Brain International School

Vikas Puri, New Delhi

Honoured with BRITISH COUNCIL International School Award 2013-2016

Class XII-A

Session 2017-18

Summer is the time to have a respite from heat

Let's do something creative for intellectual treat

So, balance your study and rest hours,

Help your mom - dad and add more power.

With your values and discipline explore new heights,

Let you and us be glad that *you are a BRAINITE*.

Wish you all happy and healthy holidays!

GENERAL INSTRUCTIONS

Holidays Homework is an interesting way of utilizing time and energy and it maintains the learners' academic connect. It must be submitted to the respective teachers before the deadline given by them.

All files, scrap books, projects etc. should be well labelled with the clear mention of **Name, Class and Section** of the student.

The parents are suggested to help their children to take up any one drive out of the following and help their children (uptil class V) to maintain a journal of the work done (minimum 2 pages), preferably with pictures. Also, make your child write why he/ she chose a particular drive.

1. Education Drive: Donate book(s) and/ or stationery to underprivileged children and give them basic education/ help them understand the key concepts like reading time from a wall clock. Make this memory last long by clicking your pic with the child and adding to your journal.

2. Help Drive: Help any family member in his or her work and maintain a journal of the work done like helping mother in the kitchen, father to wash the car, grandfather to water the plants or grandmother to organize her things etc. Capturing one or two moments for your journal would be exciting.

3. Paint Drive: Make a painting using things other than paint brush like lady finger (cut from top), onions, thumb prints, cotton swabs, match sticks etc. (You may get it framed). You can take help of one of the family members to click you, while you are at work.

4. Best out of waste Drive: Make two things that could be an artifact or utility oriented object, with waste material for instance newspaper holder with foil roll, wall hanging using egg shells or pencil shavings, pen holders using empty cans or tetra packs etc. You can take help of any of the family members to click you, while you are at work.

5. Cleanliness Drive: Along with your neighbourhood friends or school mates (living in the same locality), conduct awareness programme on cleanliness in your society. You can capture the major shots and paste them in your journal.

6. Adopt a plant Drive: Adopt a plant and take proper care of it like watering it daily, providing manure etc. and also run a small campaign encouraging your friends and neighbours to go green and adopt at least one plant. You can click the respective shots and paste them in your journal.

ENGLISH

I. Read the novel, "The Invisible Man" by H. G. Wells and write the

a) summary of the novel.

b) character sketch of all major and minor characters

MATHEMATICS

Do the questions (Chapter wise) of 1st book except Relations and functions from the given set of papers of 2015 (11 papers) and 2016 (6 papers) and 1 sample paper of CBSE(2016-17).

PHYSICS

1. Explain Coulomb's law in vector form.

2. Derive an expression for electric field at a point due to electric dipole in axial and equatorial position.

3. Derive an expression of torque acting on electric dipole placed in uniform electric field.

4. Derive an expression for electric potential at a point due to electric dipole in axial and equatorial position.

5. Write the properties of equipotential surfaces. Draw the equipotential surfaces for point charges and uniform electric field.

6. What is Gauss theorem? Derive an expression for electric field due to (a) infinite long charged conductor (b) infinite charged long thin sheet (c) charged spherical shell.

7. Explain the principle of capacitance.

8. Derive an expression for capacitance when a dielectric slab is inserted between the plates of capacitor.

9. Draw electric lines of force due to an electric dipole.

10. What is an ideal dipole?

11. What is the nature of symmetry of the dipole field?

12. A hollow metal sphere placed on an insulating stand is charged positively. Why the electric potential inside the sphere is same as that on the surface.

13. Why does the capacitance increase when a dielectric slab is introduced between the plates of a capacitor?

12. Two parallel plate capacitors of 20 μF and 30 μF are charged to 30 V and 20 V respectively. If the plates of these capacitors with same type of charges are connected together, find

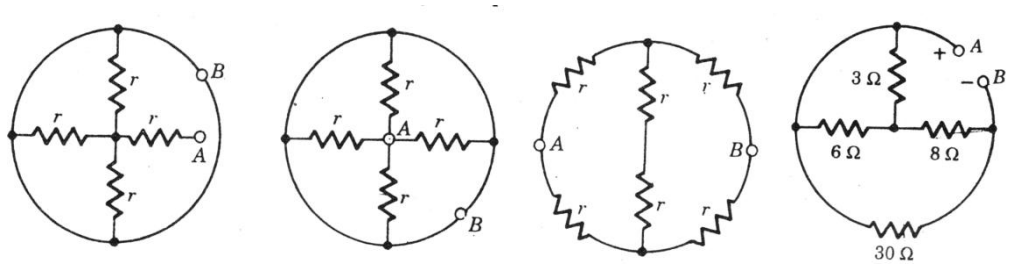
(i) the common potential of the capacitors

