactants to dissolve

Q146 *Reaction Kinetics* — Easy — ⟳⟳ Very High Repeat

Catalyst increases rate by:

A Increasing temperature
B Lowering activation energy
C Increasing concentration
D Shifting equilibrium

Q147 *Reaction Kinetics* — Moderate — ⟳ High Repeat

Temperature raised 10K — rate approximately:

A Same
B Doubles
C Triples
D Quadruples

Q148 *Reaction Kinetics* — Easy — ⟳ High Repeat

Rate of reaction depends on:

A Concentration only
B Temperature only
C Concentration temperature surface area catalyst
D Pressure only

Q149 *Reaction Kinetics* — Hard — ⟳ High Repeat

Order of reaction is determined:

A From balanced equation
B Experimentally
C From molecular formula
D From enthalpy change

Thermochemistry

Hess's law, exothermic/endothermic, first law — 3-4 Qs

Q150 *Thermochemistry* — Easy — ⟳⟳ Very High Repeat

Exothermic reaction deltaH is:

A Positive
B Negative
C Zero
D Variable

✓ 150 done — 50% complete

150 to go

Q151 *Thermochemistry* — Moderate — ⟳⟳ Very High Repeat

Hess's Law: total enthalpy change is:

A Path-dependent
B Independent of route
C Always positive
D Always negative

Q152 *Thermochemistry* — Easy — ⟳⟳ Very High Repeat

First law of thermodynamics:

A Energy not created or destroyed
B Entropy always increases
C Heat flows cold to hot
D Equilibrium reached spontaneously

Q153 *Thermochemistry* — Moderate — ⟳ High Repeat

Bond enthalpy is energy needed to:

A Form one mole of bonds
B Break one mole of bonds in gas phase
C Melt solid
D Vaporize liquid

Q154 *Thermochemistry* — Moderate — ⟳ High Repeat

Cp - Cv = R shows that:

A Cv less than Cp
B Cp equals Cv
C Cp greater than Cv
D Cp equals constant

Electrochemistry

Cathode/anode, oxidation number, SHE — 2-3 Qs

Q155 *Electrochemistry* — Easy — ⟳⟳ Very High Repeat

Reduction occurs at:

A Anode
B Cathode
C Salt bridge
D Electrolyte

Q156 *Electrochemistry* — Easy — ⟳ High Repeat

SHE potential:

A +1.0 V
B -1.0 V
C 0.00 V
D 0.5 V

Q157 *Electrochemistry* — Easy — ⟳ High Repeat

Oxidation number of O in most compounds:

A -1
B -2
C +2
D +1

Q158 *Electrochemistry* — Moderate — ⟳ High Repeat

In electrolytic cell electrical energy converts to:

A Heat energy
B Chemical energy
C Mechanical energy
D Light energy

Chemical Bonding

Hybridization, VSEPR, electronegativity — 4-5 Qs

Q159 *Chemical Bonding* — Easy — ⟳⟳ Very High Repeat

sp3 hybridization — geometry:

A Linear
B Trigonal planar
C Tetrahedral
D Octahedral

Q160 *Chemical Bonding* — Easy — ⟳⟳ Very High Repeat

VSEPR predicts:

A Bond energies
B Molecular shapes
C Reaction rates
D Solubility

Q161 *Chemical Bonding* — Moderate — ⟳⟳ Very High Repeat

Electronegativity increases across period because:

A Nuclear charge decreases
B Nuclear charge increases and radius decreases
C Radius increases
D Electron affinity decreases

Q162 *Chemical Bonding* — Moderate — ⟳ High Repeat

sp2 hybridization found in:

A CH4
B C2H4 (ethene)
C C2H2
D CCl4

Q163 *Chemical Bonding* — Easy — ⟳ High Repeat

Ionic bond forms between:

A Two non-metals
B Two metals
C Metal and non-metal
D Two metalloids

Q164 *Chemical Bonding* — Moderate — ⟳ High Repeat

Sigma bond is formed by _____ overlap:

A Side-to-side
B Head-on
C Perpendicular
D No overlap

S and P Block

Group trends and reactivity — 1-2 Qs

Q165 *S and P Block* — Moderate — ⟳ High Repeat

Alkali metals reactivity increases down Group I because:

A Radius decreases
B Ionization energy decreases
C Nuclear charge increases
D Electron affinity increases

Transition Elements

d-block electronic configurations — 1 Q

Q166 *Transition Elements* — Easy — ⟳ High Repeat

Transition elements fill _____ orbitals:

A f
B d
C p
D s

S and P Block

Group trends and reactivity — 1-2 Qs

Q167 *S and P Block* — Moderate — ⟳ High Repeat

Which property increases down Group I?

