



KĀSIGA SCHOOL
DEHRADUN

Holiday Homework Summer Break 2020



HOLIDAY HOMEWORK GRADE 11 (SCIENCE)

ENGLISH

Time away from the classroom is often the greatest gift for project planning.

Holiday Homework Class 11&12

- 1. Complete all the assignments for the topics covered so far in the notebook.**
- 2. Critique one of the following movies in about 200-250 words. Prepare to deliver the same as an integral part of your Speaking Assessment that carries 10marks.**
The Sound of Music, Inception, Gravity, Interstellar, Life of Pi, The Mysterious Island, Hugo, Hook.

General guidelines on how to critique a movie:

- Choose a movie.
- Specify the issues you are going to discuss and analyze in your paper.
- Watch the movie two-three times: first—to get a general idea of the film; second time—to pay attention to the points that come into your sphere of interest and/or to note the details you weren't able to notice the first time.

- Concentrate on specific movie characters.
- See if the way the characters dress, talk, act, or look corresponds with the image they should be projecting towards the viewer.
- Remember that the better the characters are developed, the more character-driven the story is.
- Consider that the right motivation of the characters makes the audience believe the story and its development; moreover, it helps to understand the real motives, which should be understandable to the viewers.

- Decide whether the plot is predictable.
- Define whether some actions were unpredictable; if they were, then they provided you with some food for thought to make assumptions and express your views considering an unexpected turn of events or simply shocked you.
- Remember that the structure encompasses 3 acts: introducing the main characters, mounting tension through the story (lead up to the climax of the story), and bringing the movie to an end.
- See if the plot corresponds to characters' motivations.
- Mind that before the ending there should be a culmination of the story when the tension reaches the highest point.

- Remember that good dialogues should not be protracted as they are to sound natural.
- See if there is a logical development of the conversation.

Holiday Homework

Subject : Mathematics



1. If $\sin \theta + \cos \theta = m$, show that

$$\cos^6 \theta + \sin^6 \theta = 4 - 3(m^2 - 1)^2/4, \text{ where } m^2 \leq 2.$$

2. Find the value of $\cos(31\pi/3)$.

3. Find the principal solution of the equation $\sin x = 1/2$.

4. Find the general solutions of the following equations:

(i) $\sin 2x = \sqrt{3}/2$

(ii) $\cos 3x = 1/2$

5. Decide among the following sets, which are subsets of which:

$$A = \{x: x \text{ satisfies } x^2 - 8x + 12 = 0\}, B = \{2, 4, 6\}, C = \{2, 4, 6, 8, \dots\}, D = \{6\}$$

6. Let $A = \{1, 2, 4, 5\}$, $B = \{2, 3, 5, 6\}$, $C = \{4, 5, 6, 7\}$. Verify the following identities:

(i) $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$

(ii) $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$

7. In a school, there are 20 teachers who teach mathematics or physics. Of these, 12 teach mathematics, and 4 teach physics and mathematics. How many teach physics?

8. Express the given complex number into standard form: $(1 + 2i)^{-3}$

9. If $z_1 = (2 - i)$, $z_2 = (-2 + i)$, find

$$\begin{aligned} \text{(i) } \operatorname{Re} \left(\frac{z_1 z_2}{\bar{z}_1} \right) \\ \text{(ii) } \operatorname{Im} \left(\frac{1}{z_1 \bar{z}_1} \right) \end{aligned}$$

10. Express $\sin \pi/5 + i(1 - \cos \pi/5)$ in polar form.

11. If $\sin A = 1/2$, $\cos B = \sqrt{3}/2$, where $\pi/2 < A < \pi$ and $0 < B < \pi/2$, find the following:

(i) $\tan(A + B)$ (ii) $\tan(A - B)$.

Prove the following identities:

12. $\sqrt{[(1 - \cos 2x) / (1 + \cos 2x)]} = \tan x$.

13. $\cos 2x / (1 + \sin 2x) = \tan(\pi/4 - x)$.

14. A survey shows that 76% of the Indians like oranges, whereas 62% like bananas. What percentage of the Indians like both oranges and bananas?

15. Find the real values of x and y , if

(i) $(x + iy)(2 - 3i) = 4 + i$

(ii) $(3x - 2iy)(2 + i)^2 = 10(1 + i)$.

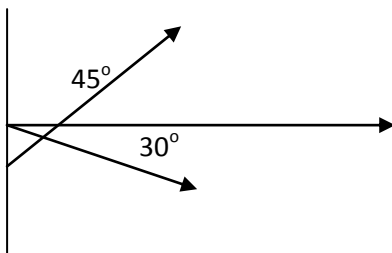
PHYSICS

Subject: Physics

Class 11

Chapter: Motion in a straight line.

