



राजर्षी शाहू महाविद्यालय, लातूर
SCSS-Screening Test 2023
Syllabus

वैद्यकिय गट (AIIMS बॅच)

परिशिष्ट 'अ'

SHIV CHHATRAPATI SHIKSHAN SANSTHA, LATUR
SCREENING TEST - 2023
SYLLABUS

BASIC MATHEMATICS	
1	DISCOUNT & PERCENTAGE
	PROFIT & LOSS (PERCENTAGE BASED)
2	LOGARITHMS
	DEFINATION
	PROPERTIES OF LOGARITHMS
3	SPEED , TIME & WORK
4	S.I.UNITS AND SYMBOLS
5	SURFACE AREAS & VOLUMES
6	TRIGONOMETRIC RATIOS OF STANDARD ANGLES
7	PLANE GEOMETRY
	[CONCEPT OF LINE & ANGLES, CIRCLE, QUADRILATERALS AND TRIANGLE]
8	CO-ORDINATE GEOMETRY
	GRAPH OF LINE (CO-ORDINATE SYSTEM)
	COLLINEAR POINTS
9	ALGEBRIC IDENTITIES
	EXPANSION OF $(A+B)^2$, $(A-B)^2$, $(A+B)^3$, $(A-B)^3$, A^3-B^3 , A^3+B^3 & $(A+B+C)^2$

Physics

1. **Force & Pressure :**
Contact & Non contact forces, Balanced & unbalanced forces, Inertia & Pressure, Pressure on solids & Liquids, Gas pressure & Atmospheric pressure, Archimedes Principle
2. **Current Electricity & Magnetism :**
Current electricity, Electrostatic potential & Potential difference, electric cells & Their types, Connecting cells, Magnetic effect of electric current & their activities. Potential & potential difference, Potential difference & cell, Free electron & Electric current, Resistance & Ohm's law, Resistivity, Conduction & Insulators, Electric symbols, Resistor in series & parallel
3. **Measurement & Effects of Heat :**
Sources of heat, Heat & Temperature, Thermometer, Specific heat & calorimeter, effects of heat, Expansion of solids, Liquids & Gases
4. **Laws of Motion :**
Motion of an Object, Displacement & Distance, Speed & Velocity, Effects of speed & direction on Velocity, Uniform & Non-uniform Linear motion, Acceleration (+ ve, - ve & Zero acceleration), Distance-Time graph (Uniform & Non-uniform motion), Velocity-Time graph (Uniform Motion & Uniformly Accelerated Motion). Equation of motion using graphical method, Uniform circular motion, Newton's laws of motion (Ist, IInd & IIIrd), Momentum & Laws of Conservation of Momentum
5. **Work & Energy :**
Work & Energy, Work & Units of Work, +ve, -ve & zero work, Energy, Kinetic energy & its expression, Potential energy & its expression, Transformation of energy, Law of conservation of energy, Free fall, Power
6. **Reflection of light :**
Laws of Reflection & Their Activities, Regular & irregular reflection, Reflection of reflected light (Kaleidoscope, Periscope)
Mirror & types of mirror, Spherical mirrors & images formed by them, Magnification due to spherical mirrors.
7. **Study of sounds :**
Production of sound, Propagation of sound & medium, Frequency of sound waves & Music, Sound Produced by Human & Loudspeaker
Sound waves, Velocity of sounds, Reflection of sound, Human ear, audible sound, Infra & ultra sounds
8. **Gravitation :**
Gravitation, Circular Motion & Centripetal force, Kepler's law, Newton's universal law of gravitation, Acceleration due to gravitational force of the Earth, Free fall, Escape velocity
9. **Effect of electric Current :**
Energy transfer in an electric current, Heating effects of electric current, Magnetic effect of electric current
10. **Heat :**
Latent heat, Regelation, Anomalous behavior of water, Specific heat capacity, Dew point & Humidity
11. **Refraction of light :**
Refraction of light, Laws of refraction, Refractive index, Dispersion of light,
12. **Lens :**
Lenses, Ray diagram of refracted light, Sign convention, Working of human eye & lens, Defects of vision and their correction, use of lens,
13. **Space mission :**
Space mission, Artificial satellites, Classification of artificial satellites, Orbits of artificial satellites, Satellites launcher vehicles, Space missions away from the earth.

Chemistry

1. Inside the atom

Types of substances, Dalton's atomic theory, Thomson's Plum pudding model of atom, Rutherford's nuclear model of atom and scattering experiment, Bohr's atomic model
Subatomic particles (e, p, n), Atomic number, mass number, isotopes and isobars, Electronic configuration of elements, Nuclear reactor.

2. Composition of Matter :

Characteristics of states of matter, Types of elements, types of compounds, types of mixture, true and colloidal solution molecular formula and valency, cross formula for writing chemical formula.