A Ionization energy
B Electronegativity
C Atomic radius
D Melting point

Hydrocarbons

Alkane/alkene/benzene reactions — 3-4 Qs

Q168 *Hydrocarbons* — Easy — ⟳⟳ Very High Repeat

General formula of alkanes:

A CnH2n
B CnH2n+2
C CnH2n-2
D CnHn

Q169 *Hydrocarbons* — Hard — ⟳ High Repeat

Friedel-Crafts acylation of benzene produces:

A Alkylbenzene
B Aryl ketone
C Nitrobenzene
D Halogenobenzene

Alcohols & Phenols

Lucas test, reactions of alcohols — 2 Qs

Q170 *Alcohols & Phenols* — Moderate — ⟳⟳ Very High Repeat

Lucas test distinguishes:

A Aldehydes and ketones
B Primary secondary and tertiary alcohols
C Alkenes and alkynes
D Acids and bases

Carboxylic Acids

Esterification and derivatives — 2 Qs

Q171 *Carboxylic Acids* — Easy — ⟳⟳ Very High Repeat

Esterification — reaction between:

A Alcohol and aldehyde
B Carboxylic acid and alcohol
C Acid and base
D Alkene and water

Alkyl Halides

SN1, SN2, E1, E2 mechanisms — 2-3 Qs

Q172 *Alkyl Halides* — Hard — ⟳ High Repeat

SN2 favored by:

A Tertiary halides
B Primary halides strong nucleophiles
C Weak nucleophiles
D High temperature

Macromolecules

Protein structure — 1-2 Qs

Q173 *Macromolecules* — Easy — ⟳⟳ Very High Repeat

Proteins are polymers of:

A Nucleotides
B Monosaccharides
C Amino acids
D Fatty acids

Organic Principles

Isomerism types — 1-2 Qs

Q174 *Organic Principles* — Moderate — ⟳ High Repeat

Cis-trans isomerism occurs in:

A Alkanes
B Alkenes
C Alkynes
D Aromatics only

Aldehydes & Ketones

Reactions and tests — 2-3 Qs

Q175 *Aldehydes & Ketones* — Moderate — ⟳ High Repeat

Catalytic reduction of aldehyde gives:

A Carboxylic acid
B Primary alcohol
C Ketone
D Alkane

Q176 *Aldehydes & Ketones* — Hard — ⟳ High Repeat

Cannizzaro reaction given by aldehydes with:

A Alpha hydrogen
B No alpha hydrogen
C Ketone group
D Double bonds

Hydrocarbons

Alkane/alkene/benzene reactions — 3-4 Qs

Q177 *Hydrocarbons* — Easy — ⟳ High Repeat

Cycloalkane general formula:

A C_nH_{2n+2}
B C_nH_{2n}
C C_nH_{2n-2}
D C_nH_{2n-6}

Q178 *Hydrocarbons* — Hard — ⟳ High Repeat

Markovnikov's rule: H adds to carbon with:

A More H atoms
B Fewer H atoms
C More substituents
D Carbon next to oxygen

Alcohols & Phenols
Lucas test, reactions of alcohols — 2 Qs

Q179 *Alcohols & Phenols* — Hard — ⟳ High Repeat

Phenol is more acidic than alcohol because:

A O-H bond weaker
B Phenoxide ion stabilized by resonance
C More substituted
D Larger molecule

Alkyl Halides
SN1, SN2, E1, E2 mechanisms — 2-3 Qs

Q180 *Alkyl Halides* — Hard — ⟳ High Repeat

Nucleophilic substitution at tertiary carbon prefers:

A SN2
B SN1
C E2
D E1 only

Carboxylic Acids
Esterification and derivatives — 2 Qs

Q181 *Carboxylic Acids* — Moderate — ⟳ High Repeat

Hydrolysis of ester produces:

A Alcohol only
B Acid only
C Alcohol and acid
D Aldehyde and acid

Fundamental Concepts
Moles, stoichiometry, limiting reagent — 3-4 Qs

Q182 *Fundamental Concepts* — Moderate — ⟳ High Repeat

Moles of H2O produced from 4g H2 (M=2) reacting with excess O2:

A 1
B 2
C 4
D 0.5

Chemical Bonding
Hybridization, VSEPR, electronegativity — 4-5 Qs

Q183 *Chemical Bonding* — Moderate — ⟳ High Repeat

Which shows sp hybridization?