(ii) charges on capacitor at common potential

(iii) loss of energy in the process

14. How a potentiometer is used to measure internal resistance of a primary cell with the help of a necessary circuit?

15. Find the equivalent resistance between A and B



16. Deduce ohm's law. Hence establish a relation between current density and conductivity.

17. Derive an expression for magnetic field at a point on the axis of a current carrying circular coil.

18. Derive an expression of force between two current carrying parallel conductors. Hence define one ampere.

19. What is a dead beat galvanometer?

20. Why is the coil wrapped on a conducting frame in a galvanometer?

21. Why should an ammeter have a low resistance?

22. Why should the resistance of an ideal voltmeter be infinite?

23. Two identical short bar magnets each of magnetic moment 12.5 Am^2 are placed at a separation of 10 cm between their centres, such that their axes are perpendicular to each other. Find the magnetic field at a point midway between the two magnets.

24. Two parallel wires separated by a distance of 10 cm carry currents of 10 A and 40 A along the same direction. Where a third current should be placed so that it experienced no magnetic force.

25. A long, straight wire is fixed horizontally and carries a current of 50.0 A. A second wire having linear mass destiny 1.0 x 10^{-4} kg/m is placed parallel to and directly above this wire at a separation of 5.0 mm. what current should this second wire carry such that the magnetic repulsion can balance its weight.

26. A proton and an alpha particle with their masses in the ratio of 1:4 and charges in the ratio of 1:2 move perpendicular to a magnetic field. Find the ratio of the radii of the circular paths followed by them when both (i) have equal velocities (ii) have equal kinetic energies
(iii) have equal momentum and (iv) were accelerated through the same p.d

CHEMISTRY

1. Arrange the following in the increasing order of properly indicated :

(i) bromomethane, chloromethane, dichloromethane. (Increasing orderof boiling points).

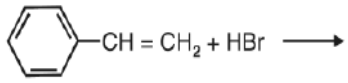
(ii) 1-chloropropane, isopropyl chloride, 1-chlorobutane (Increasing orderof boiling point)

(iii) dichloromethane, chloroform, carbon terachloride. (Increasing orderof dipole moment.

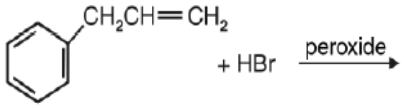
(iv) CH_3F, CH_3Cl, CH_3Br, CH_3l (Increasing reactivity towards nucleophilicsubstitution and increasing order of dipole moment)

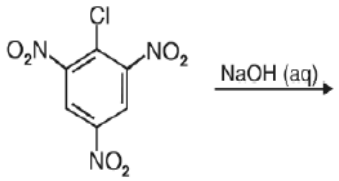
(v) *o*,*m*.p-dichlorobenzenes (Increasing order of melting points).

2. Complete the following reactions

(i) 

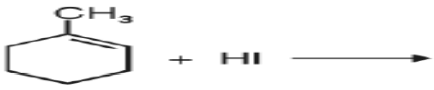
(ii) $CH_3 - CH_2 - Cl + Ag\ NO_2 \longrightarrow$

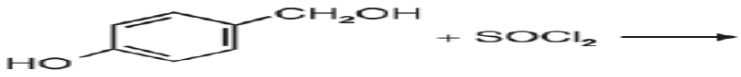
(iii) 

(iv) 

3. Find the product of following reactions:

(v) 

(vi) 

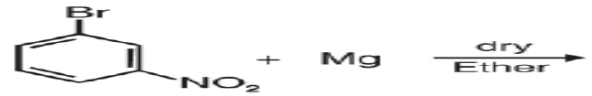
(vii) 

(viii) $CH_3CH_2Br + NaI \xrightarrow{\text{acetone}}$

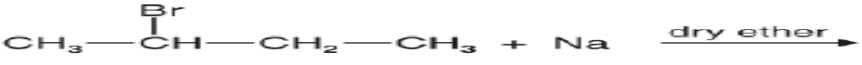
(ix) 

(x) $(CH_3)_3\ CBr + KOH \xrightarrow[\text{heat}]{\text{ethanol}}$

(xi) $CH_3CH_2Br + KCN \xrightarrow{aq.\ EtOH}$

(xii) 

(xiii) $C_6H_5ONa + C_2H_5Cl \longrightarrow$

(xiv) 

(xv) 

(xvi) $C_6H_5N_2^+Cl^- + KI \longrightarrow$

4. What happens when :

(i) aluminium reacts with tert-butyl alcohol

(ii) phenol is oxidised with chromic acid

(iii) cumene is oxidised in the presence of air and the product formedis treated with dilute acid.

(iv) phenol is treated with conc. HNO_3.

(iv) phenol is treated with chloroform in presence of dilute NaOH.

