ST. ANGEL'S SCHOOL

AUTUMN HOLIDAYS

HOMEWORK(2017-18)

CLASS XII

(SCIENCE)

ENGLISH

Poem5 Aunt Jennifer's Tigers By Adrienne Rich

Q1 What kind of image do we form of Aunt Jennifer's Tigers?

Q2 Each stanza convey a different idea.What is the idea behind each stanza?

Q3 What does Aunt Jennifer's death signify?

LESSON 5 INDIGO

Louis Fischer

SHORT QUES

Q1 How do we know that ordinary people too contributed to the freedom movement?

Q2 What was the typical Gandhi pattern? What did he want of India ?

Q3 Mention some issues Gandhi undertook in Champaran?

Q4 When was the first time civil disobedience had triumphed in modern India?

Q5 What were the two things Gandhi did on arriving at Champaran?

LONG ANSWER

Q1Now the peasants saw that they had rights and defenders .They learned courage:Elucidate.

Lesson 6 Going places

Short Ques

Q1 Jansie became melancholic.Whatdo you think was the reason behind it?

Q2 The evening blacked in the windows or Sophie's mood too,if so, what was the reason behind it?

Q3 'Damn that Geoff,this was a Geoff thing not a Jansie thing'.Express briefly what did Sophie mean by this expression?

Q4 'Iwill have to live with burden'. What was Sophie's burden?

Q5 How is the title 'Going Places'?

Long Ques

Q1 Jansie is a pragmatic whereas Sophieis a dreamer.Draw a contrast between these two adolescents.

Q2 Geoff as well as Danny Casey are examples of Sophie's horo worship. Elaborate citing examples from the story.

Lesson7 Evans Tries an O' Level by Colin Dexter

Short Ques

Q1 Evans is a genius in his own right way. Discuss.

Q2 A call was made during the examination regarding a correction in the question paper.Who made the call andWhy?

Q3 What did Stephen observe after visiting Evans cell after McLeery had left?

Long Ques

Q1 The Governor of H.M, Oxford,made a slightly unusual request to the Secretary of the Examination Board.What was the request? Why was it unusual?

Q2What loopholes in the Governor's arrangement helped Evans escape from prison?

Notice – Writing

Q1. The International Book Fair is being held at Pragati Maidan between 7 November-14 November. As the librarian, write a notice informing students about it.

Advertisement – Writing

Q2. You plan to sell your two wheeler. Draft a suitable advertisement in not more than 50 words to be inserted in the classified columns of a local daily, giving all necessary details of the two wheeler. You are Sumit/ Sudha,15,Krishna Nagar,Delhi.

Report-Writing

Q3. You are Sharad/ Shalini ,a reporter for 'The News Indian Express'.Write a report in 100-125 words on the fire accident that took place in the area of Textile Market, Ahmedabad.

Letter-Writing

Q4.You are Ankit/Amrita, staying at 4 ,Pyeroft road, Chennai. You have come across an advertisement in 'The Times of India' for recruitment of computer engineer trainees by Shivani Software. Apply in response to this advertisement giving your detailed bio-data. Invent all necessary details.

Q5. As Librarian of West Coast Senior Secondary School, Green Park Area Kanpur, write a letter to Messer Keerti Book House,31/70 Nirala Nagar,Lucknow,[placing an order for supply of certain books.You are Rajeev/Renu.

Article-Writing

Q6. It can be observed that in every nook and corner, young boys and girls keep on talking on cellphone for hours together .This is not proper use of cellphones.Write an article in 150-200 words for National Daily on the topic ,Cellphone is for communication not for Amusement.

Q7. Write an article for your school magazine on 'The Need for Education of Girls in the National Development'. (word- limit:200 words)

MATHS

Q1.   Find a particular solution of the differential:

$\frac{dy}{dx} + y \cot x = 4x \csc x \ (x \neq 0)$

Gives that y=0 when x=$\frac{\pi}{2}$

Q2.   (x-dy-ydx) y $\sin\frac{x}{y}$=(ydx+xdy)x $\cos\frac{x}{y}$

Q3. $x^2y \ dx - (x^3+y^3)dy=0$

Q4. $\left(\frac{e^{-2\sqrt{x}}}{\sqrt{X}} - \frac{y}{\sqrt{X}}\right)\frac{dy}{dx} = 1 \ \ (x \neq 0)$

Q5. $\frac{dy}{dx}+y\cos x = 4x \csc x$

Q6. $(x^2-1)\frac{dy}{dx}+2xy=\frac{2}{(x^2-1)}$

Q7. $\frac{dy}{dx} \ +y\cot x= 2x+x^2\cot x \ (x \neq 0)$

Given that y=0 when x=$\frac{\pi}{2}$

Q8. $2ye^{\frac{x}{y}} \ dx+(y-2xe^{\frac{x}{y}})dy = 0$

Given that x=0 when y=1.