3. Metals and Nonmetals:

Physical properties of metals and non metals, chemical properties of metals and non metals, Uses of metals and non metals

4. Pollution :

Pollutants, Air Pollution, Green house effect, Acid rains, Water pollution, Prevention and control of pollution.

5. Acids bases and salts :

Introduction, Indicator, Effects of acid and bases on litmus paper, properties of acids and bases and neutralization.

Arrhenius theory of acids and bases, classification of acids and bases, concentration of acids and bases, pH of solution, universal indicator, Reaction of acids and bases with metals metal oxides, Carbonates and bicarbonates, Types of Salts, Crystallisation of water, Electrical conductivity of ionic compounds Electrolysis and electrolyses of water.

6. Chemical Change and Chemical bond :

Introduction, Natural and manmade chemical changes, Ionic bond, Covalent bond.

7. Substances in common use :

Importance of salts in daily life, NaCl , NaHCO_3 , Na_2CO_3 , CaOCl_2 , Na_2CO_3 , Soap
Nature of radioactive radiation. , Characteristics of α , β , γ rays. , Uses of radioactive isotopes, Some chemical substances in day to day life., Food colours and essences, Dye, Artificial Colours, Deodorant, Teflon, Powder Coating, Anodizing, Ceramic and Porcelain.

8. Chemical Reaction and equations :

Chemical reaction, Chemical Equation and balancing of chemical equation, Types of Chemical reactions, Exothermic and endothermic reactions, Factors affecting the rate of chemical reactions, Oxidation and reduction, Corrosion and Rancidity.

9. Metallurgy :

Reactivity series of metals, Ionic Compounds and Properties of ionic compounds , Basic Principles of Metallurgy, Conc of Ores, Gravitation Method, Magnetic Separation Method, Froth Floatation Method, Leaching.

Extraction of reactive Metals, Moderately.

Extraction of Aluminium

Refining of Metals.

Prevention of Corrosion.

10. Periodic Classification of elements :

Classification elements, Dobereiner's Triads, Newland's Law of Octaves, Mendeleev's Periodic table, Merits and demerits, Modern Periodic table and its structure, Groups, Periods and electronic configurations, Periodic trends in the modern periodic table, Valency, Atomic size, Metallic and Non metallic nature.

11. Study of Gas Laws :

Properties Of Gases, Liquids And Solids, Boyle'S Law, Charle'S Law, Gas Equation, Absolute Zero, Standard Temperature Scale , Pressure, N.T.P. And S.T.P.

12. Measurement of Matter (Mole Concept) :

Laws Of Chemical Combination, Atom - Shape, Mass, Valency, Molecular Mass, Atomic Mass, Formula Mass, Radicals, Ions, Mole Concept - Avogadro'S Number, Calculation Of Moles, Mass, Atoms, No. Of Particles.

13. Carbon Compounds

Valency, Catenation Of Carbon Formation Of Double And Triple Bond

Isomerism Including Single, Double And Triple Bond Homologous Series Of Alkane, Alkene, Alkyne And Relation With Molecular Mass.

Nomenclature Of Simple Compounds Having Functional Groups Including Double Bond And Triple Bond

Hydrocarbon, Method Of Preparation Of Alkane, Alkene And Alkyline And Chemical Properties And Uses Also.

Preparation Properties (Physical And Chemical Both) Of Alcohol (Ethanol) And Carboxylic Acid (Acetic Acid) Uses Of Alcohol And Acetic Acid.

