SYLLABUS

FOR

MEDICAL AND DENTAL COLLEGES ADMISSION TEST (MDCAT) 2017

UNIVERSITY OF HEALTH SCIENCES LAHORE, PAKISTAN

Structure of the Question Paper for

Medical and Dental Colleges Admission Test (MDCAT) 2017

Sr. No.	Subject	No. of Questions
1.	Biology	88
2.	Chemistry	58
3.	Physics	44
4.	English	30
Total		**220**

BIOLOGY

STRUCTURE OF THE SYLLABUS (2017)

For F.Sc. and Non-F.Sc.

TABLE OF CONTENTS

1. CELL BIOLOGY

Content

Animal and plant cell

Prokaryotic and eukaryotic cell

Structure and function of cellular organelles

Learning outcomes:

Students should be able to:

a) Compare and contrast the structure of typical animal and plant cell.

b) Compare and contrast the structure of Prokaryotic cell with Eukaryotic cell.

c) Define the terms diffusion, facilitated diffusion, active transport, passive transport, endocytosis and exocytosis and explain the basics of Fluid Mosaic Model of Cell Membrane.

d) Outline the structure and function of the following organelles:
Nucleus, Endoplasmic reticulum, Golgi apparatus, Mitochondria, Centrioles, Ribosomes, Peroxisomes, Glyoxisomes, Cytoskeleton, Lysosomes.

2. BIOLOGICAL MOLECULES:

Content

Water

Carbohydrates

Proteins

Lipids

Nucleic acids (DNA and RNA)

Enzymes

Learning outcomes:

Students should be able to:

a) Describe the properties and significance of water.

b) Define the terms: monomer, polymer, macromolecules, discuss Carbohydrates: Monosaccharides, Oligosaccharides, Polysaccharides (starch, glycogen, and cellulose).

c) Explain the structure of amino acids and peptide bond formation.

d) Explain the structure of primary, secondary, tertiary, quaternary proteins and their importance.
e) Describe Lipids: Acylglycerols, Waxes, Phospholipids, Terpenoids and their functions.
f) Describe the structure of DNA as hereditary material along its composition and functions.
g) Give the structure and types of RNA (mRNA, rRNA, tRNA) and their function in the cell.
h) Define enzyme and describe its characteristics.
i) Define the following terms:
Coenzyme, Co-factor, Activator, Prosthetic group, Apoenzyme and Holoenzyme.
j) Explain the mode / mechanism of enzyme action.
k) Explain the effects of temperature, pH, enzyme concentration and substrate concentration on the rate of enzyme catalyzed reaction.
l) Explain the effects of reversible and irreversible, competitive and non-competitive inhibitors on the rate of enzyme activity.

3. MICROBIOLOGY:

Content

Virus
Bacteria
Fungi

Learning Outcomes:

Students should be able to:

a) Have the knowledge of discovery and structure of Viruses.
b) Discuss viral diseases in humans with signs, symptoms and cure (hepatitis, measles and mumps, polio, herpes).
c) Explain the mechanism of action of Retroviruses and describe Acquired Immunodeficiency Syndrome (AIDS).
d) Describe the life cycle of Bacteriophage including:
    - Lytic cycle
    - Lysogenic cycle

e) Explain the structure and types of bacteria (cocci, bacilli and spiral).

f) Discuss in detail:

- Gram +ve bacteria
- Gram –ve bacteria
- Nutrition in bacteria
- Reproduction in bacteria

g) Discuss the control of bacteria by physical and chemical methods.

h) Define fungi.

i) Describe the life cycle of fungus (*Rhizopus*).

j) Discuss useful and harmful fungi to mankind.

k) Describe structure and reproduction in fungi.

4. KINGDOM ANIMALIA:

Content

Basic terminology

Medically important phyla

Learning outcomes:

Students should be able to:

a) Define the following terms:

Coelomates, Acoelomates, Pseudocoelomates, Radiata, Bilateria

b) Describe the medical importance of following phyla:

i. Platyhelminthes (*Taenia solium, Fasciola hepatica*)

ii. Aschelminthes (*Ascaris lumbricoides, Enterobius vermicularis, Ancylostoma duodenale*)

iii. Annelida (*Hirudinea medicinalis*)

iv. Arthropoda (mosquito, lice, Tse-tse fly, common housefly)

v. Mollusca (snail)

5. HUMAN PHYSIOLOGY:

Content

a) Digestive system
b) Gas exchange
c) Transportation
d) Homeostasis
e) Nervous system
f) Reproduction
g) Support and Movement
h) Hormonal control
i) Immunity

Learning outcomes:

a) Digestive System:

Students should be able to:

I. Describe the anatomy of digestive system and specify the digestion in:
   i. Oral cavity (role of saliva and enzymes)
   ii. Pharynx (swallowing)
   iii. Oesophagus (peristalsis, anti-peristalsis)
   iv. Stomach (chemical and mechanical digestion)
   v. Small intestine (Duodenum, Jejunum, Ileum)
   vi. Large intestine (Caecum, Colon, Rectum)

II. Discuss disorders related to nutrition (Obesity, Anorexia Nervosa).

b) Gas Exchange:

Students should be able to:

I. Understand the anatomy of respiratory system (Nostrils, Trachea and Lungs), functions of cartilage, cilia and goblet cells.

II. Explain the mechanism of breathing (Inspiration and Expiration).

III. Know how blood carries oxygen and carbon dioxide between lungs and body tissues.

IV. Discuss structure and role of respiratory pigments e.g.; (Haemoglobin, Myoglobin).

V. Discuss the respiratory disorders with causes and symptoms (Tuberculosis, Emphysema and Lung Cancer).

c) Transport

Students should be able to:

I. Describe the structure of Heart (external and internal structure), difference in left and right chamber of heart, SA node and AV node.

II. Describe the Cardiac Cycle, ECG and Blood pressure (systolic and diastolic).

III. Explain structure of blood vessels (Arteries, Veins, Capillaries) and arterial disorder (atherosclerosis).

IV. Describe Blood and its composition; plasma and blood cells (red blood cells, white blood cells and platelets)

V. Discuss the following circulatory disorders with symptoms and causes: Thrombosis, Embolism, Myocardial infarction, Cerebral Infarction.

VI. Understand components of lymphatic System: Lymph, Lymph Vessels, Lymph Nodes

d) Homeostasis:

Students should be able to:

I. Understand the terms homeostasis, internal and external stimuli, receptors, central control, coordination system, effectors and negative feedback.

II. Describe the structure of kidney and its functions, structure of nephron with associated blood vessels, ultrafiltration, reabsorption and formation of urine.

III. Explain the terms osmoregulation and thermoregulation.

IV. Explain types of kidney problems (Kidney stones and Renal failure) and cures (Lithotripsy, Kidney transplant and Dialysis-peritoneal and hemodialysis).

e) Nervous System:

Students should be able to:

I. Describe Nervous System and its types.
II. Explain Central Nervous System including forebrain, mid brain, hind brain and spinal cord.
III. Explain Peripheral Nervous System and its types (Autonomic and Sympathetic).
IV. Describe neurons (Associative, Motor and Sensory Neurons).
V. Describe nerve impulse and how it propagates.
VI. Understand the concept of synapse and passage of nerve impulse, role of neurotransmitters.
VII. Discuss the nervous disorders (Parkinson's disease, Epilepsy and Alzheimer's disease).
VIII. Understand the Biological Clock and Circadian Rhythms.

f) Reproduction:

Students should be able to:

I. Explain the structure and function of reproductive system in male.
II. Explain the structure and function of reproductive system in female.
III. Describe menstrual cycle with its stages.
IV. Explain the stages of gametogenesis (Spermatogenesis and Oogenesis).
V. Discuss the following Sexually Transmitted Diseases (STD's) with their causative agents, symptoms and cure: Gonorrhea, Syphilis, AIDS.

g) Support & Movement:

Students should be able to:

I. Human skeleton:

i. Define and explain terminologies**:** Bone, Cartilage, Tendon, and Ligament.
ii. Describe Axial & Appendicular Skeleton.
iii. Describe Joints and their types (fibrous, cartilaginous, synovial, pivot and multistage).

