



INTEL

BRIDGE COURSE

2023

Advanced Science Course



Course of Study



INTEL INSTITUTE

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Advanced Science Course

COURSE OF STUDY

&

SAMPLE QUESTION

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LIST OF TEACHING STAFF

A: MATHEMATICS

- Amit Adhikari
- Bishnu Hari Subedi
- Kamal Kant Marasini
- Krishna Pd. Tiwari
- Pradip Bagale
- Rajesh Maharjan
- Biseshwor Pd. Bhatta
- Mausam Adhikari

B: ENGLISH

- Badri Pokharel
- Sakuntala Adhikari
- Ishab Raj Badu
- Subash Kafle
- Manahari Sharma

C: PHYSICS

- Anup Khatiwada
- Bhagirath Neupane
- Deepak Nepal
- Jeevan Panta

- Khem Joshi
- Prakash Timilsina
- Shyam Hari Prajapati
- Chetan Shiwakoti
- Dharma Raj Panthi

D: CHEMISRTY

- Ishwor Rijal
- Kanchan Sharma
- Rajeev Poudel
- S.K. Lal Karna
- Shishir Khanal
- Subash Kr. Verma
- Lokendra B. Bamma
- Siddha Raj Joshi

E: BIOLOGY

- Ambar Bdr. Thapa
- Deepa Maskey
- Devi Prasad Kharel
- Ganesh Rai
- Pramod Pandey
- Sagun Bajracharya
- Sailesh Rai
- Swasti Joshi

PHYSICS

UNIT 1: MECHANICS

15 TEACHING HOURS

- **Physical Quantities:** Precision and significant figures, dimensions and uses of dimensional analysis
- **Vectors:** Triangle, parallelogram and polygon laws of vectors, resolution of vectors; unit vectors, scalar and vector products
- **Kinematics:** Instantaneous velocity and acceleration, relative velocity, equation of motion motion of a freely falling body, projectile motion and its applications
- **Dynamics:** Linear momentum, impulse, conservation of linear momentum, application of Newton's laws, moment, torque and equilibrium, solid friction: laws of solid friction and their verifications
- **Work, energy and power:** Work done by a constant force and a variable force, power, work-energy theorem; kinetic and potential energy, conservation of energy, conservative and non-conservative forces, elastic and inelastic collisions
- **Circular Motion:** Angular displacement, velocity and acceleration, relation between angular and linear velocity and acceleration, centripetal acceleration, centripetal force, conical pendulum, motion in a vertical circle, applications of banking
- **Gravitation:** Newton's law of gravitation, gravitational field strength, gravitational potential; gravitational potential energy, variation in value of 'g' due to altitude and depth, centre of mass and center of gravity, motion of a satellite: orbital velocity and time period of the satellite, escape velocity, potential and kinetic energy of the satellite, geostationary satellite, GPS
- **Elasticity:** Hooke's law: Force constant, stress; strain; elasticity and plasticity, elastic modulus: Young modulus, bulk modulus, shear modulus, poisson's ratio, elastic potential energy

UNIT 2: HEAT AND THERMODYNAMICS

9 TEACHING HOURS

- **Heat and Temperature:** Molecular concept of thermal energy, heat and temperature, and cause and direction of heat flow, meaning of thermal equilibrium and Zeroth law of thermodynamics, thermal equilibrium as a working principle of mercury thermometer
- **Thermal Expansion:** Linear expansion and its measurement, cubical expansion, superficial expansion and its relationship with linear expansion, liquid expansion: Absolute and apparent, Dulong and Petit method of determining expansivity of liquid
- **Quantity of Heat:** Newton's law of cooling, measurement of specific heat capacity of solids and liquids, change of phases: Latent heat, specific latent heat of fusion and vaporization, measurement of specific latent heat of fusion and vaporization, triple point
- **Rate of heat flow:** Conduction: Thermal conductivity and measurement, convection, radiation: Ideal radiator, black- body radiation, Stefan – Boltzmann law
- **Ideal gas:** Ideal gas equation, molecular properties of matter, kinetic-molecular model of an ideal gas, derivation of pressure exerted by gas, average translational kinetic energy of gas molecule, Boltzmann constant, root mean square speed, heat capacities: Gases and solids

