SAINIK SCHOOL REWARI
DIWALI VACATION HOMEWORK (2019-20)
CLASS – XI

Instructions to be followed by Cadets:

1.   Do the entire Vacation Work in one Notebook only.

2.   Do the work in notebook in a sequence as mentioned below:-
(a) English, Hindi, Maths, Science, Social Studies for classes VI –X
(b) English, Maths, Physics, Chemistry Bio/Computer for classes XI-XII

3.   Vacation Work should be done neatly and efficiently. It will be duly marked as a part
Of your assessment.

4.   Any additional chart paper/Map /Model if any required in vacation work, should be submitted separately along with vacation work note book.

5.   Do not get up late. Rise at the usual time and go for a morning walk, or play a game that interests you. Talk about things you see around. Plan some outdoor and indoor games. Spend some time on a hobby.

6.   Read newspaper. Keep yourself updated. Reading from colorful illustrated story books will develop your language skills. Listen to stories from family members and try to narrate the stories you have read from various story books.

7.   Assign a permanent workplace and a work-time. This brings in discipline in your life. If there is a subject you are weak in, try and work on improving that weakness. You will be more confident when you go back to school.

8.   Inculcate good manners – 4 magic words `Please, Thank you, Excuse me, Sorry' – Use them and see the difference.

ENGLISH

1. Research on the Egyptians civilizations –with particular reference to Tut's Mummy and its discovery. Stick pictures and write a report.
2. Research on Khushwant Singh's life and works. Find out about the role of Khushwant Singh's father in building Delhi.
3. Research on sailing terminology and parts of a boat and gather information about Isle Amsterdam. Write the same in your homework copy.
4. Design a poster as an appeal for conserving water as most parts of India are facing serious problems and have been hit by drought.
5. Cut out 6 clippings of Classified Ads under the heads –
   - For sale
   - Situation vacant
   - Pets / kennels
   - To-let
   - Matrimonials
   - Tour Packages
6. Stick them in your homework copy and write two classified advertisements on each of these topics.
7. Read at least two works of fiction of your choice and write the reviews of those books in about 150 words each.

MATHEMATICS

General Instructions:
All questions are compulsory.
Students are required to do this assignment in their separate assignment notebook.

1. NCERT examples and questions of Chapter 9 and 10.
   (a) Chapter 09: Sequence And Series
   (b) Chapter 10: Straight Lines
2. Solve objective type questions from NDA Pathfinder Book of the following chapters:
   (a) Chapter 09: Sequence And Series
   (b) Chapter 10: Straight Lines
3. Learn all Trigonometric and Sequence (A.P,G.P) Formulae.
4. Do the activities covering the definitions, facts and formulae of all the concepts of class XI. The following units should be covered:
   (a) To represent set theoretic operations using Venn diagrams.
   (b) To Verify distributive law for three given non-empty sets A ,B and C, that is, $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$
   (c) To verify that the graph of a given linear inequality of the form $ax + bx + c < 0$, where a and b are not both zero, represent only one of the two half planes.
   Consider the linear inequality : $5x + 4y – 40 < 0$.
   (d) To find the number of ways in which three cards can be selected from given five cards.
   (e) To construct a Pascal's triangle and to write binomial expansion for a given positive integral exponent.
   (f) To demonstrate that the arithmetic mean of two different positive numbers is always greater than their geometric mean. Consider different positive numbers 40 and 15.
   (g) To verify the formula for the sum of squares of first n natural numbers using unit cubes. Consider n equal to 5.
   (h) To obtain the truth values of compound statement of the type $p \wedge q$ by using switch connections in series.
   (i) To verify that for two sets A and B, n(A*B)=pq and the total number of relations from A to B is 2^{pq} , where n(A) = p and n(B) =q
   (j) To write the sample space, when a die is rolled once, twice.

CHEMISTRY

1. What are electrophiles and nucleophiles? Give examples.
2. Write all the structural formulas of C_3H_6O .
3. What is the basic principle of chromatography?
4. Write the structural formula of 4-chloro-2-pentene.
5. (a) What do understand by homolytic fission?