II. Muscular system:

i. Compare the types of muscles (smooth, cardiac and skeletal).
ii. Explain structure and function of skeletal muscle.
iii. Explain the concept and working of sarcomere, ultrastructure of myofilaments, sliding filament model.
iv. Understand the sources of energy for muscle contraction.
v. Describe Muscle Fatigue, Tetany, and Cramp with their causes.

h) Hormonal control:

Students should be able to:

I. Describe hormones and their composition.
II. Discuss the effect of hypothalamus on the pituitary gland.
III. Describe the knowledge of pituitary gland and its hormones.
    i. Anterior lobe: Somatotrophin, Thyroid Stimulating Hormone, Adrenocorticotropic Hormone, Gonadotrophins (Follicle Stimulating Hormone (FSH), Luteinizing Hormone (LH), Luteotropic Hormone (LTH), Prolactin).
    ii. Posterior lobe: Vasopressin, Oxytocin.
IV. Explain the hormones of thyroid and parathyroid: Thyroxin (T3, T4), Calcitonin, Parathormone.
V. Discuss the adrenal gland in detail:
    i. Adrenal cortex (cortisol, corticosterone, aldosterone, androgens).
    ii. Adrenal medulla (adrenaline and nor adrenaline).
VI. Explain hormones of Islets of Langerhans i.e. Insulin, Glucagon.
VII. Describe the hormones of alimentary canal (Gastrin, Secretin).
VIII. Discuss the hormones of ovaries and testes (oestrogen, progesterone, testosterone).
IX. Explain the disorders of endocrine gland i.e. diabetes mellitus, diabetes insipidus, goiter, dwarfism, gigantism.

i) Immunity:

Students should be able to:

I. Define immune system and describe its components:
   - Antigen.
   - Antibody (structure of antibody).
   - Lymphocytes (B and T cells).

II. Describe cell mediated response and humoral immune response.

III. Discuss the types of immunity:
   - Active immunity.
   - Passive immunity.

IV. Explain vaccination.

6. BIOENERGETICS:

Content

Photosynthesis and cellular respiration

Learning outcomes:

Students should be able to:

a) Describe photosynthetic pigments (chlorophyll and carotenoids).
b) Understand the concept of absorption and action spectra.
c) Discuss light dependent stage (cyclic and non-cyclic phosphorylation).
d) Discuss light independent stage (Calvin cycle).
e) Describe the respiration at cellular level including:
   - Glycolysis (with preparatory and oxidative phase), Kreb's cycle (with reference to production of NADH, FADH and ATP), Electron Transport Chain with its carriers.
   - Anaerobic Respiration and its types (alcoholic and lactic acid fermentation).

7. BIOTECHNOLOGY:

Content

DNA technology

Gene therapy

Tissue culture

Cloning

Learning outcomes:

Students should be able to:

a) Describe Recombinant DNA Technology and its application (e.g. Insulin production).
b) Describe the principle and steps of Polymerase Chain Reaction (PCR).
c) Understand the following terms:
   -DNA Analysis (Finger Printing, Gene Sequencing).
d) Explain Gene therapy with reference to how genetic diseases (i.e. cystic fibrosis, severe combined immunodeficiency syndrome, hypercholesterolemia) can be treated with gene therapy.
e) Describe the detail of Transgenic Organisms (Bacteria, Plants and Animals), Tissue Culture, Cloning and their applications.

8. ECOSYSTEM:

Content

Biological succession

Impacts of Human activity on ecosystem

Energy flow in ecosystem

Explain learning outcomes:

Students should be able to:

a) Define succession and describe various stages of xerosere.
b) Describe the significance of human activity on ecosystem such as Population, Deforestation, Ozone Depletion, Greenhouse Effect, Acid rain, Eutrophication and Pesticides.
c) Describe Nitrogen cycle (ammonification, nitrification, assimilation, depletion).

d) Define and explain Energy Flow, Trophic Levels (producers, consumers, decomposers), Productivity, Food chain, Food web.

9. EVOLUTION:

Content

Darwin's theory

Lamarck's theory

Evidences of evolution

Learning outcomes:

Students should be able to:

a) Compare the theory of Darwin and Lamarck.

b) Discuss evidences of evolution from Paleontology, Comparative anatomy, Molecular biology and Biogeography.

c) Explain Hardy-Weinberg Theorem and factors affecting gene / allele frequency

10. Genetics

Content

Mendelian Inheritance

Genetic linkage

Gene control & expression

Sex Determination

Cell Division

Genetic disorders

Learning outcomes:

Students should be able to:

a) Explain the terms: Gene, locus, allele, dominant, recessive, co-dominant, linkage, F1 and F2, phenotype, genotype, homozygous, heterozygous, mutation, epistasis, multiple allele, Rh factor, dominance relations, polygenic inheritance.

b) Explain law of segregation and law of independent assortment through Punnet square, solve problems related to monohybrid, dihybrid crosses and testcross.

c) Discuss gene linkage and sex linkage in human (haemophilia and colour blindness).
d) Discuss hypothesis about DNA Replication, Meselson and Stahl experiment and mechanism of replication.
e) Explain mechanism of gene expression: Transcription and Translation.
f) Describe Genetic code and its properties.
g) Explain sex chromosomes and discuss different systems of sex determination (XO-XX, XY-XX, ZZ-ZW).
h) Know cell cycle and its phases.
i) Describe events of mitosis and meiosis along with their significance.
j) Discuss meiotic errors (Down's syndrome, Klinefelter's syndrome, Turner's syndrome).

Table of Specification (ToS) (Biology-2017)
(For F.Sc. and Non-F.Sc.)

Topic	MCQs
1- Cell Biology	**10**
2- Biological Molecules	
Carbohydrates	**02**
Proteins	**02**
Lipids	**01**
Nucleic Acids	**02**
Enzymes	**03**
3- Microbiology	
Virus	**02**
Bacteria	**02**
Fungi	**01**
4- Kingdom Animalia	**02**
5- Human Physiology	
a) Digestive System	**04**
b) Gas exchange	**04**
c) Transportation	**04**
d) Homeostasis	**05**
e) Nervous system	**04**
f) Reproduction	**04**
g) Support and movement	**05**
h) Hormonal control	**04**
i) Immunity	**03**
6- Bioenergetics	**06**
7- Biotechnology	**05**
8- Ecosystem	**02**
9- Evolution	**03**
10-Genetics	**08**
TOTAL	**88**

CHEMISTRY

STRUCTURE OF THE SYLLABUS (2017)

For F.Sc. and Non-F.Sc.

