

NORTH-EX PUBLIC SCHOOL, JAIN NAGAR
SUMMER HOLIDAYS HOMEWORK, 2019-20
CLASS-XII-A

ENGLISH

(NOTE MAKING AND SUMMARY)..... (Do in the Fair register of English)

- Q1. Choose any 3 comprehension passages from a practice book and do note making and summary. (Follow and stick to the format and the rules taught in the class.)
- Q2. Read the newspaper daily and cut samples of the following in the fair register of English underlining it with the holiday homework:
 - a. 3 Reports
 - b. 3 Articles
 - c. 3 Posters
 - d. 5 Classified advertisements.
- Q.3. Write a letter to the Editor of a national daily highlighting the neglect of our national monuments and how these are being damaged in the present day world
- Q.4. Write an article on the topic- 'How Google controls the life of an average person?' 150-200 words.
- Q5. Learn and revise all the syllabus of PERIODIC TEST-I.

MATHS

1. SHOW THAT THE FUNCTION $f: \mathbb{R} \rightarrow \mathbb{R}$ GIVEN BY $f(x) = x^3$ IS INJECTIVE
2. GIVE EXAMPLES OF TWO FUNCTIONS $f: \mathbb{N} \rightarrow \mathbb{N}$ AND $g: \mathbb{Z} \rightarrow \mathbb{Z}$ SUCH THAT $g \circ f$ IS INJECTIVE BUT g IS NOT INJECTIVE.
GIVEN A SET $A = \{1, 2, 3, 4\}$, CREATE :
 3. A REFLEXIVE BUT NOT SYMMETRIC RELATION
 4. A REFLEXIVE AND SYMMETRIC BUT NOT TRANSITIVE RELATION
 5. AN EQUIVALENCE RELATION
 6. DEFINE SIGNUM FUNCTION AND CHECK WHETHER IT IS AN EQUIVALENCE RELATION OR NOT.
CONSTRUCT A 3×3 WHICH IS :
 7. A SYMMETRIC MATRIX
 8. A SKEW SYMMETRIC MATRIX
 9. REPRESENT IT AS THE SUM OF A SYMMETRIC AND A SKEW SYMMETRIC MATRIX.
 10. DERIVE THE MINORS AND CO FACTORS OF A 3×3 MATRIX AND HENCE DEDUCE THE FORMULA FOR THE ADJOINT. (YOU MAY CHOOSE ANY MATRIX OF ORDER 3×3 .)

PHYSICS

1. Derive an expression for the strength of electric field intensity at a point on the axis of a uniformly charged circular coil of radius R carrying charge Q .
2. Derive an expression for potential at any point distant r from the centre O of dipole making an angle θ with the dipole
3. A point charge is placed at the centre of a spherical Gaussian surface. How will electric flux change if
 - (a) The sphere is replaced by a cube of same or different volume.
 - (b) A second charge is placed near, and outside the original sphere.
 - (c) A second charge is placed inside the sphere
 - (d) The original charge is replaced by an electric dipole
 - (e) The magnitude of charge is doubled
4.
 - (a) Define electric flux. Write its SI unit.

- (b) A uniform electric field $\mathbf{E} = E_x \mathbf{i}$ N/C for $x > 0$ and $\mathbf{E} = -E_x \mathbf{i}$ N/C for $x < 0$ are given. A right circular cylinder of length 'l' cm and radius 'r' cm has its centre at the origin and its axis along the x-axis. Find out the net outward flux. Using Gauss's law write the expression for the net charge within the cylinder.
5. An electric dipole of length 2 cm is placed with its axis making an angle of 60° to a uniform electric field of 10^5 N/C. If it experiences a torque of $8\sqrt{3}$ Nm. Calculate
- Magnitude of the charge on the dipole, and
 - Potential energy of the dipole.
6. Prepare an investigatory project on the given topics :
- To study various factors on which the internal resistance/EMF of a cell depends.
 - To study the variations in current flowing in a circuit containing an LDR because of a variation in
 - the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance).
 - the distance of a incandescent lamp (of fixed power) used to 'illuminate' the LDR.
 - To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equi convex lens (made from a glass of known refractive index) and an adjustable object needle.
 - To design an appropriate logic gate combination for a given truth table.
 - To investigate the relation between the ratio of (i) output and input voltage and (ii) number of turns in the secondary coil and primary coil of a self-designed transformer.
 - To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids.
 - To estimate the charge induced on each one of the two identical styrofoam (or pith) balls suspended in a vertical plane by making use of Coulomb's law.
 - To study the factor on which the self-inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/(bulb) in a circuit fed up by an A.C. source of adjustable frequency.
 - To study the earth's magnetic field using a tangent galvanometer

CHEMISTRY

- Solve CBSE Question Papers 2008-2019 (Delhi Set -1 only) in Separate Sheets along with Questions.(Chapter-2 to Chapter -5)
- Complete your Chemistry note book.(Chapter-2 to Chapter-5)
- Complete the synopsis on Working Project.
- Write all Reactions Five Times for Organic Chemistry(Chapter-10 to chapter -13) and p- Block reaction (Group 16 to Group18)in separate sheets.
- Write complete chapters of Biomolecules, Polymers and Chemistry in Every Day Life in a file.

BIOLOGY

- With a neat, labeled diagram, describe the parts of a mature angiosperm embryo sac. Mention the role of synergids.
- What are the possible types of pollinations in chasmogamous flowers? Give reasons.
- What role does pituitary gonadotropins play during follicular and ovulatory phases of menstrual cycle? Explain the shifts in steroidal secretions.
- The zygote passes through several development stages till implantation, Describe each stage briefly with suitable diagrams.
- Briefly explain IVF and ET. What are the conditions in which these methods are advised?

6. Prepare an investigatory project on the topic of your interest.

COMPUTER SCIENCE

1. Solve Q1, 2 and 6 of last 5 years class XII board examinations Computer Science.
2. Prepare a practical file of C++. Do the programs covered in the class in it.
3. Revise Chapter – 1, 4, 5, 6 and 13 for the upcoming periodic test.

PHYSICAL EDUATION

1. Draw Fixture of 22 teams participating in the Knockout Tournament.
2. Explain Pre, During and Post responsibilities of various committees.
3. Draw a fixture of 14 teams participating in league tournament.
4. Describe Fluid intake of an athlete for pre, during and after competition.
5. Elaborate the requirements of food intake for pre, during and after competition.