UNIT 3: WAVE AND OPTICS**9 TEACHING HOURS**

- **Reflection at curved mirror:** Real and virtual images, mirror formula.
- **Refraction at plane surfaces:** Laws of refraction: Refractive index, relation between refractive indices, lateral shift, total internal reflection
- **Refraction through prisms:** Minimum deviation condition, relation between angle of prism, minimum deviation and refractive index, deviation in small angle prism
- **Lenses:** Spherical lenses, angular magnification, lens maker's formula, power of a lens
- **Dispersion:** Pure spectrum and dispersive power, chromatic and spherical aberration, achromatism and its applications

UNIT 4: ELECTRICITY AND MAGNETISM**5 TEACHING HOURS**

- **Electric Charges:** Electric charges, charging by induction, Coulomb's law- Force between two-point charges, force between multiple electric charges
- **Electric field:** Electric field due to point charges; field lines, Gauss Law: electric flux, application of Gauss law: Field of a charge sphere, line charge, charged plane conductor
- **Potential, potential difference and potential energy:** Potential difference, potential due to a point, charge, potential energy, electron volt, equipotential lines and surfaces, potential gradient
- **Capacitor:** Capacitance and capacitor, parallel plate capacitor, combination of capacitors, energy of charged capacitor, effect of a dielectric polarization and displacement
- **DC Circuits:** Electric Currents; Drift velocity and its relation with current, Ohm's law; Electrical resistance; Resistivity; Conductivity, current-voltage relations; Ohmic and Non-Ohmic resistance, resistances in series and parallel, potential divider, electromotive force of a source, internal resistance, work and power in electrical circuits

UNIT 5: MODERN PHYSICS**2 TEACHING HOURS**

- **Nuclear Physics:** Nucleus: Discovery of nucleus, nuclear density; Mass number; Atomic number, atomic mass; Isotopes, Einstein's mass-energy relation, mass defect, packing fraction, BE per nucleon, creation and annihilation, nuclear fission and fusion, energy released
- **Solids:** Energy bands in solids (*qualitative ideas*), difference between metals, insulators and semi-conductors using band theory, intrinsic and extrinsic semiconductors
- **Recent Trends in physics:** *Particle physics:* Particles and antiparticles, Quarks (baryons and meson) and leptons (neutrinos), *Universe:* Big Bang and Hubble law: expansion of the universe, dark matter, black hole and gravitational wave

CHEMISTRY

UNIT 1: FOUNDATION AND FUNDAMENTALS

1 TEACHING HOUR

- General introduction of chemistry
- Importance and scope of chemistry
- Basic concepts of chemistry (atoms, molecules, relative masses of atoms and molecules, atomic mass unit, radicals, molecular formula, empirical formula).

UNIT 2: STOICHIOMETRY

4 TEACHING HOURS

- Dalton's atomic theory and its postulates
- Laws of stoichiometry
- Avogadro's law and some deductions
- Molecular mass and vapour density
- Molecular mass and volume of gas
- Mole and its relation with mass, volume and number of particles
- Calculations based on mole concept.

UNIT 3: ATOMIC STRUCTURE

3 TEACHING HOURS

- Rutherford's atomic model
- Limitations of Rutherford's atomic model
- Postulates of Bohr's atomic model and its application
- Spectrum of hydrogen atom
- Quantum numbers
- Orbitals and shape of s and p orbitals only
- Aufbau principle
- Pauli's exclusion principle
- Hund's rule and electronic configurations of atoms and ions.

UNIT 4: CLASSIFICATION OF ELEMENTS AND PERIODIC TABLE

3 TEACHING HOURS

- Modern periodic law and modern periodic table
- Classification of elements into different groups, periods and blocks
- IUPAC classification of elements
- Nuclear charge and effective nuclear charge
- Periodic trend and periodicity: Atomic radii, ionic radii, ionization energy, electron affinity, electronegativity, metallic characters

UNIT 5: CHEMICAL BONDING AND SHAPES OF MOLECULES

3 TEACHING HOURS

- Valences, valence electron and octet theory
- Ionic bond and its properties
- Covalent bond and coordinate covalent bond

UNIT 6: OXIDATION AND REDUCTION

3 TEACHING HOURS

- General and electronic concept of oxidation and reduction
- Oxidation number and rules for assigning oxidation number
- Balancing redox reactions by oxidation number and ion-electron method
- Electrolysis: Qualitative aspect, quantitative aspect.