TABLE OF CONTENTS

A. PHYSICAL CHEMISTRY

1. FUNDAMENTAL CONCEPTS:

In this topic, student should be able to:

a) Define relative atomic, molecular and formula masses, based on the ^{12}C scale and concept of isotopes.
b) Explain mole in terms of the Avogadro's constant.
c) Apply mass spectrometric technique in determining the relative atomic mass of an element using the mass spectral data provided.
d) Calculate empirical and molecular formulae, using combustion data.
e) Understand stoichiometric calculations using mole concept involving.
    i) Reacting masses
    ii) Volume of gases
    iii) Percentage yield
f) Describe and explain following concentration units of solutions:
    i) Percentage composition
    ii) Molarity
    iii) Mole fraction

2. STATES OF MATTER:

In this topic, student should be able to:

a) Understand gaseous state with reference to:
    i) Postulates of kinetic molecular theory
    ii) Gas laws: Boyle's law, Charles' law, Avogadro's law and gas equation (PV=nRT) and calculations involving gas laws.
    iii) Deviation of real gases from ideal behaviour at low temperature and high pressure'
    iv) Conditions necessary for gasses to approach ideal behavior.
b) Discuss liquid state with reference to:
    Evaporation, vapour pressure, boiling and hydrogen bonding in water.
c) Explain the lattice structure of a crystalline solid with special emphasis on:
    i) Giant ionic structure, as in sodium chloride.

ii) Simple molecular, as in iodine.

iii) Giant molecular, as in diamond; silicon (IV) oxide.

iv) Hydrogen-bonded, as in ice.

d) Outline the importance of hydrogen bonding to the physical properties of substances, including NH_3, H_2O, C_2H_5OH and ice.

e) Suggest from quoted physical data the type of structure and bonding present in a substance.

3. ATOMIC STRUCTURE:

In this topic, student should be able to:

a) Identify and describe the proton, neutron and electron in terms of their relative charges and relative masses.

b) Discuss the behaviour of beams of protons, neutrons and electrons in electric fields.

c) Calculate the distribution of mass and charges within an atom from the given data.

d) Deduce the number of protons, neutrons and electrons present in both atoms and ions for a given proton and nucleon numbers/charge.

e)

i) Describe the contribution of protons and neutrons to atomic nuclei in terms of proton number and nucleon number.

ii) Distinguish between isotopes on the basis of different numbers of neutrons present.

f) Describe the number and relative energies of the s, p and d orbitals for the principal quantum numbers 1, 2 and 3 and also the 4s and 4p orbitals.

g) Describe the shapes of s, p and d-orbitals.

h) State the electronic configuration of atoms and ions given, the proton number/charge for period 1, 2, 3 and 4 (hydrogen to Krypton).

i) Explain:

i) Ionization energy.

ii) The factors influencing the ionization energies of elements.

iii) The trends in ionization energies across a Period and down a Group of the Periodic Table.

j) Explain and use the term Electron Affinity.

4. CHEMICAL BONDING:

In this topic, student should be able to:

a) Characterize electrovalent (ionic) bond as in sodium chloride and calcium oxide.

b) Use the 'dot-and-cross' diagrams to explain:

i) Covalent bonding, as in hydrogen(H_2); oxygen(O_2); chlorine(Cl_2); hydrogen chloride; carbon dioxide; methane and ethane.

ii) Co-ordinate (dative covalent) bonding, as in the formation of the ammonium ion in $H_3N^+ - {}^-BF_3$ and H_3O^+.

c) Describe the shapes and bond angles in molecules by using the qualitative model of Valence Shell Electron-Pair Repulsion (VSEPR) theory up to 4 pairs of electron including bonded electron pair and lone pair around central atom.

d) Describe covalent bonding in terms of orbital overlap, giving σ and π bonds.

e) Explain the shape of and bond angles in ethane, ethene and benzene molecules in terms of σ and π bonds.

f) Describe hydrogen bonding, using ammonia and water as simple examples of molecules containing N-H and O-H groups.

g) Explain the terms bond energy, bond length and bond polarity (electronegativity difference) and use them to compare the nature of covalent bonds i.e. polar and non-polar.

h) Describe intermolecular forces (Van der Waal's forces), based on permanent and induced dipoles, as in HCl, $CHCl_3$, Halogens and in liquid noble gases.

i) Describe metallic bonding in terms of positive ions surrounded by mobile electrons (sea of electrons).

j) Describe, interpret and/or predict the effect of different types of bonding (ionic bonding; covalent bonding; hydrogen bonding; Van der Waal's forces and metallic bonding) on the physical properties of substances.

k) Deduce the type of bonding present in a substance from the given information.

5. CHEMICAL ENERGETICS:

In this topic, student should be able to:

a) Understand concept of energy changes during chemical reactions with examples of exothermic and endothermic reactions.

b) Explain and use the terms:

   i) Enthalpy change of reaction and standard conditions, with particular reference to: formation; combustion; solution; neutralization and atomization.

   ii) Bond energy (ΔH positive, i.e. bond breaking).

   iii) Lattice energy (ΔH negative, i.e. gaseous ions to solid lattice).

c) Find heat of reactions/neutralization from experimental results using mathematical relationship i.e. $\Delta H = mc\Delta T$

d) Explain, in qualitative terms, the effect of ionic charge and of ionic radius on the numerical magnitude of lattice energy.

e) Apply Hess's Law to construct simple energy cycles, and carry out calculations involving such cycles and relevant energy terms, with particular reference to:

   i) Determining enthalpy changes that cannot be found by direct experiment, e.g. an enthalpy change of formation from enthalpy change of combustion.

   ii) Born-Haber cycle of NaCl (including ionization energy and electron affinity).

6. ELECTROCHEMISTRY:

In this topic, student should be able to:

a) Describe and explain redox processes in terms of electron transfer and/or of changes in oxidation number.

b) Define the terms:

   Standard electrode (redox) potential and Standard cell potential.

c) Describe the standard hydrogen electrode as reference electrode.

d) Describe methods used to measure the standard electrode potentials of metals or non-metals in contact with their ions in aqueous solution.

e) Calculate a standard cell potential by combining two standard electrode potentials.
f) Use standard cell potentials to:
    i) Explain/deduce the direction of electron flow in the external circuit.
    ii) Predict the feasibility of a reaction.
g) Construct redox equations using the relevant half-equations.
h) State the possible advantages of developing the H_2/O_2 fuel cell.
i) Predict and to identify the substance liberated during electrolysis from the state of electrolyte (molten or aqueous), position in the redox series (electrode potential) and concentration e.g. $H_2SO_{4(aq)}$ and $Na_2SO_{4(aq)}$.

7. CHEMICAL EQUILIBRIUM:

In this topic, student should be able to:

a) Explain, in terms of rates of the forward and reverse reactions, what is meant by a reversible reaction and dynamic equilibrium.
b) State Le Chatelier's Principle and apply it to deduce qualitatively the effects of changes in temperature, concentration or pressure, on a system at equilibrium.
c) Deduce whether changes in concentration, pressure or temperature or the presence of a catalyst affect the value of the equilibrium constant for a reaction.
d) Deduce expressions for equilibrium constants in terms of concentrations; Kc, and partial pressures; Kp
e) Calculate the values of equilibrium constants in terms of concentrations or partial pressures from appropriate data.
f) Calculate the quantities present at equilibrium, given appropriate data.
g) Describe and explain the conditions used in the Haber process.
h) Understand and use the Bronsted-Lowry theory of acids and bases.
i) Explain qualitatively the differences in behaviour between strong and weak acids and bases and the pH values of their aqueous solutions in terms of the extent of dissociation.
j) Explain the terms pH; Ka; pKa; Kw and use them in calculations.
k) Calculate $[H^+(aq)]$ and pH values for strong and weak acids and strong bases.
l) Explain how buffer solutions control pH.

m) Calculate the pH of buffer solutions from the given appropriate data.
n) Show understanding of, and use, the concept of solubility product, Ksp.
o) Calculate Ksp from concentrations and vice versa.
p) Show understanding of the common ion effect.