Q1.   For any two vectors $\vec{a}$ and $\vec{b}$, show that

$$(1+|\vec{a}|^2)\,((1+|\vec{b}|^2)=|(1-\vec{a}\cdot\vec{b})|^2+|\vec{a}+\vec{b}+(\vec{a}\times\vec{b})|^2$$

Q2.   Let $\vec{a}, \vec{b}, \vec{c}$ be unit vectors such that $\vec{a}\cdot\vec{b} = \vec{a}\cdot\vec{c}=0$ and the angle between $\vec{b}$ and $\vec{c}$ is $\frac{\pi}{6}$,

prove that $\vec{a}=\pm 2(\vec{b}\times\vec{c})$.

Q3.   For any vector $\vec{a}$, prove that

$$|\vec{a}\times\hat{\imath}|^2 + |\vec{a}\times\hat{\jmath}|^2 + |\vec{a}\times\hat{k}|^2 = 2\,|\vec{a}|^2$$

Q4.   If $\hat{\imath}+\hat{\jmath}+\hat{k}$, $2\hat{\imath}+5\hat{\jmath}$, $3\hat{\imath}+2\hat{\jmath}-3\hat{k}$ and $\hat{\imath}-6\hat{\jmath}-\hat{k}$ are the position vectors of the

Points A , B , C and D . Find the angle between $\overrightarrow{AB}$ and $\overrightarrow{CD}$. Deduce that $\overrightarrow{AB}$ and $\overrightarrow{CD}$ are

Collinear.

Q5.   Show that $(\vec{a}\times\vec{b})^2 = \begin{vmatrix} \vec{a}.\vec{a} & \vec{a}.\vec{b} \\ \vec{a}.\vec{b} & \vec{b}.\vec{b} \end{vmatrix}$

Q6.   Let $\vec{a} =2\hat{\imath}+\hat{k}$, $\vec{b}= \hat{\imath}+\hat{\jmath}+\hat{k}$ and $\vec{c} = 4\hat{\imath}-3\hat{\jmath}+7\hat{k}$ be three vectors . Find a vector $\vec{r}$ which satisfies $\vec{r}\times\vec{b} = \vec{c}\times\vec{b}$ and $\vec{r}.\vec{a} = 0$

Q7.   If $\vec{a}\times\vec{b}=\vec{c}\times\vec{d}$, $\vec{a}\times\vec{c}=\vec{b}\times\vec{d}$ .Show that $\vec{a} - \vec{d}$ is parallel to $\vec{b} - \vec{c}$.

Q8.   Decompose the vector $6\hat{\imath}-3\hat{\jmath}-6\hat{k}$ into two vectors which are parallel

and perpendicular to , $\hat{\imath}+\hat{\jmath}+\hat{k}$ respectively.

Q9.   Let $\vec{a}, \vec{b}, \vec{c}$ be three non zero vectors such that any two of them are non collinear

If $\vec{a}+2\vec{b}$ is collinear with $\vec{c}$ and $\vec{b}+2\vec{c}$ is collinear with $\vec{a}$,then prove that

$\vec{a}+2\vec{b}+6\vec{c}=0$

CHAPTER 12
LINEAR PROGRAMMING

Q1.   A company makes two kinds of leather belts .Belt A is high quality and belt B is lower   quality . The respective profits are Rs. 8 and Rs. 6 per belt . Each belt of type A requires twice as much time as   a belt of type B and if all belts were of type B , company could make 1000 belts per day . The supply of leather is sufficient for only 800 belts per day . Belt A requires a fancy buckle and only 400 buckles per day are available and 700 buckles are available for Belt B . what should be daily production to maximize profit .