(b) What are carbanions? Give example.

6. Explain hyperconjugation effect. How does hyperconjugation effect explain the stability of alkenes.

7. Electrophiles are electron seeking species. Which of the following groups contain only electrophiles?

(i) BF_3, NH_3, H_2O

(ii) $AlCl_3$, SO_3, NO_2^+

(iii) NO_2^+, CH_3^+, $CH_3 - \overset{.}{C} = O$

(iv) $C_2H_5^-$, $\overset{.}{C}_2H_5$, $C_2H_5^+$

8. Compounds with same molecular formula but differing in their structures are said to be structural isomers. What type of structural isomerism is shown by

$$CH_3-S-CH_2-CH_2-CH_3 \text{ and } CH_3-S-CH\underset{CH_3}{\overset{CH_3}{<}}$$
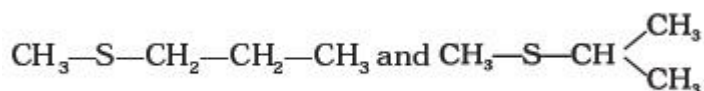
9. Make notes of chapter 14 i.e. Environmental Chemistry and learn it.

BIOLOGY
(CHAPTER: MOVEMENT AND LOCOMOTION)

1. Name the cells/tissues in human body which
   (a) Exhibit ameboid movement
   (b) Exhibit ciliary movement
2. Locomotion requires a perfect coordinated activity of muscular, _____, _____ systems
3. Sarcolemma, sarcoplasm and sarcoplasmic reticulum refer to a particular type of cell in our body. Which is this cell and to what parts of that cell do these names refer to?
4. The three tiny bones present in middle ear are called ear ossicles. Write them in correct sequence beginning from ear drum.
5. What is the difference between the matrix of bones and cartilage?
6. Which tissue is afflicted by Myasthenia gravis? What is the underlying cause?
7. How do our bone joints function without grinding noise and pain?
8. Give the location of a ball and socket joint in a human body.
9. Our fore arm is made of three different bones. Comment.

SHORT ANSWER TYPE QUESTIONS

1. With respect to rib cage, explain the following:
   (a) Bicephalic ribs
   (b) True ribs
   (c) Floating ribs
2. In old age, people often suffer from stiff and inflamed joints. What is this condition called? What are the possible reasons for these symptoms?
3. Exchange of calcium between bone and extracellular fluid takes place under the influence of certain hormones
   (a) What will happen if more of Ca++ is in extracellular fluid?
   (b) What will happen if very less amount of Ca++ is in the extracellular fluid?
4. Name at least two hormones which result in fluctuation of Ca++ level.
6. Radha was running on a treadmill at a great speed for 15 minutes continuously. She stopped the treadmill and abruptly came out. For the next few minutes, she was breathing heavily/fast. Answer the following questions.
   (a) What happened to her muscles when she did strenuously exercised?
   (b) How did her breathing rate change?
7. Write a few lines about Gout.
8. What is the source of energy for muscle contraction?
9. What are the points for articulation of Pelvic and Pectoral girdles?

LONG ANSWER TYPE QUESTIONS

1. Calcium ion concentration in blood affects muscle contraction. Does it lead to tetany in certain cases? How will you correlate fluctuation in blood calcium with tetany?
2. An elderly woman slipped in the bathroom and had severe pain in her lower back. After X-ray examination doctors told her it is due to a slipped disc. What does that mean? How does it affect our health?
3. Explain sliding filament theory of muscle contraction with neat sketches.
4. How does a muscle shorten during its contraction and return to its original form during relaxation?
5. Discuss the role of Ca2+ ions in muscle contraction. Draw neat sketches to illustrate your answer.