A CH4
B C2H4
C C2H2 (ethyne)
D CCl4

Aldehydes & Ketones
Reactions and tests — 2-3 Qs

Q184 *Aldehydes & Ketones* — Hard — ⟳ High Repeat

Iodoform test is positive for:

A Primary alcohols
B Methyl ketones and ethanol
C All aldehydes
D Carboxylic acids

Carboxylic Acids
Esterification and derivatives — 2 Qs

Q185 *Carboxylic Acids* — Moderate — ⟳ High Repeat

Saponification is hydrolysis of ester by:

A Water
B Acid
C Base (alkali)
D Enzyme

Q186 *Carboxylic Acids* — Easy — ⟳ High Repeat

General formula of carboxylic acids:

A CnH2nO
B CnH2nO2
C CnH2n+1OH
D CnH2nCOOH

Alcohols & Phenols
Lucas test, reactions of alcohols — 2 Qs

Q187 *Alcohols & Phenols* — Easy — ⟳ High Repeat

Dehydration of alcohol produces:

A Alkane
B Alkene
C Alkyne
D Ester

Aldehydes & Ketones
Reactions and tests — 2-3 Qs

Q188 *Aldehydes & Ketones* — Easy — ⟳ High Repeat

Organic compound containing -CHO group is:

A Ketone
B Aldehyde
C Alcohol
D Ether

Alkyl Halides
SN1, SN2, E1, E2 mechanisms — 2-3 Qs

Q189 *Alkyl Halides* — Hard — ⟳ High Repeat

Which halide is most reactive in nucleophilic substitution?

A Alkyl fluoride
B Alkyl chloride
C Alkyl bromide
D Alkyl iodide

Hydrocarbons
Alkane/alkene/benzene reactions — 3-4 Qs

Q190 *Hydrocarbons* — Moderate — ⟳ High Repeat

Benzene undergoes _____ reactions preferably:

A Addition
B Substitution
C Elimination
D Oxidation

Organic Principles
Isomerism types — 1-2 Qs

Q191 *Organic Principles* — Easy — ⟳ High Repeat

Functional group of amines:

A -OH
B -COOH
C -NH2
D -CHO

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Force and Motion

Projectile motion and Newton's laws — 5-6 Qs every year

Q192 *Force and Motion* — Easy — ⟳⟳ Very High Repeat

Newton's second law F=:

A ma
B mv
C m/a
D a/m

Q193 *Force and Motion* — Easy — ⟳⟳ Very High Repeat

Horizontal velocity in projectile motion is:

A Constantly increasing
B Constantly decreasing
C Zero at max height
D Constant throughout

Q194 *Force and Motion* — Easy — ⟳⟳ Very High Repeat

Range of projectile maximum at:

A 30
B 45
C 60
D 90 degrees

Q195 *Force and Motion* — Hard — ⟳⟳ Very High Repeat

Ball 20m/s from 45m cliff — time to ground (g=10):

A 2s
B 3s
C 4.5s
D 9s

Q196 *Force and Motion* — Moderate — ⟳⟳ Very High Repeat

Elastic collision — conserved quantities:

A Momentum only
B KE only
C Momentum and KE both
D Neither

Q197 *Force and Motion* — Easy — ⟳⟳ Very High Repeat

Newton's third law — action reaction:

A Equal same direction same body
B Equal opposite different bodies
C Unequal opposite
D Equal opposite same body

Q198 *Force and Motion* — Moderate — ⟳ High Repeat

Impulse equals change in:

A Velocity
B Acceleration
C Momentum
D Kinetic energy

Q199 *Force and Motion* — Easy — ⟳ High Repeat

Slope of displacement-time graph gives:

A Acceleration
B Velocity
C Distance
D Force

Q200 *Force and Motion* — Easy — ⟳ High Repeat

At maximum height of projectile vertical velocity is:

A Maximum
B Equal to horizontal
C Zero
D Negative maximum

✓ 200 done — 66% complete — 100 to go

Work and Energy

KE, PE, power, kWh — 4-5 Qs every year

Q201 *Work and Energy* — Moderate — ⟳⟳ Very High Repeat

KE doubles when speed increases by factor:

A 2
B root 2
C 4
D 0.5

Q202 *Work and Energy* — Easy — ⟳⟳ Very High Repeat

Power =

A F x displacement
B Work per time
C F x velocity
D Energy per force

Q203 *Work and Energy* — Moderate — ⟳⟳ Very High Repeat

1 kWh equals:

A 3600 J
B 3.6 x 10^6 J
C 1000 J
D 360 J

Q204 *Work and Energy* — Easy — ⟳ High Repeat

Work done by friction always:

A Positive
B Negative
C Zero
D Variable

Q205 *Work and Energy* — Easy — ⟳ High Repeat

Gravitational PE = mgh. If height halved PE becomes:

A Same
B Double
C Half
D Quarter

Q206 *Work and Energy* — Moderate — ⟳ High Repeat

Area under force-displacement graph gives:

A Power
B Velocity
C Work done
D Acceleration

Q207 *Work and Energy* — Moderate — ⟳ High Repeat

Escape velocity from Earth surface approximately:

A 7.9 km/s
B 11.2 km/s
C 3.0 km/s
D 9.8 km/s

Rotational Motion

Angular velocity, centripetal force — 3-4 Qs

Q208 *Rotational Motion* — Easy — ⟳⟳ Very High Repeat

1 radian equals:

A 90
B 180
C 57.3
D 360 degrees

Q209 *Rotational Motion* — Easy — ⟳⟳ Very High Repeat

Linear and angular velocity: v=

A omega/r
B r*omega
C r2*omega
D omega2*r

Q210 *Rotational Motion* — Easy — ⟳⟳ Very High Repeat

Centripetal acceleration directed:

A Tangentially
B Away from center
C Toward center
D Upward

Q211 *Rotational Motion* — Hard — ⟳ High Repeat

Speed doubled radius same — centripetal force becomes:

A Same
B Double
C 4 times
D Half

Q212 *Rotational Motion* — Easy — ⟳ High Repeat

Angular velocity unit is:

A m/s
B rad/s
C m/s2
D N

Q213 *Rotational Motion* — Moderate — ⟳ High Repeat

Object on circular path r=1m covers 2m arc — angular displacement:

A 0.5 rad
B 1 rad
C 2 rad
D 3 rad

Waves

Wave equation, SHM, Doppler effect — 4-5 Qs every year

Q214 *Waves* — Easy — ⟳⟳ Very High Repeat

Wave equation:

A v=f/lambda
B v=f*lambda
C v=lambda/f
D f=v*lambda

Q215 *Waves* — Moderate — ⟳⟳ Very High Repeat

SHM acceleration directed:

A Away from equilibrium
B Toward equilibrium
C Perpendicular to displacement
D Tangential

Q216 *Waves* — Moderate — ⟳⟳ Very High Repeat

Speed of sound increases per degree C by:

A 0.61 m/s
B 1.0 m/s
C 6.1 m/s
D 0.061 m/s

Q217 *Waves* — Easy — ⟳ High Repeat

Transverse wave — particles vibrate:

A Parallel to propagation
B Perpendicular to propagation
C Circular
D Randomly

Q218 *Waves* — Easy — ⟳ High Repeat

Doppler effect — relative motion between:

A Two waves
B Source and observer
C Two mediums
D Wave and medium

Q219 *Waves* — Moderate — ⟳ High Repeat

Stationary waves — two waves travelling in:

A Same direction same frequency
B Opposite directions same frequency
C Perpendicular
D Random

Q220 *Waves* — Moderate — ⟳ High Repeat

100 waves per second wavelength 1cm — speed:

A 1 m/s
B 2 m/s
C 3 m/s
D 4 m/s

Q221 *Waves* **Moderate** ⟳ High Repeat

In longitudinal waves compressions and rarefactions are regions of:

A High and low displacement
B High and low pressure
C High and low frequency
D High and low amplitude

Thermodynamics

First law, Cp-Cv, isochoric — 3-4 Qs

Q222 *Thermodynamics* **Easy** ⟳⟳ Very High Repeat

First law thermodynamics — conservation of:

A Momentum
B Energy
C Mass
D Charge

Q223 *Thermodynamics* **Moderate** ⟳⟳ Very High Repeat

Cp - Cv = R:

A 0
B R
C 2R
D R/2

Q224 *Thermodynamics* **Easy** ⟳⟳ Very High Repeat

Isochoric process — constant:

A Pressure
B Temperature
C Volume
D Entropy

Q225 *Thermodynamics* **Moderate** ⟳ High Repeat

ΔU = Q - W is statement of:

A Second law
B First law
C Zeroth law
D Third law

Q226 *Thermodynamics* **Easy** ⟳ High Repeat

In isobaric process what remains constant:

A Volume
B Pressure
C Temperature
D Internal energy

Q227 *Thermodynamics* **Moderate** ⟳ High Repeat

42J heat transferred, 32J work done — change in internal energy:

A 74 J
B 10 J
C 116 J
D 106 J

Electrostatics

Coulomb's law, capacitance, energy — 4-5 Qs every year

Q228 *Electrostatics* **Easy** ⟳⟳ Very High Repeat

Coulomb's law — force inversely proportional to:

A Distance
B Square of distance
C Cube
D Fourth power

Q229 *Electrostatics* **Moderate** ⟳⟳ Very High Repeat

Energy in capacitor:

A E=CV
B E=1/2 CV2
C E=CV2
D E=2CV2

Q230 *Electrostatics* **Easy** ⟳⟳ Very High Repeat

SI unit of capacitance:

A Coulomb
B Volt
C Farad
D Ohm

Q231 *Electrostatics* — Easy — ⟳ High Repeat

2uF and 6uF in parallel — equivalent:

A 8uF
B 3/2 uF
C 4uF
D 13/2 uF

Q232 *Electrostatics* — Easy — ⟳ High Repeat

Electric field lines go from:

A Negative to positive
B Positive to negative
C Negative to neutral
D Parallel always

Q233 *Electrostatics* — Hard — ⟳ High Repeat

RC time constant — capacitor charges to 63.2% in time:

A RC/2
B RC
C 2RC
D RC2

Current Electricity

Ohm's law, resistance, power transfer — 4-5 Qs

Q234 *Current Electricity* — Easy — ⟳⟳ Very High Repeat

Ohm's Law:

A V=IR
B V=I/R
C V=I2R
D V=R/I

Q235 *Current Electricity* — Easy — ⟳⟳ Very High Repeat

Resistance directly proportional to:

A Area
B Length
C Temperature only
D Conductivity

Q236 *Current Electricity* — Moderate — ⟳⟳ Very High Repeat

Max power transfer when external R:

A Zero
B Infinite
C Equals internal r
D Doubles internal r

Q237 *Current Electricity* — Hard — ⟳ High Repeat

Wire radius halved — resistance becomes:

A 4R
B R
C 6R
D 16R

Q238 *Current Electricity* — Easy — ⟳ High Repeat

Volt x Ampere = :

A Current
B Voltage
C Resistance
D Power

Q239 *Current Electricity* — Easy — ⟳ High Repeat

Pakistan domestic electricity frequency:

A 70 Hz
B 50 Hz
C 100 Hz
D 60 Hz

Electromagnetism

Magnetic flux, force on charges — 2-3 Qs

Q240 *Electromagnetism* — Moderate — ⟳⟳ Very High Repeat

Magnetic flux:

A phi=B/A
B phi=BA cos theta
C phi=BA sin theta
D phi=B+A

Q241 *Electromagnetism* — Moderate — ⟳⟳ Very High Repeat

Charged particle parallel to B field — force is:

A Maximum
B Centripetal
C Zero
D Repulsive

Q242 *Electromagnetism* — Moderate — ⟳ High Repeat

Magnetic flux is maximum when angle between B and area is:

A 0 degrees
B 90 degrees
C 180 degrees
D 45 degrees

Q243 *Electromagnetism* — Moderate — ⟳ High Repeat

Force on current-carrying conductor in B field — F=:

A BIL
B BIL sin theta
C BIL cos theta
D B/IL

EM Induction

Lenz's law, transformers, Faraday — 3-4 Qs

Q244 *EM Induction* — Moderate — ⟳⟳ Very High Repeat

Lenz's law — conservation of:

A Momentum
B Charge
C Energy
D Mass

Q245 *EM Induction* — Easy — ⟳⟳ Very High Repeat

Step-up transformer — more secondary turns because:

A Fewer turns
B More turns
C Larger current
D Iron core

Q246 *EM Induction* — Moderate — ⟳ High Repeat

Faraday's law — induced EMF proportional to:

A Flux
B Rate of change of flux
C Current
D Resistance

Q247 *EM Induction* — Easy — ⟳ High Repeat

Device that increases or decreases EMF:

A Generator
B Motor
C Transformer
D Rectifier

Electronics

Diodes and rectification — 2-3 Qs

Q248 *Electronics* — Easy — ⟳ High Repeat

Diode allows current in:

A Both directions
B Neither
C Only forward
D Only reverse

Q249 *Electronics* — Moderate — ⟳ High Repeat

Full-wave rectification uses:

A 1
B 2
C 4
D 8 diodes

Q250 *Electronics* — Easy — ⟳ High Repeat

Half-wave rectification uses:

A 1
B 2
C 4
D 8 diodes

✓ 250 done — 83% complete

50 to go

Modern Physics

Photon energy E=hf — 1-2 Qs

Q251 *Modern Physics* — Easy — ⟳⟳ Very High Repeat

Photon energy E=:

A mv2
B hf
C mc
D 1/2 mv2

Nuclear Physics

Half-life calculations, alpha beta gamma — 4-5 Qs

Q252 *Nuclear Physics* — Moderate — ⟳⟳ Very High Repeat

Half-life — fraction remaining after 60yr (T1/2=20yr):

A 1/2
B 1/4
C 1/8
D 1/16

Atomic Spectra

Line spectrum and Bohr's model — 1-2 Qs

Q253 *Atomic Spectra* — Moderate — ⟳⟳ Very High Repeat

Line spectrum when electrons jump:

A Lower to higher
B Higher to lower
C Out of atom
D Into nucleus

Nuclear Physics

Half-life calculations, alpha beta gamma — 4-5 Qs

Q254 *Nuclear Physics* — Easy — ⟳ High Repeat

Alpha particles are:

A Electrons
B Protons
C Helium nuclei
D Gamma rays

Q255 *Nuclear Physics* — Easy — ⟳ High Repeat

Gamma rays penetrating power vs alpha and beta:

A Less
B Same
C Greater
D None

Q256 *Nuclear Physics* — Moderate — ⟳ High Repeat

Half-life of substance 20 min. After 1 hour fraction remaining:

A 1/2
B 1/4
C 1/8
D 1/16

Force and Motion

Projectile motion and Newton's laws — 5-6 Qs every year

Q257 *Force and Motion* — Easy — ⟳ High Repeat

Gravitational field strength at Earth's surface approximately:

A 8.9 N/kg
B 9.8 N/kg
C 10.8 N/kg
D 7.8 N/kg

Work and Energy

KE, PE, power, kWh — 4-5 Qs every year

Q258 *Work and Energy* — Easy — ⟳ High Repeat

Work done W = Fs cos theta. When theta = 90 work done is:

A Maximum
B Minimum
C Zero
D Negative

Waves

Wave equation, SHM, Doppler effect — 4-5 Qs every year

Q259 *Waves* — Moderate — ⟳ High Repeat

In simple pendulum period T depends on:

A Mass only
B Length and g
C Amplitude only
D Mass and length

Modern Physics

Photon energy E=hf — 1-2 Qs

Q260 *Modern Physics* — Easy — ⟳ High Repeat

X-rays are part of _____ spectrum:

A Sound
B Electromagnetic
C Visible light only
D Infrared only

Nuclear Physics

Half-life calculations, alpha beta gamma — 4-5 Qs

Q261 *Nuclear Physics* — Easy — ⟳ High Repeat

Proton has charge of:

A -1.6 x 10^-19 C
B +1.6 x 10^-19 C
C Zero
D 0.5 x 10^-19 C

EM Induction

Lenz's law, transformers, Faraday — 3-4 Qs

Q262 *EM Induction* — Moderate — ⟳ High Repeat

In transformer Vs/Vp = :

A Np/Ns
B Ns/Np
C Is/Ip
D Ip/Is

Current Electricity

Ohm's law, resistance, power transfer — 4-5 Qs

Q263 *Current Electricity* — Easy — ⟳ High Repeat

Frequency of AC supply in Pakistan:

A 60 Hz
B 50 Hz
C 100 Hz
D 25 Hz

Electrostatics

Coulomb's law, capacitance, energy — 4-5 Qs every year

Q264 *Electrostatics* — Moderate — ⟳ High Repeat

Capacitors in series — equivalent capacitance:

A Increases
B Decreases
C Stays same
D Doubles

Rotational Motion

Angular velocity, centripetal force — 3-4 Qs

Q265 *Rotational Motion* — Hard — ⟳ High Repeat

Speed doubled radius doubled — centripetal force:

A Same
B Double
C 4 times
D Half

Q266 *Rotational Motion* — Hard — ⟳ High Repeat

Angular momentum is conserved when _____ torque acts:

A Maximum
B Minimum
C Zero
D Constant

Electronics

Diodes and rectification — 2-3 Qs

Q267 *Electronics* — Hard — Repeat

NPN transistor — majority carriers in base are:

A Electrons
B Holes
C Protons
D Neutrons

Modern Physics

Photon energy E=hf — 1-2 Qs

Q268 *Modern Physics* — Hard — ⟳ High Repeat

de Broglie wavelength lambda = h/p shows:

A Wave nature of light only
B Wave nature of matter
C Particle nature of light
D Energy quantization

Nuclear Physics

Half-life calculations, alpha beta gamma — 4-5 Qs

Q269 *Nuclear Physics* — Easy — ⟳ High Repeat

Mass number = :

A Protons only
B Neutrons only
C Protons + neutrons
D Protons + electrons

Atomic Spectra

Line spectrum and Bohr's model — 1-2 Qs

Q270 *Atomic Spectra* — Moderate — ⟳ High Repeat

Bohr's model: electrons move in _____ orbits without radiating:

A Elliptical
B Circular fixed
C Spiral
D Random

Current Electricity

Ohm's law, resistance, power transfer — 4-5 Qs

Q271 *Current Electricity* — Easy — ⟳ High Repeat

Resistors in parallel — equivalent resistance:

A Increases
B Decreases
C Same as largest
D Sum of all

ENGLISH — 29 MCQs — 10%

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Vocabulary

High and low frequency words — 2-3 Qs

Q272 *Vocabulary* — Easy — ⟳⟳ Very High Repeat

Meaning of BENEVOLENT:

A Hostile
B Kind and generous
C Indifferent
D Cruel

Q273 *Vocabulary* — Moderate — ⟳ High Repeat

Synonym of AMBIGUOUS:

A Clear
B Certain
C Having double meaning
D Simple

Q274 *Vocabulary* — Hard — ⟳ High Repeat

Meaning of EPHEMERAL:

A Permanent
B Lasting very short time
C Ancient
D Enormous

Q275 *Vocabulary* — Easy — ⟳⟳ Very High Repeat

Meaning of SURPLUS:

A In excess
B Mathematical term
C Within reach
D Salutation

Q276 *Vocabulary* — Moderate — ⟳ High Repeat

Meaning of AMBIVALENT:

A Confident
B Having mixed feelings
C Very strong
D Completely certain

Tenses

Present perfect, conditionals — 2-3 Qs every year

Q277 *Tenses* — Moderate — ⟳⟳ Very High Repeat

She _____ to hospital every day since the accident.

A Goes
B Is going
C Has been going
D Went

Q278 *Tenses* — Moderate — ⟳⟳ Very High Repeat

If I had studied harder I _____ the exam.

A Will pass
B Would pass
C Would have passed
D Had passed

Q279 *Tenses* — Easy — ⟳⟳ Very High Repeat

Report _____ by committee before deadline.

A Submitted
B Was submitted
C Has submitted
D Submit

Q280 *Tenses* — Hard — ⟳ High Repeat

By the time he arrived the movie _____.

A Started
B Has started
C Had already started
D Was starting

Q281 *Tenses* — Moderate — ⟳ High Repeat

I _____ English for five years.

A Study
B Am studying
C Have been studying
D Studies

Q282 *Tenses* — Moderate — ⟳ High Repeat

Unless we _____ now we cannot be on time.

A Start
B Will start
C Do not start
D Are starting

Punctuation

Semicolons, apostrophes, colons — 2 Qs

Q283 *Punctuation* — Moderate — ⟳⟳ Very High Repeat

Correct punctuation:

A He said, "I will come".
B He said 'I will come'.
C He said; 'I will come'.
D He said: I will come.

Q284 *Punctuation* — Easy — ⟳⟳ Very High Repeat

Correct apostrophe:

A The student's books are here.
B The students book's are here.
C The student's' books are here.
D The students books are here.

Q285 *Punctuation* — Hard — ⟳ High Repeat

Correct semicolon:

A He was tired; but happy.
B He was tired; and slept.
C He was tired; he went to sleep.
D He was; tired.

Q286 *Punctuation* — Moderate — ⟳ High Repeat

Correct use of colon:

A He had one motto; serving humanity.
B He had one motto: serving humanity.
C He had one motto, serving humanity.
D He had one motto. serving humanity.

Subject-Verb Agreement

Neither/nor, each, collective nouns — 2-3 Qs

Q287 *Subject-Verb Agreement* — Moderate — ⟳⟳ Very High Repeat

Neither teachers nor principal _____ aware of incident.

A Are
B Were
C Was
D Have been

Q288 *Subject-Verb Agreement* — Easy — ⟳⟳ Very High Repeat

Each student _____ required to submit.

A Are
B Were
C Is
D Have been

Q289 *Subject-Verb Agreement* — Easy — ⟳⟳ Very High Repeat

The news _____ shocking.

A Were
B Are
C Is
D Have been

Q290 *Subject-Verb Agreement* — Moderate — ⟳ High Repeat

The committee _____ reached a decision.

A Have
B Has
C Are
D Were

Q291 *Subject-Verb Agreement* — Hard — ⟳ High Repeat

Neither of the boys _____ done homework.

A Have
B Has
C Are
D Were

Prepositions

Good at, responsible for, abide by — 2-3 Qs

Q292 *Prepositions* — Easy — ⟳⟳ Very High Repeat

She is good _____ mathematics.

A In
B At
C On
D With

Q293 *Prepositions* — Easy — ⟳⟳ Very High Repeat

He has been waiting _____ two hours.

A Since
B During
C For
D From

Q294 *Prepositions* — Moderate — ⟳ High Repeat

He prefers death _____ dishonor.

A Over
B On
C Upon
D To

Q295 *Prepositions* — Easy — ⟳ High Repeat

Abide _____ the traffic laws.

A On
B With
C By
D To

Q296 *Prepositions* — Easy — ⟳ High Repeat

She is responsible _____ the project.

A Of
B For
C To
D With

Error Identification

Spot the grammar error — 1-2 Qs

Q297 *Error Identification* — Moderate — ⟳ High Repeat

Grammatically correct sentence:

A Between you and I this is wrong.
B Between you and me this is wrong.
C Between you and mine.
D Between yours and me.

Q298 *Error Identification* — Easy — ⟳⟳ Very High Repeat

Identify error: He don't know the answer.