Q2.   A co-operative society of farmers has 50 hectares of land to grow two crops X and Y. the profit from crop X and Y per hectare are estimated at Rs. 10,500 and Rs. 9000 respectively .To control weeds , a liquid herbicide has to be used for crops X and Y rates of 20 and 10 liters per hectare . further no more than 800 liters of herbicide should be used in order to protect fish and wild life using apond which collects drainage from this land .How much land should be allocated to each crop so as to maximize the profit .

Q3.   A manufacturer of patent medicines is preparing a production plan on medicines A and B. There are sufficient row material available to make 20,000 bottles of A and 40,000 bottles of B, but there are only 45,000 bottles into which either of the medicines can be put . Further it takes 3 hours to prepare enough material to fill 1,000 bottles of A , it takes 1 hour to prepare enough material to fill 1,000 bottles of B and there are 66 hours available for his operation . The profit is Rs 16 per bottle for A and Rs 14 per bottle for B . How should the manufacturer schedule his production in order to maximize his profit .

PHYSICS

Electromagnetic induction and Alternating currents

1. State Lenz Law. On which law of conservation is it based?

2. How are eddy currents produced?give its advantage and disadvantages.

3. Power factor of an a.c. circuit is 0.5. What will be the phase difference between voltage and current in the circuit?

4. What is the significance of a Q-factor in a series LCR resonant circuit?

5. Draw the graph to show the variation of Xc with the frequency of the a.c. source used.

6. A capacitor blocks d.c. Why?

7. The frequency of a.c. source is doubled. How do R, X_L and Xc get affected?

8. Which is more dangerous ac or d.c current. for the same value?why?

9. A lamp is connected in series with a capacitor. Predict your observation for d.c. and a.c. connections. What happens in each case if the capacitance is reduced?

Dual nature of matter and radiations

1

Does a photon have a de Broglie wavelength? Explain.

2.

If kinetic energy of thermal neutron is $\frac{3}{2}kT$ then show that de-Brogl wavelength of waves associated with a thermal neutron of mass m temperature T kelvin is $\frac{h}{\sqrt{3mkT}}$ where k is boltz mann constant.

3

What is the (i) Speed (ii) Momentum (ii) de-Broglie wav elength of an electron having kinetic energy of 120eV?

[**Ans.** : (a) 6.5×10^6 m/s; (b) 5.92×10^{-24} kg m/s; (c) 0.112 nm.]

4

A proton is accelerated through a potential difference V.Find the percentage increase or decrease in its deBroglie wavelength if potential difference is increased by 21%.
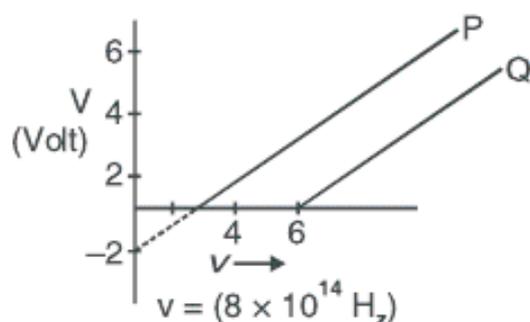
5

A nucleus of mass M initially at rest splits into two fragments of masses $\frac{M}{3}$ and $\frac{2M}{3}$. Find the ratio of de Broglie wavelength of the fragments.

6. In a photoelectric effect experiment the graph between the stopping potenti V and frequency of the incident radiation on two different metals P and C are shown in Fig. :

$$v = (8 \times 10^{14} \text{ H}_z)$$

(i) Which of the two metals has greater value of work function?

(ii) Find maximum K.E. of electron emitted by light of frequency $v = 8 \times 10^{14}$ Hz for metal P.

Atom and Nuclei

1

Name the series of hydrogen spectrum which has least wavelength.

2.

In nuclear reaction $_1^1H \rightarrow {}_0^1n + {}_Q^Px$ find P, Q and hence identify X.

3

The half life of a radioactive element A is same as the mean life time of another radioactive element B. Initially, both have same number of atoms. B decay faster than A. Why?

4

Define distance of the closest approach. An α-particle of kinetic energy 'K' is bombarded on a thin gold foil. The distance of the closet approach is 'r'. What will be the distance of closest approach for an α-particle of double the kinetic energy?

5.

The atom $_8O^{16}$ has 8 protons, 8 neutrons and 8 electrons while atom $_4Be^8$ has 4 proton, 4 neutrons and 4 electrons, yet the ratio of their atomic masses is not exactly 2. Why?