8. REACTION KINETICS / CHEMICAL KINETICS:

In this topic, student should be able to:

a) Explain and use the terms: rate of reaction; activation energy; catalysis; rate equation; order of reaction; rate constant; half-life of a reaction; rate-determining step.
b) Explain qualitatively, in terms of collisions, the effect of concentration changes on the rate of a reaction.
c) Explain that, in the presence of a catalyst, a reaction has a different mechanism, i.e. one of lower activation energy.
d) Describe enzymes as biological catalysts which may have specific activity.
e) Construct and use rate equations of the form

$$\text{Rate} = k[A]^m[B]^n$$

with special emphasis on:

i) Zero order reaction
ii) 1^{st} order reaction
iii) 2^{nd} order reaction

f) Show understanding that the half-life of a first-order reaction is independent of initial concentration and use the half-life to calculate order of reaction.
g) Calculate the rate constant from the given data.
h) Name a suitable method for studying the rate of a reaction, from given information.

B. INORGANIC CHEMISTRY

1. PERIODS:

In this topic, student should be able to:

Discuss the variation in the physical properties of elements belonging to period 2 and 3 and to describe and explain the periodicity in the following physical properties of elements.

a) Atomic radius.
b) Ionic radius.
c) Melting point.
d) Boiling point.
e) Electrical conductivity.
f) Ionization energy.

2. GROUPS:

In this topic, student should be able to:

Describe and explain the variation in the properties of group II and VII elements from top to bottom with special emphasis on:

a) Reactions of group-II elements with oxygen and water.
b) Properties of halogens and uses of chlorine in water purification and as bleaching agent.
c) Reaction of chlorine with sodium hydroxide (disproportionation reactions of chlorine).
d) Uses of Nobel gases (group VIII).

3. TRANSITION ELEMENTS:

In this topic, student should be able to:

Discuss the chemistry of transition elements of 3-d series with special emphasis on:

a) Electronic configuration.
b) Variable oxidation states.
c) Use as a catalyst.
d) Formation of complexes.
e) Colour of transition metal complexes.

4. ELEMENTS OF BIOLOGICAL IMPORTANCE:

In this topic, student should be able to:

a) Describe the inertness of Nitrogen.
b) Manufacture of Ammonia by Haber's process.
c) Discuss the uses of nitrogenous fertilizers.
d) Describe the presence of Sulphur dioxide in the atmosphere which causes acid rain.
e) Describe only manufacturing of Sulphuric acid by contact method.

C. ORGANIC CHEMISTRY

1. FUNDAMENTAL PRINCIPLES:

In this topic, student should be able to:

a) Classify the organic compounds.
b) Explain the types of bond cleavage, homolytic and heterolytic.
c) Suggest how cracking can be used to obtain more useful alkanes and alkenes of lower masses.
d) Discuss the types of reagents; nucleophile, electrophile and free radicals.
e) Explain isomerism; structural and cis-trans.
f) Discuss the functional group and nomenclature of organic compounds with reference to IUPAC names of Alkanes, Alkenes, Alcohols, Haloalkanes and Carboxylic acids.

2. HYDROCARBON:

In this topic, student should be able to:

Describe the chemistry of Alkanes with emphasis on:

a) Combustion.
b) The mechanism of free radical substitution reaction of methane with particular reference to the initiation, propagation and termination.

Discuss the chemistry of Alkenes with emphasis on:

a) Preparation of alkenes by elimination reactions:
    i) Dehydration of alcohols.

ii) Dehydrohalogenation of Alkyl halide.

b) Reaction of Alkenes such as:
   i) Catalytic hydrogenation.
   ii) Halogenation (Br_2 addition to be used as a test of an alkene).
   iii) Hydration of alkenes.
   iv) Reaction with HBr with special reference to Markownikoff's rule.
   v) Oxidation of alkenes using cold alkaline or acidic $KMnO_4$ (Bayer's reagent) and using hot concentrated acidic or alkaline $KMnO_4$ for cleavage of double bond in 2-butene.
   vi) Polymerization of ethene.

Discuss chemistry of Benzene with examples

a) Structure of benzene showing the delocalized π-orbital which causes stability of benzene.
b) Electrophilic substitution reactions of benzene including mechanism of:
   i) Nitration
   ii) Halogenation (chlorination and bromination)
   iii) Friedel Craft's reaction (Alkylation and acylation)
c) Hydrogenation of benzene ring to form cyclohexane ring.
d) Side chain oxidation of methyl benzene (toluene) and ethyl benzene.
e) Directive influence of substituents on the benzene ring by 2,4 directing and 3,5 directing groups (orientation in Electrophilic Substitution reactions of Benzene).

3. ALKYL HALIDES:

In this topic, student should be able to:

a) Discuss importance of halogenoalkanes in everyday life with special use of CFCs, halothanes, CCl_4, $CHCl_3$ and Teflon.
b) Reaction of alkyl halides such as:
   i) S_N-reactions, (Reactions of Alkyl halides with aqueous KOH, Alcoholic / aqueous KCN and Alcoholic / aqueous NH_3).
   ii) Describe SN1 and SN2 Mechanisms for tertiary butyl chloride and methyl bromide respectively using aqueous KOH.
   iii) Elimination reaction with alcoholic KOH to give alkenes.

4. ALCOHOLS AND PHENOLS:

In this topic, student should be able to:

Discus Alcohols with reference to:

a) Classification of alcohols into primary, secondary and tertiary.
b) Preparation of ethanol by hydration of ethene using conc. H_2SO_4 or conc. H_3PO_4
c) Reaction of alcohol with:
    i) $K_2Cr_2O_7 + H_2SO_4$ (oxidation).
    ii) PCl_5.
    iii) Na-metal.
    iv) Alkaline aqueous Iodine (Iodoform Test).
    v) Carboxylic acid (Esterification).
d) Dehydration of alcohol to give alkene.

Phenols

a) Discuss reactions of phenol with:
    i) Bromine ii) HNO_3 iii) NaOH
b) Explain the relative acidity of water, ethanol and phenol.

5. ALDEHYDES AND KETONES:

In this topic, student should be able to:

a) Describe the structure of aldehyde and ketones.
b) Discuss preparation of aldehydes and ketones by oxidation of alcohols.
c) Discuss following reactions of aldehydes and ketones:
    i) Common to both;
        - 2,4-DNPH to detect the presence of carbonyl group
        - HCN to show mechanism of nucleophilic addition reaction
        - Reduction with $NaBH_4$ or $LiAlH_4$
    ii) Reactions in which Aldehydes differs from ketones i.e. Oxidation with Tollen's reagent and Fehling's solution.
    iii) Reaction which show presence of CH_3CO- group in aldehydes and ketones Triiodomethane test (Iodo form test) using alkaline aqueous iodine.

6. CARBOXYLIC ACID:

In this topic, student should be able to:

a) Show preparation of ethanoic acid by oxidation of ethanol or by acidic hydrolysis of Ethane nitrile (CH_3CN).

b) Discuss the reactions of ethanoic acid with emphasis on:

   i) Salt formation.

   ii) Esterification.

   iii) Acid chloride formation (acyl chloride).

   iv) Amide formation.

c) Describe the strength of organic acids relative to chloro substituted acids.

d) Explain the relative acidic strength of carboxylic acids, phenols and alcohols.

7. AMINO ACIDS:

In this topic, student should be able to:

a) Describe the general structure of α-amino acids found in proteins.

b) Classify the amino acids on the basis of nature of R-group.

c) Describe Acid base properties of amino acids and formation of Zwitter ions.

d) Understand peptide bond formation.