UNIT 7: STATES OF MATTER

4 TEACHING HOURS

- **Gaseous state:** Kinetic theory of gas and its postulates, gas laws; Boyle's law and Charles' law, Avogadro's law, combined gas equation, Dalton's law of partial pressure, Graham's law of diffusion, ideal gas and ideal gas equation, universal gas constant and its significance, deviation of real gas from ideality
- **Liquid state:** Physical properties of liquids; Evaporation and condensation, vapour pressure and boiling point, surface tension and viscosity,
- **Solid state:** Types of solids, amorphous and crystalline solids, efflorescent, deliquescent and hygroscopic solids, crystallization and crystal growth, water of crystallization, introduction to unit crystal lattice and unit cell

UNIT 8: CHEMISTRY OF NON-METALS

5 TEACHING HOURS

- **Hydrogen:** Chemistry of atomic and nascent hydrogen, isotopes of hydrogen and their uses, application of hydrogen as fuel, heavy water and its applications
- **Allotropes of Oxygen:** Definition of allotropy and examples, oxygen: Types of oxides (acidic, basic, neutral, amphoteric, peroxide and mixed oxides
- **Ozone:** Occurrence, preparation of ozone from oxygen, structure of ozone, test for ozone, ozone layer depletion, uses of ozone
- **Nitrogen:** Reason for inertness of nitrogen and active nitrogen, chemical properties of ammonia [Action with CuSO_4 solution, water, FeCl_3 solution, Mercurous nitrate paper], applications of ammonia, harmful effects of ammonia, oxy-acids of nitrogen, chemical properties of nitric acid, ring test for nitrate ion
- **Carbon:** Allotropes of carbon (crystalline and amorphous) including fullerenes,
- **Phosphorus:** Allotropes of phosphorus, preparation, properties

UNIT 9: CHEMISTRY OF METALS

4 TEACHING HOURS

- **Metals and Metallurgical Principles:** Definition of metallurgy and its types, introduction of ores, gangue or matrix, flux and slag, alloy and amalgam, general principles of extraction of metals (different processes involved in metallurgy)
- **Alkali Metals:** General characteristics of alkali metals, sodium [extraction from Down's process, properties (action with Oxygen, water, acids non-metals and ammonia) and uses], properties (precipitation reaction and action with carbon mono oxide) and uses of sodium hydroxide, properties (action with CO_2 , SO_2 , water, precipitation reactions) and uses of sodium carbonate
- **Alkaline Earth Metals:** General characteristics of alkaline earth metals, molecular formula and uses of (quick lime, bleaching powder, magnesia, plaster of paris and epsom salt), solubility of hydroxides, carbonates and sulphates of alkaline earth metals stability of carbonate and nitrate of alkaline earth metals

UNIT 10: BASIC CONCEPT OF ORGANIC CHEMISTRY

2 TEACHING HOURS

- Introduction to organic chemistry and organic compounds
- Reasons for the separate study of organic compounds from inorganic compounds
- Tetra-covalency and catenation properties of carbon
- Classification of organic compounds
- Alkyl groups, functional groups and homologous series
- Idea of structural formula, contracted formula and bond line structural formula

UNIT 11: FUNDAMENTAL PRINCIPLES OF ORGANIC CHEMISTRY

4 TEACHING HOURS

- IUPAC Nomenclature of organic compounds
- Qualitative analysis of organic compounds (detection of N, S and halogens by Lassaigne's test)
- Definition and classification of isomerism
- Structural isomerism and its types: chain isomerism, position isomerism, functional isomerism, metamerism and tautomerism

UNIT 12: HYDROCARBONS

3 TEACHING HOURS

- **Saturated Hydrocarbons (Alkanes):** Alkanes: Preparation from haloalkanes (Reduction and Wurtz reaction), decarboxylation, catalytic hydrogenation of alkene and alkyne, chemical properties: Substitution reactions (halogenation, nitration & sulphonation only), oxidation of ethane
- **Unsaturated hydrocarbons (Alkenes & Alkynes):**
Alkenes: Preparation by Dehydration of alcohol, dehydrohalogenation, catalytic hydrogenation of alkyne, chemical properties: Addition reaction with HX (Markovnikov's addition and peroxide effect).
Alkynes: Preparation from carbon and hydrogen, 1,2 dibromoethane, chloroform/iodoform only: Chemical properties: Addition reaction with (H_2 , HX, H_2O),
- Test of unsaturation (ethene & ethyne): Bromine water test and Baeyer's test
- Comparative studies of physical properties of alkane, alkene and alkyne
- Kolbe's electrolysis methods for the preparation of alkane, alkene and alkynes