A He
B Don't
C Know
D Answer

Q299 *Error Identification* — Moderate — ⟳ High Repeat

Correct sentence:

A I am knowing him since 2010.
B I know him since 2010.
C I have known him since 2010.
D I knew him since 2010.

Q300 *Error Identification* — Hard — ⟳ High Repeat

Daud is better than _____ of the college.

A All teachers
B Any teachers
C All other teachers
D Any teacher

ANSWER KEY — All 300 Questions

BIOLOGY Q1 – Q111

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
B	B	C	C	B	B	B	C	B	C
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
B	B	C	C	B	B	C	A	B	B
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
C	C	B	C	B	C	C	B	B	C
Q31	Q32	Q33	Q34	Q35	Q36	Q37	Q38	Q39	Q40
C	B	B	B	B	C	B	B	C	B
Q41	Q42	Q43	Q44	Q45	Q46	Q47	Q48	Q49	Q50
B	B	C	C	B	C	B	C	C	B
Q51	Q52	Q53	Q54	Q55	Q56	Q57	Q58	Q59	Q60
B	B	C	C	B	B	B	B	B	B
Q61	Q62	Q63	Q64	Q65	Q66	Q67	Q68	Q69	Q70
B	B	B	B	B	B	B	B	B	B
Q71	Q72	Q73	Q74	Q75	Q76	Q77	Q78	Q79	Q80
B	C	C	B	C	C	C	C	B	C
Q81	Q82	Q83	Q84	Q85	Q86	Q87	Q88	Q89	Q90
B	C	B	D	B	C	B	C	C	C
Q91	Q92	Q93	Q94	Q95	Q96	Q97	Q98	Q99	Q100
A	C	C	B	B	B	C	B	B	B
Q101	Q102	Q103	Q104	Q105	Q106	Q107	Q108	Q109	Q110
B	C	B	C	B	B	B	B	C	C
Q111									
C									

CHEMISTRY Q112 – Q191

Q112	Q113	Q114	Q115	Q116	Q117	Q118	Q119	Q120	Q121
B	B	A	B	B	B	B	A	B	B
Q122	Q123	Q124	Q125	Q126	Q127	Q128	Q129	Q130	Q131
C	B	B	B	B	C	C	B	B	B
Q132	Q133	Q134	Q135	Q136	Q137	Q138	Q139	Q140	Q141
B	B	B	D	C	B	B	B	B	B
Q142	Q143	Q144	Q145	Q146	Q147	Q148	Q149	Q150	Q151
B	B	B	B	B	B	C	B	B	B
Q152	Q153	Q154	Q155	Q156	Q157	Q158	Q159	Q160	Q161
A	B	C	B	C	B	B	C	B	B
Q162	Q163	Q164	Q165	Q166	Q167	Q168	Q169	Q170	Q171
B	C	B	B	B	C	B	B	B	B
Q172	Q173	Q174	Q175	Q176	Q177	Q178	Q179	Q180	Q181
B	C	B	B	B	B	A	B	B	C
Q182	Q183	Q184	Q185	Q186	Q187	Q188	Q189	Q190	Q191
B	C	B	C	B	B	B	D	B	C

PHYSICS Q192 – Q271

Q192	Q193	Q194	Q195	Q196	Q197	Q198	Q199	Q200	Q201
A	D	B	B	C	B	C	B	C	B
Q202	Q203	Q204	Q205	Q206	Q207	Q208	Q209	Q210	Q211
B	B	B	C	C	B	C	B	C	C
Q212	Q213	Q214	Q215	Q216	Q217	Q218	Q219	Q220	Q221
B	C	B	B	A	B	B	B	A	B
Q222	Q223	Q224	Q225	Q226	Q227	Q228	Q229	Q230	Q231
B	B	C	B	B	B	B	B	C	A
Q232	Q233	Q234	Q235	Q236	Q237	Q238	Q239	Q240	Q241
B	B	A	B	C	D	D	B	B	C
Q242	Q243	Q244	Q245	Q246	Q247	Q248	Q249	Q250	Q251
A	B	C	B	B	C	C	C	A	B
Q252	Q253	Q254	Q255	Q256	Q257	Q258	Q259	Q260	Q261
C	B	C	C	C	B	C	B	B	B
Q262	Q263	Q264	Q265	Q266	Q267	Q268	Q269	Q270	Q271
B	B	B	B	C	B	B	C	B	B

ENGLISH Q272 – Q300

Q272	Q273	Q274	Q275	Q276	Q277	Q278	Q279	Q280	Q281
B	C	B	A	B	C	C	B	C	C
Q282	Q283	Q284	Q285	Q286	Q287	Q288	Q289	Q290	Q291
C	A	A	C	B	C	C	C	B	B
Q292	Q293	Q294	Q295	Q296	Q297	Q298	Q299	Q300	
B	C	D	C	B	B	B	C	C	