8. MACROMOLECULES:

In this topic, student should be able to describe and explain

a) Formation and uses of Addition polymers such as polyethene, polystyrene and polyvinylchloride (PVC).

b) Formation and uses of Condensation polymers such as polyesters (terylene), polyamide (Nylon-6,6).

c) Structure of proteins i.e. primary and secondary structures.

d) Structure and function of nucleic acid (DNA).

9. ENVIRONMENTAL CHEMISTRY:

In this topic, student should be able to:

a) Describe air pollutants.

b) Understand the chemistry and cause of Acid Rain.

c) Depletion of Ozone layer by chlorofluorocarbons (CFCs).

Table of Specification (ToS) (CHEMISTRY-2017)

(For F.Sc. and Non-F.Sc.)

Topic	MCQs
A. Physical Chemistry	
1. Fundamental concepts	04
2. States of matter	02
3. Atomic structure	02
4. Chemical bonding	02
5. Chemical energetics	02
6. Electrochemistry	02
7. Chemical Equilibrium	02
8. Reaction kinetics / Chemical Kinetics	02
B. Inorganic Chemistry	
1. Periods	02
2. Groups	02
3. Transition elements	02
4. Elements of biological importance	04
C. Organic Chemistry	
1. Fundamental principles	03
2. Hydrocarbon	04
3. Alkyl halides	04
4. Alcohols and Phenols	04
5. Aldehydes and Ketones	04
6. Carboxylic acid	04
7. Amino acids	02
8. Macromolecules	03
9. Environmental chemistry	02
Total	**58**

PHYSICS

STRUCTURE OF THE SYLLABUS (2017)

For F.Sc. and Non-F.Sc.

TABLE OF CONTENTS

1. Measurement:

Learning outcomes:

In this topic the student should be able to:

a) Define Physical quantities and understand that all physical quantities consist of numerical magnitude and a unit.

b) Define International System of Units and understand SI base units of physical quantities and their derived units.

c) Use prefixes and symbols to indicate decimal, submultiples or multiples of both base and derived units: pico (p), nano (n), micro (μ), milli (m), centi (c), deci (d), kilo (k), mega (M), giga (G), tera (T).

d) Understand Errors and uncertainties including:
   - systematic error and random error.
   - fractional uncertainty and percentage uncertainty.
   - assessment of total uncertainty in the final results.

2. Motion and Force

Learning outcomes:

In this topic the student should be able to:

a) Understand the concept of displacement, distance, speed, velocity and acceleration.

b) Understand velocity–time graph.

c) Review equations of motion.

d) Recall Newton's Laws of motion.

e) Define momentum and describe law of conservation of momentum.

f) Derive and explain the relation between the force and rate of change of momentum.

g) Define impulse and understand the concept of $I = F \times t = mv_f - mv_i$

h) Understand projectile motion and its applications.

i) Define moment of force or torque and use of torque due to force.

j) Define the equilibrium, its conditions and use it to solve problems.

3. Work, Energy and Power

Learning Outcomes:

In this topic the student should be able to:

a) Understand the concept of work in terms of the product of a force and displacement in the direction of the force.

b) Understand the concept of kinetic energy $K.E. = \frac{1}{2}mv^2$.

c) Understand the concept of potential energy $P.E. = mgh$.

d) Explain the Interconversion of kinetic energy and potential energy in gravitational field.

e) Define power in terms of work done per unit time and use power as product of force and velocity $P = \frac{W}{t}$ and $P = FV$.

4. Circular Motion

Learning outcomes:

In this topic the student should be able to:

a) Describe angular motion with the concept of angular displacement, angular velocity and use relation between angular and linear velocity to solve problems.

b) Define centripetal force and use equations $F = mr\omega^2$, $F = \frac{mv^2}{r}$ and centripetal acceleration equations $a = r\omega^2$ and $a = \frac{v^2}{r}$.

c) Understand geostationary orbits.

5. Oscillations

Learning outcomes:

In this topic the student should be able to:

a) Define and explain simple harmonic motion with examples.

b) Define and use the terms amplitude, frequency, angular frequency, phase difference. Express the time period in terms of both frequency and angular frequency.

c) Define and use equations $x = x_o \sin\omega t,\ v = v_o \cos\omega t,\ v = \pm\omega\sqrt{x_o^2 - x^2},\ a = -\omega^2 x$.

d) Understand that the motion of simple pendulum is simple harmonic and use the relation $T = 2\pi\sqrt{\frac{l}{g}}$.

e) Describe the interchange between Kinetic energy and potential energy during Simple Harmonic Motion.

f) Define free, forced and damped oscillations with practical examples.

g) Understand the concept of Resonance, its advantages and disadvantages.

6. Waves

Learning outcomes:

In this topic the student should be able to:

a) Describe progressive waves and use the relation $v = f\lambda$.

b) Define and explain transverse and longitudinal waves.

c) Define stationary waves and determine the wavelength of sound in air columns for open and closed pipes and in stretched string using stationary waves.

d) Describe Doppler's Effect and its causes, Recognize the application of Doppler's Effect.

7. Light

Learning outcomes:

In this topic the student should be able to:

a) Define and explain interference of light waves with constructive and destructive interference.

b) Describe Young's Double Slit experiment and understand the concept of fringe spacing, dark and bright fringes.

c) Explain diffraction grating and solve problems using the formula $d\sin\theta = n\lambda$.

d) Explain the basic principle of Optical Fiber.

8. Heat and Thermodynamics

Learning outcomes:

In this topic the student should be able to:

a) State the basic postulates of kinetic theory of gases.

b) Explain the concept of pressure exerted by a gas and derive the relation $PV = \frac{Nm < v^2 >}{3}$.

c) Solve problems using the equation of state for an ideal gas as $PV = nRT$.

d) Compare $PV = \frac{Nm < v^2 >}{3}$ with $PV = NkT$ and prove that $\langle K.E. \rangle \propto T$ for a single molecule.

e) Understand the concept of internal energy and use the first law of thermodynamics $\Delta U = Q - W$.

f) Define and explain specific heat capacity.

g) Describe absolute zero and thermodynamic scale of temperature.

9. Electrostatics

Learning outcomes:

In this topic the student should be able to:

a) Describe Coulomb's Law in the form $F = \frac{1}{4\pi\varepsilon_o}\frac{Q_1 Q_2}{r^2}$ in free space or in air.

b) Understand the concept of electric field strength.

c) Use the relation $E = \frac{\Delta V}{\Delta d}$ to calculate the field strength.

d) Use the relations $E = \frac{Q}{4\pi\varepsilon_o r^2}$ for the field strength of a point charge in free space or air.

e) Define electric potential and use equation $V = \frac{1}{4\pi\varepsilon_o}\frac{q}{r}$.

f) Define and explain capacitance of a parallel plate capacitor and use $C = \frac{Q}{V}$, $C = \frac{A\varepsilon_o}{d}$.

g) Explain energy stored in capacitor and use relation $W = \frac{1}{2}QV$ and $W = \frac{1}{2}CV^2$.

10. Current – Electricity

Learning outcomes:

In this topic the student should be able to:

a) Understand the concept of current and use $I = \frac{Q}{t}$.

b) Describe and understand Ohm's Law and use $V = IR$.

c) Recall series and parallel Combination of resistors and use $R = R_1 + R_2 + \ldots\ldots\ldots\ldots$ and $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \ldots\ldots\ldots\ldots$.

d) Explain resistance and resistivity and use $R = \frac{\rho l}{A}$.

e) Define potential difference and e.m.f and use $V = \frac{W}{Q}$.

f) Describe power dissipation in resistors and use $P = VI, \quad P = \frac{V^2}{R}, \quad P = I^2R$.

g) Know and use Kirchhoff's First Law as conservation of charge.

h) Know and use Kirchhoff's Second Law as conservation of energy.

i) Use Kirchhoff's Laws to solve problems.