UNIT 13: AROMATIC HYDROCARBONS

1 TEACHING HOUR

- Introduction and characteristics of aromatic compounds
- Huckel's rule of aromaticity
- Kekule structure of benzene
- Resonance and isomerism
- Preparation of benzene from decarboxylation of sodium benzoate, phenol, and ethyne only

BIOLOGY

ZOOLOGY

UNIT 1: INTRODUCTION TO BIOLOGY

1 TEACHING HOUR

- **Introduction to Biology:** Scope and fields of biology, relation with other science

UNIT 2: EVOLUTIONARY BIOLOGY

6 TEACHING HOURS

- **Life and its Origin:** Oparin-Haldane theory, Miller and Urey's experiment
- **Evidences of evolution:** Morphological, Anatomical, Paleontological, Embryological and Biochemical
- **Theories of evolution:** Lamarckism, Darwinism & concept of Neo Darwinism.

UNIT 3: FAUNAL DIVERSITY

10 TEACHING HOURS

- **Protista:** Outline classification, Protozoa: diagnostic features and classification up to class with examples; *Paramecium caudatum*, *Plasmodium vivax* - habits and habitat, structure, reproduction, life-cycle and economic importance of *P. falciparum*
- **Animalia:** Level of organization, body plan, body symmetry, body cavity and segmentation in animals, diagnostic features and classification of the following phyla (up to class) with examples: Porifera, Coelenterata (Cnidaria), Platyhelminthes, Aschelminthes (Nemathelminthes), Annelida, Arthropoda, Mollusca, Echinodermata and Chordata
- **Earthworm** (*Pheretima posthuma*): Habit and habitat, External features; Digestive system (alimentary canal & physiology of digestion), excretory system (types of nephridia, structure and arrangement of septal nephridia), nervous system (central & peripheral nervous system, working mechanism) & reproductive systems (male & female reproductive organs), copulation, cocoon formation and economic importance
- **Frog** (*Rana tigrina*): Habit and habitat, external features, digestive system (alimentary canal, digestive glands & physiology of digestion), blood vascular system (structure & working mechanism of heart), respiratory system (respiratory organs & physiology of respiration) and reproductive system (male & female reproductive organs).

UNIT 4: BIOTA AND ENVIRONMENT

2 TEACHING HOUR

- **Animal adaptation and behavior:** Reflex action, taxes, dominance and leadership
- **Environmental Pollution:** Air, water land pollution
- **Conservation Biology:** Biodiversity, wildlife, hotspots, conservation areas of Nepal

BOTANY

UNIT 5: BIOMOLECULES AND CELL BIOLOGY 10 TEACHING HOURS

- **Biomolecules:** Introduction and functions of: Carbohydrates, proteins, lipids, nucleic acids, minerals, enzymes and water
- **Cell:** Introduction of cell, concepts of prokaryotic and eukaryotic cells, detail structure of eukaryotic cells (composition, structure and functions of cell wall, cell membrane, plastids, mitochondria, golgi complex, endoplasmic reticulum, ribosome, lysosomes, nucleus, chromosomes, cilia, flagella and cell inclusions)
- **Cell division:** Concept of cell cycle, types of cell division (amitosis, mitosis and meiosis) and significances

UNIT 6: FLORAL DIVERSITY 6 TEACHING HOURS

- **Introduction:** Three domains of life, binomial nomenclature, five kingdom classification system (Monera, Protista, Fungi, Plantae and Animalia)
- **Fungi:** General introduction and characteristic features of phycomycetes, ascomycetes, basidiomycetes and deuteromycetes;
- **Algae:** General introduction and characteristic feature of green, brown and red algae; structure and reproduction of *Spirogyra*, economic importance of algae
- **Bryophyta:** General introduction and characteristic features of liverworts, hornworts and moss
- **Pteridophyta:** General introduction and characteristic features of pteridophytes
- **Gymnosperm:** General introduction and characteristic features of Gymnosperms

UNIT 7: INTRODUCTORY MICROBIOLOGY 2 TEACHING HOURS

- **Kingdom Monera:** General introduction, structure of bacterial cell, mode of nutrition, bacterial growth; cyanobacteria (blue green algae)
- **Virus:** General introduction, structure and importance of virus, bacteriophage

UNIT 8: ECOLOGY 4 TEACHING HOURS

- **Ecosystem ecology:** Concept of ecology, biotic and abiotic factors, species interactions; concept of ecosystem, structural and functional aspects of pond and forest ecosystem, food chain, food web, trophic level, ecological pyramids, productivity, biogeochemical cycle - carbon and nitrogen cycles, concept of succession
- **Ecological Imbalances:** Green house effects and climate change, depletion of ozone layer, acid rain and biological invasion

MATHEMATICS

MATH BASICS

6 TEACHING HOURS

Percentage, Annuity and Rate, Mensuration, Trigonometric Ratios and Identities, Algebra Basics, Fundamental Geometry.