Magnetism and matter

1.Do back exercise of magnetism and matter.

CHEMSTRY

UNIT-2 SOLUTIONS

1. Why is vapour pressure of solution of glucose in water lower than that of water ?

2. What is the molarity of ammonia in a solution contaning 0.85 g of NH_3 in 100 ml of liquid of density 0.85 g cm^{-3} ?

3. What is the value of ΔH and ΔV for an ideal solution of two liquids ?

4. Why is freezing point depressed when a non volatile solute is added?

5. `Calculate the osmotic pressure of a solution obtained by mixing 100 cm^3 of 0.25M solution of urea and 100 cm^3 of 0.1M solution of cane sugar at 293 K.[R= 0.0821 L atm mol^{-1} K^{-1}]

6. Give one example each of the miscible liquid pairs showing positive and negative deviations from Raoult's law. Give one reason each of such deviations.

UNIT-7   THE p-BLOCK ELEMENTS

1. Name the geometry of $XeOF_4$ and XeO_3 .

2. What is inert pair effect ?

3. Give reason : The maximum number of covalent bonds formed by nitrogen is 4.

4. Assign reason for the following: In solid state PCl_5 behaves as an ionic species.

5. Give reason for the following: Among the noble gases only xenon is well known to form chemical compounds.

6. Which is the strongest oxidizing agent among ClO^{4-} , BrO^{4-} , IO^{3-}

7. HCl when reacts with finely powdered iron forms ferrous chloride and not ferric chloride. Why?

8. Why ICl more reactive than I_2?

9. Give three oxo acids of nitrogen. Write the oxidation state of the nitrogen in each of them.

UNIT -8   THE d AND f- BLOCK ELEMENTS

1. Write the outer electronic configuration of Cr atom (Z = 24).

2.   Why is the third ionization energy of manganese unexpectedly high ?

3. Which is more basic, $La(oH)_3$ or $Lu(OH)_3$? Why ?

4. Why is Ce^{+4} in aqueous solution a good oxidising agent.

5.   Name the element which exhibits +4 oxidation state besides +3 oxidation state.

6. State the consequences of Lanthanoid contraction shown by transition group elements.

7.   Why is that orange solution 0f $K_2Cr_2O_7$ turns yellow on adding NaOH to it ?

UNIT- 9 CO-ORDINATION CHEMISTRY

1. Give IUPAC name of the ionization isomer of :

    $[(NH_3)_3PtNO_2]Cl$.

2. How many moles of AgCl will be precipitated when an excess of $AgNO_3$ is added to a molar solution of $[CrCl(H_2O)_5]Cl_2$?

3. What is the oxidation state of Ni in $[Ni(CO)_4]$?

4.   Write the formula of tetrachlorocuprate(II) ion.

5. Describe briefly the nature of $[Fe(CN)_6]^{4-}$ ion. (At. No. of Fe = 26).

BIOLOGY

Ch.05
Principle of inheritance and variation

1. Does the phenotype gets affected if the modified gene produces less efficient or produce no enzyme?
2. What will be the blood group of persons having no sugar polymers on plasma membrane of RBC?
3. Which phenomenon is indicated by mechanism of blood groups in human beings ?
4. How do point mutations occur?
5. What is pedigree Analysis ?
6. Why did Mendel obtained F3 generation. What has its utility?
7. What are Pleiotrpic genes? Explain with a suitable eg.
8. Why Morgan selected Drosophila for his experiments?
9. Write short note on
    1. systic fibrosis
    2. color blindness
    3. thalasemia

Ch.06
Molecular Basis of Inhheritance

1. Why RNA is not a suitable genetic material ?
2. Which discovery was made by Avery
3. What are the characteristics of RNA polymerase of a prokaryote?
4. What are UTRs. Explain?
5. a) What is codon and anticodon?
    b) Where are codons and anticodons present?
    c) What is the role of tRNA ?
6. Describe the structure of a ribosome?
7. Some sequence of codons on mRNA is given below:
    AUGCUAUACUUU
    1. What amino acids will be coded by these mRNA codons?
    2. What is the sequence of bases on the DNA that would have transcribed these RNA codons?
    3. What will be the codons present on the coding strand?