5. How will you convert

(i) propene to propan-l-ol.

(ii) anisole to phenol

(iii) butan-2-one to butan-2-ol

(iv) ethanal to ethanol

(v) phenol to ethoxybenzene

(vi) 1-phenylethene to 1-phenylethanol

(vii) formaldehyde to cyclohexylmethanol

(viii) butyl bromide to pentan-1-ol.

(ix) toluene to benzyl alcohol

(x) 1-propoxypropane to propyl iodide

(xi) ethyl bromide to 1-ethoxyethane

(xii) methyl bromide to 2-methoxy-2-methylpropane

(xiii) ethyl bromide to ethoxybenzene

(xiv) ethanol to benzyl ethyl ether.

6. Giving an example of each, describe the following reactions :

(i) Hoffman bromamide reaction

(ii) Gabriel phthanlimide synthesis

(iii) Gatterman reaction

(iv) Coupling reaction

(vi) Carbylamine reaction

(vii) Acetylation of aniline

7. Describe the Hinsberg's test for identification of primary, secondary and tertiary amines. Also write the chemical equations of the reactions involved.

8. Name the building blocks of proteins.

9. Give the structure of simplest optically active amino acid

10. Name the amino acid which is not optically active.

11. Write the Zwitter ionic form of aminoacetic acid.

BIOLOGY

1. Offsprings formed by asexual reproduction are said to be clones. Why?

2. The seeds in a pea pod are arranged in a row,whereas those in tomato are scattered in the juicy pulp. Why?

3. Draw the sketches of zoospore and a conidium.

4. Rose plants produce large attractive bisexual flowers but they seldom produce fruits.

Analyse the reason for failure of fruit formation in rose.

5. Why is banana considered to be a good example of parthenocarpy?

6. Mention the unique flowering phenomenon exhibited by *Strobilanthus kunthiana*

7. What are gemmules? Give their function.

8. What is apomixes? Give example.

9. In case of polyembryony if an embryo develops from the synergid and another from the nucellus,which is haploid and which is diploid?

10. Draw the diagram of a mature embryosac and show its 8- nucleated 7 celled stage.

11. Why does the zygote begin to divide only after the division of primary endosperm cell?

12. Is pollination and fertilisation necessary in apomixis? Give reasons.

13. Why are cucurbits referred to as monoecious?

14. Sunflower is pollinated by insects while rice is pollinated by wind. How these plants are adapted for pollination?

15. Draw a labelled diagram of an anatropous ovule.

16. Explain microsporogenesis in flowering plants.

17. Fertilisation performs two functions. What are these?

18. List four functions of placenta.

19. Write the difference between spermiation and spermiogenesis.

20 Write the hormonal control of spermatogenesis in human males.

21. Draw and label the sectional view of human seminiferous tubule.

22. Draw a neat and labelled diagram of human sperm.

23. Name any two copper releasing IUDs. How do they act as effective contraceptive?

24. Describe any three methods that you can suggest for an infertile couple to have children.

25. What are veneral diseases?

26. Differentiate tubectomy and vasectomy.

27. What are the suggested reasons of population explosion?

28. What is MTP?

29. Enlist the probable causes of infertility.

30. How can lactational amenorrhoea considered as a contraceptive method?

31. Mention any two autosomal genetic disorders with their symptoms.

32. Define multiple allelism.

33. With a help of a Punnett square find the percentage of heterozygous individuals in a F_2 population of a cross involving a true breeding plant with green pea pods with yellow peapods.

34. In a typical monohybrid cross the F_2 population ratio is written as 3:1 for phenotype but expressed as 1:2:1 for genotype.. Explain with the help of an example.

35. A woman with blood group O married a man with a blood group AB. Show the possible blood groups of the progeny. List the alleles involved in this inheritance.

36. What is point mutation? Give one example.

37. How does incomplete dominance differ from co dominance?

38. Explain polygenic inheritance in relation to skin colour in man.

39. Why is that father never passes the gene for haemophilia to his sons. Explain.

40. Write the type of sex determination in the following cases. –females XX with male XO.

COMPUTER SCIENCE

Complete the C++ programs of Classes and Objects, Polymorphism, Inheritance and take out the printouts in a document format for the practical file.

ECONOMICS

Revise all the chapters thoroughly for PT1

PHYSICAL EDUCATION

Write the following related to Athletics in your Practical File:-

1. History of the game.
2. Latest general rules.
3. Specifications of play fields.
4. Important tournaments.
5. Sports personalities
6. Fundamental skills.
7. Related sports terminology
8. Sports award winning personalities.
   (Arjun award, Dronacharya Award, Rajiv Gandhi Khel Ratan Award)
9. Draw an Athletic Track.

NOTE: Revise PT-1 Syllabus of all the subjects.