11. Electromagnetism

Learning outcomes:

In this topic the student should be able to:

a) Understand magnetic field due to current in a long straight wire.

b) Describe force on current carrying conductor in uniform magnetic field and use $F = BIl\sin\theta$.

c) Explain magnetic field due to current carrying solenoid and use $B = \mu_o nI$.

d) Explain the concept of force on a moving charge in magnetic field and use $F = q(V \times B)$ or $F = qVB\sin\theta$

e) Determine the e/m for an electron.

12. Electromagnetic Induction

Learning outcomes:

In this topic the student should be able to:

a) Define magnetic flux and its units, use equation $\phi = BA$.

b) State and explain Faraday's Law and Lenz's Law.

c) Understand the concept of induced e.m.f and factors affecting on it.

d) Define and explain alternating current and use $v = v_o \sin \omega t$.

e) Know the principle of transformer and solve problems using $\frac{N_s}{N_p} = \frac{V_s}{V_p} = \frac{I_p}{I_s}$ for an ideal transformer.

f) Define and describe the terms period, frequency, peak value and root mean square value of an alternating current or voltage.

13. Deformation of Solids

Learning outcomes:

In this topic the student should be able to:

a) Define and describe the terms stress, strain and Young's Modulus.

b) Define tensile stress and strain.

c) Describe Hook's Law.

d) Understand the concept of elastic and plastic deformation of a material.

e) Explain brittle and ductile materials.

f) Explain the concept of strain energy in deformed materials and force – extension graph.

14. Electronics

Learning outcomes:

In this topic the student should be able to:

a) Explain Half and Full wave rectification.

b) Explain the use of single diode for half wave rectification of an alternating current.

c) Explain the use of four diodes for full wave rectification of an alternating current.

d) Understand an operational amplifier and its characteristics.

e) Know the applications operational amplifiers as inverting and non-inverting amplifiers and use relations.

1. $gain = -\frac{R_2}{R_1}$ ($for\ inverting\ amplifier$)

2. $gain = 1 + \frac{R_2}{R_1}$ ($for\ non-inverting\ amplifier$)

15. Modern Physics

Learning outcomes:

In this topic the student should be able to:

a) Describe energy of photon $E = hf$.

b) Understand the concept of photoelectric effect, threshold frequency and work function energy.

c) Explain why the maximum photoelectric energy is independent of intensity where as photoelectric current is proportional to intensity.

d) Describe Einstein's Photoelectric equation $hf = \phi + \frac{1}{2}mv_{\max}^2$.

e) Define and explain de Broglie wavelength and use $\lambda = \frac{h}{p}$.

f) Understand discrete energy levels of hydrogen atom and spectral lines

g) Use the relation $hf = (E_1 - E_2)$.

h) Describe the production of X-rays and main features of X-rays tube.

i) Identify use of X-rays.

j) Explain Band Theory and its terms valence band, conduction band and forbidden band.

16. Nuclear Physics

Learning outcomes:

In this topic the student should be able to:

a) Describe the concept of nucleus and define nucleon number, charge number.

b) Explain radioactivity and emission of radiation.

c) Define the terms activity, decay constant and solve problems using relation $Activity = -\lambda N$.

d) Explain half life of radioactive substance and solve problem using relation $\lambda = \frac{0.693}{t_{1/2}}$.

e) Understand nuclear transmutation and conservation of mass, energy, momentum and charge during nuclear changes.

f) Know the Significance of mass-defect, binding energy and use the relation $E = mc^2$.

g) Describe nuclear fission and fusion.

h) Know the concept of Hadrons, Leptons and Quarks.

Table of Specification (PHYSICS-2017)
For F.Sc. and Non-F.Sc.

Sr. No.	Topic	MCQs
1.	Measurement	02
2.	Motion and Force	03
3.	Work, Energy and Power	03
4.	Circular Motion	02
5.	Oscillations	03
6.	Waves	02
7.	Light	02
8.	Heat and Thermodynamics	03
9.	Electrostatics	03
10.	Current – Electricity	03
11.	Electromagnetism	03
12.	Electromagnetic Induction	03
13.	Deformation of Solids	02
14.	Electronics	03
15.	Modern Physics	04
16.	Nuclear Physics	03
Total		**44**

ENGLISH

STRUCTURE OF THE SYLLABUS (2017)

For F.Sc. and Non-F.Sc.

The English section shall consist of four parts:

Part I:

It will be comprised of Four Questions in which the candidate will have to select the appropriate/suitable word from the given alternatives.

Part II:

It will contain sentences with grammatical errors and the candidate will have to identify the error. There will be Six Questions from this part.

Part III:

There will be Ten Questions consisting of a list of Four sentences each. The candidate will have to choose the grammatically correct sentence out of the given four options.

Part IV:

In this part, the candidate will be asked to choose the right synonyms. Four options will be given and He/She will have to choose the most appropriate one. There will be Ten Questions from this part.

Essential Word Power

1.	Aberration
2.	Ability
3.	Absolution
4.	Absorption
5.	Abstruse
6.	Abundant
7.	Acceptors
8.	Accessory
9.	Acclimate
10.	Accolade
11.	Accrue
12.	Acquiesce
13.	Acumen
14.	Acupuncture
15.	Addled
16.	Adjacent
17.	Admonition
18.	Adroitness
19.	Affect

20.	Affinity
21.	Alacrity
22.	Allay
23.	Altruistic
24.	Ambulatory
25.	Ameliorate
26.	Amenities
27.	Amorphous
28.	Analogue
29.	Analyzed
30.	Anaphylactic
31.	Aneurysm
32.	Angina
33.	Angle
34.	Anomaly
35.	Antagonist
36.	Anterior
37.	Antibody
38.	Apathy

39.	Aperture
40.	Apprehension
41.	Arbiter
42.	Arboreal
43.	Arc
44.	Arcane
45.	Arch
46.	Archives
47.	Articulate
48.	Ascetic
49.	Aspersion
50.	Assimilate
51.	Assume
52.	Atrophy
53.	Attendant
54.	Attire
55.	Audacious
56.	August
57.	Auspicious

58.	Automated
59.	Avid
60.	Axial
61.	Barbaric
62.	Barrier
63.	Basilica
64.	Batter
65.	Beaded
66.	Beguile
67.	Behest
68.	Belated
69.	Benediction
70.	Beneficence
71.	Benign
72.	Bequeath
73.	Berate
74.	Bifurcated
75.	Binding
76.	Blasphemous
77.	Blathering
78.	Blaze
79.	Bloom
80.	Bouquet
81.	Braille
82.	Broadside
83.	Buckle
84.	Buffers
85.	Buoyant
86.	Burgeoning
87.	Cachet
88.	Cadaver
89.	Caesarean
90.	Camber
91.	Cameo
92.	Capable
93.	Capital
94.	Capsule
95.	Carapace
96.	Cardigan
97.	Career
98.	Caricature
99.	Cartographer
100.	Cast
101.	Catalyst
102.	Catharsis
103.	Caudal
104.	Caulk
105.	Centennial