MATH ADVANCED

UNIT 1: ALGEBRA

15 TEACHING HOURS

- **Set Theory:** Methods of describing a Set, Types of Sets, Relation between Sets, Operation on Sets, Euler-Venn Diagrams.
- **Real Numbers:** Geometric representation, intervals, absolute value of Real numbers.
- **Relation and Function:** Ordered pair, Cartesian product, Relations and Inverse relations, Domain and Range of relations.
- Types of function, Inverse function, Composite function, Domain and Range of function, Even and Odd function, Periodic function, Nature of Algebraic function (Linear, Quadratic and Cubic) and Transcendental function (Trigonometric, Exponential and Logarithmic).
- **Polynomial and Quadratic Equation:** Polynomials and Polynomial equation, Factor and Remainder theorem, Nature of roots of Quadratic equation, Relation between roots and Quadratic equation, formation of Quadratic equation, common roots.
- **Sequence and Series:** Arithmetic, Geometric and Harmonic sequences and series and their properties, Relation between A.M., G.M. and H.M., sum of infinite Geometric series.
- **Matrices and Determinants:** Types of Matrices, Operation on Matrices and their properties, Transpose of a Matrix and its properties, Minors and Cofactors, Adjoint and Inverse Matrices, Determinants of order 2 and order 3 Matrices, properties of Determinants.
- **Complex Numbers:** Imaginary unit, Conjugate and Absolute value of Complex number and their properties, Additive and Multiplicative inverse of Complex numbers, square roots of Complex number, cube roots of unity.

UNIT 2: TRIGONOMETRY

6 TEACHING HOURS

- **Trigonometric Equations:** Equations and Identities, General value solutions of trigonometric equations.
- **Inverse Circular Functions:** Domain and Range of inverse trigonometric functions, Properties of inverse trigonometric functions (Self inverse, Reciprocal, Conversion).
- **Properties of Triangle:** Sine law, Cosine Law, Projection Law, Area of triangle, solution of triangle.

UNIT 3: ANALYTICAL GEOMETRY

6 TEACHING HOURS

- **Straight Lines:** Rectangular Co-ordinate (Cartesian) System, The Distance and Slope of a Line between two Points , Internal division, External division, Section formula, Mid-point formula, Standard equation of straight lines, Collinear points, Concurrent lines, Angle between two Lines, two sides of a Line, length of the perpendicular from a point on a Line, Bisector of the angles between two Lines.
- **Pair of Lines:** Homogeneous equation and general equation of degree two in x and y, condition of a second degree general equation representing the pair of lines, angle between pair of lines.
- **Circle and Conic section:** Equation of circle, tangent and normal to Circle, introduction of Conic section (Parabola, Ellipse and Hyperbola).

UNIT 4: VECTORS

3 TEACHING HOURS

- **Vectors and Scalars:** Law of vector addition, Position vectors, Unit vectors, Modulus of vectors, Direction of vectors, Collinear and Coplanar vectors.
- **Product of Vectors:** Scalar and Vector product between two vectors and their geometrical interpretation.

UNIT 5: STATISTICS AND PROBABILITY

4 TEACHING HOURS

- **Statistics:** Measure of central tendency, Partition of data, Measure of dispersion, Combined Mean and Standard deviation
- **Probability:** Mathematical and Empirical definition of Probability, Probability of Independent and Mutually exclusive cases, Basic Laws on Probability

UNIT 6: CALCULUS

10 TEACHING HOURS

- **Limits:** Limits of indeterminate forms, algebraic properties of limits, Fundamental results on Algebraic, Trigonometric, Exponential and Logarithmic Limits.
- **The Derivative:** Derivative and its geometrical meaning, Derivative using definition and rules (Sum rule, Product rule, Quotient rule, Power rule and Chain rule), derivative of Parametric and Implicit functions.
- **Integration:** Fundamental rules on integration, Integration using basic Integrals, Integration using substitution and by parts methods.