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SYLLABUS

BIOLOGY

1	DIVERSITY IN LIVING ORGANISM
	WHAT IS BASIS OF CLASSIFICATION?
	THE HIERARCHY OF CLASSIFICATION-GROUP. (MONERA, PROTISTA, FUNGI, PLANTAE, ANIMALIA)
2	CLASSIFICATION OF PLANTS:
	KINGDOM PLANTS,
	BASIS OF CLASSIFICATION
	THALLOPHYTA, BRYOPHYTA, PTERIDOPHYTA, PHANEROGAMS.
3	ANIMAL CLASSIFICATION
	NEW(METHOD) SYSTEM OF ANIMAL CLASSIFICATION.
	CRITERIA - GRADE OF ORGANISATION, BODY SYMMETRY, GERM LAYERS, BODY CAVITY, BODY SEGMENTATION
	KINGDOM ANIMALIA - FROM PHYLUM PORIFERA TO CHORDATA. (NON-CHORDATES UPTO PHYLUM LEVEL AND CHORDATES UPTO CLASS LEVEL)
4	FUNDAMENTAL UNIT OF LIFE
	WHAT ARE LIVING ORGANISM?
	WHAT IS CELL MADE UP?
	STRUCTURE AND DIFFERENCE BETWEEN ANIMAL AND PLANT CELL.
	CELL THEORY.
	PLASMA MEMBRANE AND CELL MEMBRANE.
	CELL WALL, NUCLEUS, CYTOPLASM, CELL ORGANELLES, ENDOPLASMIC RETICULUM. (ER), GOLGI APPARATUS, LYSOSOMES, MITOCHONDRIA, PLASTID, VACUOLES.
5	CELL CYCLE AND CELL DIVISION
	CELL CYCLES PHASES IN BRIEF.
	MITOSIS AND ITS PHASES
	MEIOSIS AND ITS PHASES
	SIGNIFICATION.
6	TISSUE
	ANIMAL TISSUE
	TYPES OF EPITHELIAL TISSUE, CONNECTIVE TISSUE, MUSCULAR TISSUE, NERVOUS TISSUE.
	PLANT TISSUE
	MERISTEMATIC TISSUE, PERMANENT TISSUE, TYPES OF SIMPLE AND COMPLEX TISSUES.
7	LIFE PROCESSES IN LIVING ORGANISM
	TRANSPORTATION IN PLANTS-
	TRANSPORTATION OF WATER , FOOD AND OTHER SUBSTANCES,
	RESPIRATION : AEROBIC AND ANAEROBIC RESPIRATION
	LIVING ORGANISM AND ENERGY PRODUCTION
	GLYCOLYSIS, TCA CYCLE, ETC.
	ENERGY FROM DIFFERENT FOOD COMPONENTS.
	PHOTOSYNTHESIS
	PLANTS GROWTH (BRIEF IDEA)
	PGR - AUXIN, CYTOKININ, ABA, ETHYLENE, GIBBERELIC ACID.
	NUTRITION - IN PLANTS AND ANIMALS
	CIRCULATION - BLOOD, HEART, BLOOD VESSELS
	EXCRETION IN PLANTS AND HUMAN BEINGS, DIALYSIS. HUMAN EXCRETORY SYSTEM.
	COORDINATION-
	CO-ORDINATION IN PLANTS AND CO-ORDINATION IN HUMAN.

	NERVOUS CONTROL - TYPES OF NEURONS, HUMAN NERVOUS SYSTEM-CNS, PNS, ANS, REFLEX ACTION,
	CHEMICAL-CONTROL - ENDOCRINE GLANDS AND THEIR HORMONES.
	REPRODUCTION
	ASEXUAL REPRODUCTION - BINARY FISSION, MULTIPLE FISSION, BUDDING, FRAGMENTATION, REGENERATION, VEGETATIVE PROPAGATION, SPORE FORMATION
	SEXUAL REPRODUCTION - GAMETES FORMATION, FERTILISATION,
	SEXUAL REPRODUCTION IN PLANTS.
	SEXUAL REPRODUCTION IN HUMAN BEING - MALE AND FEMALE REPRODUCTIVE SYSTEM, MENSTRUATION CYCLE, GAMETES FORMATION, FERTILISATION, DEVELOPMENT AND BIRTH
	REPRODUCTION AND MODERN TECHNOLOGY- IVF, SPERM BANK, TWINS.
	REPRODUCTIVE HEALTH
	PLANT GROWTH, STRUCTURE OF SEED, TYPE OF GERMINATION, GERMINATION OF SEED , TYPE OF SEED .
	FLOWER PLACENTATION AND TYPE OF INFLORESCENCE .
	POLLINATION- SELF POLLINATION , CROSS POLLINATION, AGENTS OF POLLINATION. (ICSE CLASS 9TH)
	RESPIRATORY SYSTEM IN HUMANS - EXTERNAL RESPIRATION, INTERNATION RESPIRATION CELLULAR RESPIRATION
	BREATHING
	EFFECT OF ALTITUDE ON BREATHING
	ASPHYXIATION, EMPHYSEMA, HYPOXIA
	TRANSPIRATION IN PLANTS
	MEASUREMENTS OF TRANSPIRATION
	TYPE OF TRANSPIRATION
	GUTTATION AND BLEEDING
	FACTORS AFFECTING RATE OF PHOTOSYNTHESIS
8	HEREDITY AND VARIATION
	INHERITANCE - HEREDITY, HEREDITARY CHANGES.
	DNA - GENE CONCEPT , REPLICATION, TRANSCRIPTION, TRANSLATION.
	RNA AND Its types, Mutation.
	MENDEL'S PRINCIPLES OF HEREDITY - MONOHYBRID CROSS, DIHYBRID CROSS
	GENETIC DISORDER -DISORDERS DUE TO CHROMOSOMAL ABNORMALITIES, MONOGENIC DISORDER, POLYGENIC DISORDER, MITOCHONDRIAL DISORDER.
	SEX DETERMINATION.
	HEREDITY AND VARIATION
	IMPORTANT TERMS TO UNDERSTAND MENDEL'S WORK
	GENES , ALLELES , HOMOZYGOUS , RECESSIVE, DOMINANT, MENDELS CROSSING TECHNIQUE .
	MENDELS LAW OF INHERITANCE
	LAW OF DOMINANCE , LAW OF SEGREGATION, LAW OF INDEPENDENT ASSORTMENT , BACK CROSS, TEST CROSS, POLYGENIC TRAITS , INCOMPLETE DOMINANCE , CO-DOMINANCE, MULTIPLE ALLELES -ABO BLOOD GROUP, EXAMPLES OF SEX LINKED INHERITANCE , PEDIGREE ANALYSIS.
	INHERITANCE OF TRAITS AND EXPRESSION OF TRAITS- CHROMOSOMES, TYPES OF CHROMOSOME.
	HUMAN GENOME PROJECT
9	INTRODUCTION TO BIOTECHNOLOGY
	BIOTECHNOLOGY- MAIN AREAS AND BENEFITS.
	COMMERCIAL APPLICATION
	IMPORTANT STAGES IN AGRICULTURAL DEVELOPMENT
	GREEN,WHITE AND BLUE REVOLUTION.
	FERTILISERS (INSECTICIDE, ORGANIC FARMING)
	CULTIVATION OF MEDICINAL PLANTS.
	TISSUE CULTURE