106.	Certain
107.	Chastise
108.	Chimerical
109.	Chivalry
110.	Chromosome
111.	Churn
112.	Circulated
113.	Circumduction
114.	Clamorous
115.	Clamp
116.	Clement
117.	Close
118.	Cluster
119.	Coast
120.	Cobble
121.	Coccyx
122.	Coercive
123.	Collage
124.	Collar
125.	Collateral
126.	Collective
127.	Column
128.	Comatose
129.	Combinations
130.	Comely
131.	Commiserate
132.	Communicate
133.	Commute
134.	Compact
135.	Compartments
136.	Compatible
137.	Complacent
138.	Complex
139.	Components
140.	Composed
141.	Compound
142.	Compression
143.	Concave
144.	Concept
145.	Concerted
146.	Conciliatory
147.	Condone
148.	Configuration
149.	Confiscatory
150.	Confound
151.	Congeal
152.	Congruent
153.	Constituents

154.	Constructed
155.	Contemporary
156.	Contiguous
157.	Contract
158.	Contravention
159.	Contrive
160.	Contusion
161.	Conversion
162.	Cord
163.	Cordial
164.	Corollary
165.	Coronal
166.	Corpuscle
167.	Corroborating
168.	Cosset
169.	Coterie
170.	Covert
171.	Cramp
172.	Cranial
173.	Crass
174.	Craven
175.	Crescent
176.	Crest
177.	Criterion
178.	Cue
179.	Cumulative
180.	Cygnet
181.	Cynical
182.	Dale
183.	Dam
184.	Dappled
185.	Deadhead
186.	Debility
187.	Debunk
188.	Debut
189.	Decelerate
190.	Deciduous
191.	Decompression
192.	Decorum
193.	Decry
194.	Defective
195.	Deferential
196.	Degenerate
197.	Degradation
198.	Delegate
199.	Delta
200.	Demographics
201.	Demure

202.	Denomination
203.	Deprotonated
204.	Desiccate
205.	Destiny
206.	Determination
207.	Deuce
208.	Devious
209.	Dexter
210.	Diaphragm
211.	Dictated
212.	Diffidence
213.	Digest
214.	Dilate
215.	Diligence
216.	Dimension
217.	Disability
218.	Discourse
219.	Discrepancy
220.	Discretion
221.	Disdain
222.	Disingenuous
223.	Disorders
224.	Dissension
225.	Dissent
226.	Dissonance
227.	Distant
228.	Divagate
229.	Divulge
230.	Docent
231.	Dominant
232.	Dote
233.	Downy
234.	Droll
235.	Dulcet
236.	Dunce
237.	Duplicitous
238.	Effect
239.	Effectors
240.	Effervescent
241.	Efficient
242.	Elastic
243.	Electrolytes
244.	Elicit
245.	Elucidate
246.	Elusive
247.	Embed
248.	Emblazon
249.	Emblematic

250.	Emboss
251.	Emit
252.	Empathy
253.	Emphasize
254.	Empower
255.	Emulate
256.	Encounter
257.	Encumber
258.	Encyclical
259.	Enhance
260.	Ennui
261.	Environment
262.	Epicenter
263.	Eponyms
264.	Equilibrium
265.	Equipoise
266.	Equivocate
267.	Ergometer
268.	Eruption
269.	Eschew
270.	Espalier
271.	Ethic
272.	Euphonious
273.	Evaluate
274.	Evanescent
275.	Evasive
276.	Evocative
277.	Excavate
278.	Exception
279.	Exclusively
280.	Exhortation
281.	Exonerate
282.	Expel
283.	Exploitation
284.	Expressed
285.	Extemporaneous
286.	Extension
287.	Extent
288.	Extrapolate
289.	Extricate
290.	Extrinsic
291.	Fabricate
292.	Facet
293.	Facile
294.	Facilitate
295.	Fascia
296.	Fateful
297.	Fawning

298.	Feasible
299.	Feckless
300.	Felicity
301.	Feral
302.	Fermentation
303.	Fiesta
304.	Figment
305.	Filigree
306.	Finagle
307.	Flaunt
308.	Flexible
309.	Flexion
310.	Florid
311.	Flux
312.	Forman
313.	Forswear
314.	Fosse
315.	Fracture
316.	Fragment
317.	Frowsy
318.	Gable
319.	Galvanize
320.	Gambit
321.	Garnish
322.	Gaudy
323.	Genocide
324.	Gesticulate
325.	Gild
326.	Girdle
327.	Glaucoma
328.	Glaze
329.	Glib
330.	Gliding
331.	Glucose
332.	Gradient
333.	Graphically
334.	Green
335.	Gridlock
336.	Groove
337.	Guileless
338.	Guise
339.	Gull
340.	Guru
341.	Hackles
342.	Hail
343.	Harangue
344.	Hawk
345.	Hector

346.	Heinous
347.	Herbicide
348.	Herculean
349.	Hermetic
350.	Heterogeneous
351.	Hiatus
352.	Holistic-medicine
353.	Homeopathy
354.	Hone
355.	Hormones
356.	Horse latitudes
357.	Hue and cry
358.	Humane
359.	Hydra
360.	Hypertension
361.	Hypothermia
362.	Idealist
363.	Ideally
364.	Ilk
365.	Illicit
366.	Illustrate
367.	Immobilize
368.	Immolate
369.	Impediment
370.	Impending
371.	Impetuous
372.	Impetus
373.	Impinge
374.	Implacable
375.	Implicated
376.	Impregnable
377.	Improvise
378.	Impulse
379.	Impute
380.	Inadvertently
381.	Incarnate
382.	Incentive
383.	Incisive
384.	Inculcate
385.	Indicates
386.	Indigent
387.	Ineradicable
388.	Inertia
389.	Infallible
390.	Information
391.	Infusion
392.	Inherent
393.	Innocuous

394.	Innovate
395.	Inoculate
396.	Inordinate
397.	Inquisition
398.	Inscrutable
399.	Inspiration
400.	Integrated
401.	Integument
402.	Interactions
403.	Interposed
404.	Intersect
405.	Intransigent
406.	Intrinsic
407.	Inversion
408.	Irrefutable
409.	Irritant
410.	Itinerant
411.	Jaded
412.	Jargon
413.	Jell
414.	Jeopardy
415.	Jettison
416.	Jig
417.	Jitney
418.	Jocular
419.	Jocund
420.	Joint
421.	Jubilee
422.	Judicial
423.	Juncture
424.	Junta
425.	Justify
426.	Juxtapose
427.	Kiln
428.	Kismet
429.	Lacerating
430.	Laconic
431.	Lampoon
432.	Lapidary
433.	Largess
434.	Latent
435.	Lateral
436.	Lathe
437.	Latter
438.	Laud
439.	Legate
440.	Lemming
441.	Ligament

442.	Lineage
443.	Linkages
444.	Lion's share
445.	Lipid
446.	Lissome
447.	Litter
448.	Liturgy
449.	Localize
450.	Longitudinal
451.	Lucidity
452.	Lumina
453.	Macramé
454.	Magnanimous
455.	Magnetic
456.	Magnum
457.	Malevolence
458.	Maneuver
459.	Manicured
460.	Manifestation
461.	Material
462.	Matriculation
463.	Mausoleum
464.	Maverick
465.	Mean
466.	Measure
467.	Mechanism
468.	Median
469.	Medley
470.	Membrane
471.	Memorized
472.	Menial
473.	Mentor
474.	Meritorious
475.	Mesmerize
476.	Metabolism
477.	Microcosm
478.	Mild
479.	Mirth
480.	Misanthropy
481.	Misapprehension
482.	Mitigation
483.	Moderate
484.	Monolithic
485.	Montage
486.	Moot
487.	Morass
488.	Moratorium
489.	Mordant