ENGLISH

SECTION I: Reading Comprehension

3 Teaching Hours

- Definition
- Reading Strategies
- Practice

Section II: Sentence Completion

3 Teaching Hours

- Vocabulary
- Use of specific words
- Sentence Completion Practice

SECTION III: Structure-Based Questions

3 Teaching Hours

- Examples
- Practice

SECTION IV: Analogy and Logical Reasoning

3 Teaching Hours

- Definitions and examples
- Practice

SECTION V: Grammatical Structures and Expressions

7 Teaching Hours

- Adverbs and Adjectives
- Modal Auxiliaries
- Countable and Uncountable nouns
- Verbs
- Tense
- Speech - Direct and Indirect
- Voice - Active and Passive
- Questions:
 - Indirect Questions
 - Information Question
 - Tag Questions
- Subject - Verbs Agreement
- Conditional Sentences
- Conjunctions
- Preposition and prepositional phrases
- Articles – A, An, The
- Use of Some, Many, Any, Enough, A lot etc.
- Suggestions, Offers and Invitations
- Transformation of sentences

SECTION VI: Photonics and Phonology

3 Teaching Hours

- Definitions and distinctions
- Speech organs
- Classification of consonant and vowel sounds
- Syllable
- practice

SECTION VII: Composition

3 Teaching Hours

- Paragraph writing
- Story writing
- Precis writing
- Essay writing
- Writing Biography/Autobiography

Section VIII: Technical Writing

3 Teaching Hours

- Letter writing:
 - Personal Letter
 - Business Letter
 - Letter to the Editor
 - Invitation Letter
- E-mail writing

ENTRANCE PREPARATION

ST. XAVIER'S, SOS, BUDHANILKANTHA AND OTHERS

- **English**
- **Mathematics**
- **Science (Physics, Chemistry and Biology)**
- **General Knowledge**

Advanced Science Course
SAMPLE QUESTION

Instructions

1. Read the questions carefully. Do the calculations on the scrap paper provided. Then indicate the correct answer on the answer sheet as shown in the example.
2. Sample question.
Find the sum of 6 and 4, if you divide this answer by two, what is the correct answer?
a) 3 b) 4 c) 5 d) 10

The answer is '5'; so on your sheet use a cross mark for the correct answer shown in the example:

A
☐

B
☐

C
☒

D
☐

3. There should not be any rough marks in the answer sheet.
4. Do not use calculator.
5. Please keep complete silence in the examination hall.

27. The simple interest on a certain sum of money at 5% p.a in 2 years is Rs.112. What would be the compound interest on the same sum at the same rate at the same time?
a) Approx. Rs.108 b) Approx. Rs.109
c) Approx. Rs.114 d) Approx. Rs.120
28. The distance between lines $3x + 4y = 9$ and $6x + 8y = 15$ is:
a) $5/7$ b) $2/3$
c) $7/10$ d) $3/10$
29. The maximum and minimum value of $\sin x + \cos x$ is:
a) 2, -2 b) 1, -1
c) $\sqrt{2}$, $-\sqrt{2}$ d) $1/2$, $-1/2$
30. If $\tan A + \sin A = p$ and $\tan A - \sin A = q$, then $p^2 - q^2 = \text{-----}$.
a) \sqrt{pq} b) $2\sqrt{pq}$
c) $3\sqrt{pq}$ d) $4\sqrt{pq}$
31. The string of a kite is inclined to the horizontal at an angle of 60° . Find the height of kite if the length of string is 150m.
a) $150\sqrt{3}$ m b) $60\sqrt{3}$ m
c) $75\sqrt{3}$ m d) 75m
32. If $A = \begin{pmatrix} 2 & -1 \\ -1 & 2 \end{pmatrix}$ and I is a unit matrix of order 2, then A^2 is =
...
a) $A + I$ b) $A - I$
c) $3A - 4I$ d) $4A - 3I$
33. If $a:b = 5 : 3$, then $(3a + 4b) : (5a + 2b)$ equals:
a) 27 : 31 b) 25 : 29
c) 29 : 25 d) 31 : 27
34. When 'z' is divided by 8 the remainder is 5. What is remainder when $4z$ is divided by 8?
a) 1 b) 3
c) 4 d) 5