	CHANGES IN AGRICULTURE MANAGEMENT DUE TO BIOTECHNOLOGY
	APPLICATION OF BIOTECHNOLOGY IN FLORICULTURE, NURSERIES AND FORESTRY, AGRITOURISM,
	AGRO COMPLEMENTARY OCCUPATION
	ANIMAL HUSBANDRY, POULTRY FARMING, APICULTURE, SERICULTURE.
10	USEFUL AND HARMFUL MICROBE
	USEFUL MICRO-ORGANISMS(LACTOBACILLI, RHIZOBIUM, YEAST, ANTIBIOTICS),
	HARMFUL MICRO-ORGANISM (CLOSTRIDIUM OTHER MICROBES).
11	HEALTH AND DISEASE / WHY DO WE FALL ILL ?
	HEALTH, IMMUNITY
	DISEASE AND ITS CAUSES-ACUTE AND CHRONIC DISEASE, CAUSES OF DISEASE,
	INFECTIOUS AND NON INFECTIOUS DISEASES
	DISEASE CAUSING AGENTS, MEANS OF SPREAD
	TREATMENT AND PREVENTION (T.B., TYPHOID, HEPATITIS, RABIES, POLIO, AIDS, DIARRHOEA.)
12	SOCIAL HEALTH
	FACTORS AFFECTING / DISTURBING THE SOCIAL HEALTH.
	MENTAL STRESS, ADDICTION, INCURABLE DISEASE.
	GOVERNMENT SCHEME - VACCINE AND VACCINATION
13	EVOLUTION
	THEORY OF EVOLUTION
	EVIDENCES OF EVOLUTION- MORPHOLOGICAL, ANATOMICAL, PALEONTOLOGICAL, EMBRYOLOGICAL
	EVIDENCES, VESTIGIAL ORGANS, CONNECTING LINK,
	DARWINS THEORY OF NATURAL SELECTION, LAMARCKISM, SPECIATION, HUMAN EVOLUTION.
	TRACING EVOLUTIONARY RELATIONSHIP, FOSSILS, EVOLUTION BY STAGES.
14	ENERGY FLOW IN AN ECOSYSTEM
	FOOD CHAIN AND FOOD WEB,
	ENERGY PYRAMID.
	ENERGY FLOW AND ITS IMPORTANCE.
	PRODUCERS CONSUMERS AND DECOMPOSER.
	BIOGEOCHEMICAL CYCLE-(CARBON, OXYGEN AND NITROGEN CYCLE).
15	ENVIRONMENTAL MANAGEMENT
	ECOSYSTEM TYPES AND INTERACTION
	ENVIRONMENTAL CONSERVATION AND ITS NEED AND OUR SOCIAL RESPONSIBILITY.
	ACTS RELATED TO CONSERVATION.
	BIODIVERSITY, HOT SPOTS BIODIVERSITY
	CLASSIFICATION OF THREATENED SPECIES.
	SOLID WASTE MANAGEMENT-BIODEGRADABLE WASTE, NON BIODEGRADABLE WASTE, NECESSITY OF
	SOLID WASTE MANAGEMENT, SEVEN PRINCIPLES OF SOLID WASTE MANAGEMENT, PERIOD REQUIRED
	FOR DEGRADATION OF WASTE.