(CHAPTER: BODY FLUIDS AND CIRCULATION)
VERY SHORT ANSWER TYPE QUESTIONS

1. Name the blood component which is viscous and straw coloured fluid.
2. Complete the missing word in the statement given below:
    (a) Plasma without _____ factors is called serum.
    (b) _____ and monocytes are phagocytic cells.
    (c) Eosinophils are associated with _____ reactions.
    (d) _____ ions play a significant role in clotting.
    (e) One can determine the heart beat rate by counting the number of _____ in an ECG.
3. Name the vascular connection that exists between the digestive tract and liver.
4. Which coronary artery diseases is caused due to narrowing of the lumen of arteries?
5. Define the following terms and give their location?
    (a) Purkinje fibre
    (b) Bundle of His
6. State the functions of the following in blood
    (a) Fibrinogen
    (b) Globulin
    (c) Neutrophils
    (d) Lymphocytes
7. What physiological circumstances lead to erythroblastosis foetalis?
8. Explain the consequences of a situation in which blood does not coagulate.
9. How will you interpret an electrocardiogram (ECG) in which time taken in QRS complex is higher.

PHYSICS

1. Write about who won the Noble prize 2019 in the field of physics and their contribution for the welfare of human kind.
2. The gravitational force of earth on a ball one kilogram is 9.8 N. Find the attraction of the ball on the earth?
3. The length of simple pendulum for a given time period is l. if the pendulum is taken to t\a place where acceleration due to gravity is doubled, then for the time period to remain find the length ?

4. What is the average magnitude of intensity of the gravitational field on the surface of the earth in SI units?
5. A man is carrying a load to his own weight on his head. If he jumps from root of a building, during his fall, what is the weight experienced by him:
6. Let g_e and g_p be the acceleration due to gravity on the earth and a planet. The radius of the planet as well as its mass is twice that of the earth. Find the relation between g_p and g_e.
7. You have given 32 identical balls all of equal weight except 1 which is heavier than the others. You are given a beam balance but no weight box. What is the minimum number of weightings required to identify the ball of different weight.
8. Two bodies held one above the other at a distance of 50 cm are simultaneously released. What will be their separation after 4 seconds of motion?

9.   Given that the acceleration due to gravity at a height h is same as that at the depth d below the surface of the earth. If both h and d are small as compared to the radius of the earth. Then find the relation between h and d.

10.   A body of mass M is raised from the surface of the earth to an altitude equal to the radius of the earth. Find the potential energy gained by the body.

11.   If the radius of the earth decreases by 10% the mass remaining unchanged, what will happen to the acceleration due to gravity?

12.   What causes the tail of the comet?

13.   For a satellite to revolve very near to surface of the earth.,find the orbital velocity.

14.   At What angle with the horizontal should a projectile be fire from the top of Mount Everest, with the escape velocity to enable it escape from gravitational pull of the earth?

15.   The escape velocity for a body projected vertically upwards from the surface of earth is 11 km/s. if the body is projected of 450 with the vertical, find the escape velocity.

COMPUTER SCIENCE

1.   Give the output of the following code:-

```
list=['p','r','o','b','l','e','m']
list[1:3]=[]
print(list)
list[2:5]=[]
print(list)
```

2.   Give the output of the following code:-

```
l1=[13,18,11,16,13,18,13]
print(l1.index(18))
print(l1.count(18))
l1.append(l1.count(13))
print(l1)
```

3.   WAP in python to create a list of natural numbers from 1 to 50 using for loop.

4.   WAP in python to take two lists of same size and create a third list of same size with adding elements at the same location of 1st & 2nd list. E.g. if A=[1,2,3], B= [4,5,6], then C[5,7,9].

5.   WAP in Python to accept any ten numbers from the user in a list and display the maximum number along with its position.

6.   WAP in Python to calculate &display the factorial of all elements of an integer list.

7.   Predict the output of the following code in python:

```
T1=(1,)*3
T1[0]=2
Print(T1)
```

8.   Predict the output of the following code in python:

```
TupleA='m','n'
TupleB=('m','n')
Print(TupleA==TupleB)
```

9.   WAP in Python to create a phone dictionary for your ten friends and then print them in format : name of friend : mobile number

10.   Predict the output of the following code in python:

```
Fruit ={ }
L=['Orange','Apple','Grapes']
For index in L:
If index in Fruit:
Fruit[index]+=1
else:
Fruit[index]=1
print(len(Fruit))
print(Fruit)
```