8. Mention the goals of HGP?
9. What are the components of lac operon?
10. Differentiate between DNA and RNA?

Ch.07

Evolution

1. What is divergent evolution?
2. Define Fossils.
3. How do fossils help in providing evidence that evolution has taken place . Explain with examples?
4. Evolution of antibiotic resistant bacteria is not a directed but is a stochastic action . justify?
5. What are the postulates of the Hugo de Vries theory of evolution?
6. Give an account of history of plant evolution.
7. Mention the consequences of evolution of life on earth.
8. What is directional selection? Gve two examples which have shown directional selection.
9. Explain steady state theory.
10. Write the effects of pesticides on evlution of species.

Ch.08

Human health and Diseases

1. What is health?
2. What are the different categories of diseases?
3. How many types of immunities do we possess?
4. What characteristics should be possessed by a pathogen? Explain with the help of example.
5. What precautions arte taken at the time of transplanting an organ loke liver and kidney?
6. Differentiate between interferons and antibodies?
7. Mention the factors which affect health?
8. Mention the functions of serotonin, histamine, interferons?
9. What are the harmful effects of nicotine in human body?
10. Describe passive immunity?

COMPUTER SCIENCE

LESSON – 3 FUNCTION OVERLOADING

1. What is polymorphism? How is it implemented in C++? Give example.
2. What is function overloading? Give example.
3. Write an overloaded function power() having two versions for it. The first version takes double n and int p and returns a double value. Another version takes int n and int p returning in value. Use a default value of 2 for p in case it is omitted in the function call.
4. Write an overloaded function volume(0, a function that returns volumes of different structures. Write three versions : one for cube's volume that takes one float side of the cube, other for cylinder's volume that takes float radius and float height of the cylinder and third rectangular box's volume that takes float length, float breadth and float height.

LESSON-5 CONSTRUCTORS AND DESTRUCTORS

1. What is a constructor? Give example.
2. What is a destructor? Give example.
3. What is a copy constructor? Give example.
4. What is a constructor overloading? Give example.
5. Given the following C++ code, answer (i) and (vi)

```
#include<iostream.h>
class readbook
{ int ch;
public:
readbook()                    // function 1
{ cout<<"\n open book"<<endl;}
void readbook(int ch1)     // function 2
{ ch=ch1;cout<<"\n initializing book"<<endl;}
~readbook()                          // function 3
{ cout<<"\n close book"<<endl;}
readbook(readbook &r)    // function 4
{ ----------------------------------}
```

(i)   In Object Oriented Programming, what is function 1 referred as and when it get invoked/ called?

(ii) In Object Oriented Programming, what is function 2 referred as and when it get invoked/ called?

(iii) In Object Oriented Programming, what is function 1 & function 2 referred as and when it get invoked/ called?

(iv) In Object Oriented Programming, what is function 3 referred as and when it get invoked/ called?

(v)   In Object Oriented Programming, what is function 4 referred as and when it get invoked/ called?

(vi) Complete the missing lines of function 4.

6.   Define a class Play in C++ with the following specification :

Private members of class play

Playcode	integer
Playtitle	string
Duration	float
No_scenes	integer

Public members of class play

Constructor function	initialize duration as 20 and no_scenes as 15.
Newplay()	accept playcode and playtitle
Moreinfo()	assign the values of duration and no_scenes with the help of corressponding parameters passed to the function
Showplay()	display all data members on screen

7.   Give the output of the following program :

```
#include <iostream.h>
class A
{
public :
A() { calculate(); cout<<"constructor"; }
void calculate() { show(); cout<<"\n calculating";}
void show() { cout<<"displaying";}};
void main() { A A1;}
```

PSYCHOLOGY

Ch-6 Attitude and Social Cognition

1. Define attitude. Discuss the components of an attitude.

2. What are the factors that influence the formation of an   attitude?

3. Explain the concept of pro-social behaviour.

4. Differentiate between prejudice and stereotype.

5. How does social facilitation take place?

Highlight the importance of schemas in social cognition

PHYSICAL EDUCATION

CHAPTER 8

Q1. What is Tidal Volume?

Q2. What is Blood Pressure?

Q3. What is stroke Volume?

Q4. What are the important functions of a skeleton system?

Q5. Give five physiological differences between males and females.

Q6. What are systole, diastole and pause?

Q7. "Physical Fitness of an individual is multi-dimensional". Explain.

Note: Do the Holidays Home work in P.Ed. Register