490.	Morphology
491.	Mortality
492.	Mosaic
493.	Mosey
494.	Mote
495.	Motif
496.	Motley
497.	Multifunctional
498.	Mumbo jumbo
499.	Murky
500.	Muse
501.	Myriad
502.	Nary
503.	Nausea
504.	Neutral
505.	Nexus
506.	Niche
507.	Nip and tuck
508.	Notch
509.	Nourish
510.	Nuance
511.	Nutrient
512.	Obeisance
513.	Obligatory
514.	Obliterate
515.	Obsequious
516.	Obstreperous
517.	Obtuse
518.	Odometer
519.	Onerous
520.	Onslaught
521.	Onyx
522.	Opaque
523.	Opportune
524.	Opposition
525.	Optically
526.	Optimum
527.	Orb
528.	Organizing
529.	Orientate
530.	Orthodox
531.	Overdraft
532.	Overlie
533.	Pad
534.	Paddy
535.	Palatable
536.	Palaver
537.	Palazzo

538.	Palpation
539.	Palpitation
540.	Pampas
541.	Pan
542.	Pandemic
543.	Par
544.	Para median
545.	Paradox
546.	Paragon
547.	Parallel
548.	Paralyzed
549.	Paramedic
550.	Parameter
551.	Parasagittal
552.	Parcel
553.	Pare
554.	Parlous
555.	Paroxysm
556.	Partial
557.	Passes
558.	Passive
559.	Pathos
560.	Patisserie
561.	Pedestrian
562.	Peerless
563.	Pending
564.	Peninsula
565.	Perceive
566.	Perfidy
567.	Perfunctory
568.	Perimeter
569.	Periphery
570.	Permeate
571.	Permit
572.	Permutation
573.	Peroration
574.	Perpendicular
575.	Perpetuate
576.	Perseverance
577.	Perspective
578.	Perspicacious
579.	Phlegmatic
580.	Piety
581.	Pilaster
582.	Placate
583.	Plague
584.	Plane
585.	Platonic

586.	Plexus
587.	Pomp
588.	Portray
589.	Posterior
590.	Postulate
591.	Posture
592.	Potpourri
593.	Precipitate
594.	Précis
595.	Preclude
596.	Precursor
597.	Predatory
598.	Pre-emptive
599.	Premise
600.	Premonition
601.	Preplate
602.	Prevail
603.	Prig
604.	Primal
605.	Primary
606.	Privation
607.	Procure
608.	Prodigious
609.	Proliferate
610.	Prolific
611.	Pronation
612.	Proponent
613.	Proportional
614.	Proscription
615.	Prosecutions
616.	Protraction
617.	Provender
618.	Provident
619.	Provocative
620.	Prowess
621.	Prune
622.	Pseudo
623.	Pulsation
624.	Purchase
625.	Purified
626.	Putrid
627.	Quadriceps
628.	Quagmire
629.	Quarter
630.	Queasy
631.	Querulous
632.	Queue
633.	Quorum

634.	Radiant
635.	Rakish
636.	Rapacious
637.	Rapport
638.	Raze
639.	Reactionary
640.	Recapitulate
641.	Reciprocal
642.	Reclamation
643.	Reclusive
644.	Reconnoiter
645.	Rectify
646.	Red herring
647.	Redolent
648.	Reflects
649.	Reflex
650.	Regime
651.	Region
652.	Regnant
653.	Regularities
654.	Relationship
655.	Relay
656.	Relegate
657.	Relief
658.	Remedial
659.	Repute
660.	Resistance
661.	Resonance
662.	Resound
663.	Restitution
664.	Resuscitate
665.	Retrench
666.	Retrusion
667.	Reversible
668.	Riff
669.	Rigidity
670.	Robust
671.	Roil
672.	Roster
673.	Rostra
674.	Rotatory
675.	Ruddy
676.	Rue
677.	Ruminant
678.	Saddle
679.	Sagacity
680.	Sampler
681.	Sanatorium

682.	Sanctity
683.	Sandbagger
684.	Sanguine
685.	Sarong
686.	Satellite
687.	Satiate
688.	Satire
689.	Scaffold
690.	Scam
691.	Scattering
692.	Sciatica
693.	Score
694.	Scorned
695.	Scruple
696.	Scrutinize
697.	Scuttle
698.	Sear
699.	Sedate
700.	Sediment
701.	Segment
702.	Seminary
703.	Sensibility
704.	Separation
705.	Septic
706.	Sequential
707.	Sheath
708.	Shrapnel
709.	Shunt
710.	Sidle
711.	Siesta
712.	Signifying
713.	Silhouette
714.	Simplified
715.	Simultaneous
716.	Singe
717.	Sisyphean
718.	Skeptical
719.	Skew
720.	Skittish
721.	Snide
722.	Socket
723.	Sojourn
724.	Solvent
725.	Somatic
726.	Sophistry
727.	Spa
728.	Span
729.	Specious

730.	Specter
731.	Splotch
732.	Spurious
733.	Squander
734.	Stabilize
735.	Stalwart
736.	Stanch
737.	Staples
738.	Static
739.	Stay
740.	Steep
741.	Stentorian
742.	Steppe
743.	Stepwise
744.	Stilted
745.	Stimuli
746.	Stipulate
747.	Stoicism
748.	Stratagem
749.	Strength
750.	Striated
751.	Structural
752.	Subdivision
753.	Substituent
754.	Succumb
755.	Superficial
756.	Superfluous
757.	Supination
758.	Supposition
759.	Surface
760.	Surplice
761.	Surrealism
762.	Swivel
763.	System
764.	Symbiosis
765.	Sympathy
766.	Syndrome
767.	Synergist
768.	Synthesis
769.	Systemic
770.	Taboo
771.	Tactile
772.	Tank
773.	Tariff
774.	Taxidermy
775.	Telepathy
776.	Temperance
777.	Tenacious

778.	Terminal
779.	Tertiary
780.	Therapeutic
781.	Thorax
782.	Threshold
783.	Tinge
784.	Tipping point
785.	Titan
786.	Torpid
787.	Traction
788.	Tranquil
789.	Transcend
790.	Transient
791.	Translucent
792.	Transmute
793.	Transparent
794.	Transported
795.	Transverse
796.	Trepidation
797.	Trifle
798.	Trilogy
799.	Truncated

800.	Trunk
801.	Tuberosity
802.	Tunica
803.	Tussle
804.	Uncanny
805.	Undulate
806.	Unmitigated
807.	Urbane
808.	Vale
809.	Validity
810.	Vanquish
811.	Variations
812.	Varicose
813.	Vascular
814.	Vegetate
815.	Venality
816.	Vendetta
817.	Veneer
818.	Venerable
819.	Venomous
820.	Ventricle
821.	Veracity

822.	Vertex
823.	Verve
824.	Vestibule
825.	Viability
826.	Vintage
827.	Virago
828.	Virtually
829.	Virulent
830.	Viscera
831.	Vista
832.	Visualize
833.	Vital
834.	Vociferous
835.	Voracious
836.	Vortex
837.	Vulcanize
838.	Wan
839.	Wheedle
840.	Wry
841.	Xenophobic
842.	Xeric
843.	Zone

APTITUDE FEEDBACK FOR ENTRANCE TEST 2017

A compulsory feedback shall be administered to all candidates after the completion of Entrance Test 2017, collection and secure packing of the Question Papers and Response Forms. The feedback is for University and Government use only and SHALL NOT IN ANY WAY affect the merit of the candidates.