1. The displacement of a body is directly proportional to the time elapsed. Comment upon the velocity of the body.
2. An object has a zero velocity at an instant. Does it imply that it has zero acceleration? Given an example to support your answer.
3. A ball hits the ground with velocity ' v ' and rebounds with velocity ' $v/2$ '. What is the change in its velocity?
4. The displacement ' x ' of a moving object is given by $x = A \sin(\omega t - \theta)$. At what time will the displacement be maximum?
5. The displacement versus time graph for two bodies is shown in the figure below. What can you say about the type of motion represented by the bodies and in what direction? What is the ratio of their velocities?



6. The velocity of a particle moving along x-axis is related to time by the equation $v = vt + 2$, where ' v ' is the velocity in m/s and ' t ' in seconds. Find the relation between its (i) displacement and time and acceleration and time. (ii) displacement and acceleration of the particle when its velocity is zero.
7. A body moves with a uniform acceleration. It is found that it covers 9 m in 5th second and 15 m in 8th second. Find (i) its initial velocity and acceleration (ii) distance covered in 20th second.
8. A policeman is chasing a thief running at a constant speed of 10 km/h. The policeman runs at a constant speed of 12 km/h. If policeman starts running 10 min after the thief, how far will the policeman have to run to catch the thief?
9. A body covers the first one-third of the total distance with speed ' v_1 ' and the next one-third with speed ' v_2 ' and the last one-third with speed ' v_3 '. Find the average speed of the body during the motion.
10. On a parallel railway track, train A and B are moving in the opposite directions. If train A moves at 45 km/h and train B moves at 70 km/h, calculate the relative speed of (a) train B w.r.t. train A (b) train A w.r.t. train B and (c) ground w.r.t. train A.

NCERT QUESTIONS: 3.1 to 3.16

CHEMISTRY

Ch- 1 Some basic concepts of chemistry

- Q1. Calculate number of moles in 1.6g of S (Atomic mass of S=32u) [0.05]
- Q2. Calculate number of atoms present in 18g of glucose($C_6H_{12}O_6$) [6.02X10²²]
- Q3. Calculate the mass of 1 molecule of N₂. (Given : Atomic mass of N=14u) [4.65X10⁻²³]
- Q4. How many moles of gold are present in 49.25g of gold rod? (atomic mass of gold=197u) [0.25]
- Q5. What is the number of molecules of CO₂ which contain 8g of O₂? [1.505 x10²³ molecules]
- Q6. A compound contains 42.3913% K, 15.2173% Fe, 19.5652% C and 22.8260%N. The molecular mass of the compound is 368u. Find the molecular formula of the compound. (Given At mass of K=39u, Fe=56u, C=12u, N=14u) [K₄Fe(CN)₆]
- Q7. How many moles of Nitrogen are needed to produce 8.2 moles of Ammonia by reaction with Hydrogen? [4.1mol]
- Q8. Zinc and HCl react according to the following reaction: $Zn + HCl \rightarrow ZnCl_2 + H_2$
If 0.8 mol of Zn is added to HCl containing 0.62 mol of HCl, how many moles of hydrogen are produced? What is the limiting reagent? [LR- HCl, 0.31 moles of H₂]
- Q9. Calculate molarity of a solution containing 13.8g of potassium carbonate (molar mass =138g/mol) dissolved in 500ml of solution. [0.2M]
- Q10. Calculate the molarity and molality of 93% H₂SO₄ (weight/volume). The density of the solution is 1.84 g/cc. [9.5 M, 10.44 m]

Ch-2 Atomic structure

- Q1. Yellow light emitted from a sodium lamp has a wavelength of 580 nm Calculate the frequency and wave number. [5.17X10¹⁴s⁻¹]
- Q2. What is the number of photons of light with wavelength 400 pm which provide 1J of energy. [20.11X10¹⁴]
- Q3. The threshold frequency ν_0 for a metal is 7x10¹⁴ s⁻¹. Calculate the kinetic energy of an electron emitted when radiation of $\nu=1 \times 10^{15}$ s⁻¹ hits the metal. Given $h=6.6 \times 10^{-34}$ Js. [1.99X10⁻¹⁹J]
- Q4. What is the energy in joules required to shift the electron of the hydrogen atom from the first Bohr orbit to the fifth Bohr orbit and what is the wave length of light emitted when the electron returns to the ground state? The ground state electronic energy is -2.18 x 10⁻¹⁸ J. [9.5X10⁻⁸ m]
- Q5. Energy associated with the 1st orbit in the H atom is -13.12 X 10⁵ J/mol. What is the energy required for excitation to 2nd Bohr's orbit? [9.84x10⁵ J/mol]
- Q6. Using Aufbau's principle, write the ground state electronic configuration of the following:
a) Ca (Z=20) b) Mn (Z=25) c) Cu (Z=29) d) Rb (Z=37)

- Q7. Give the values of all the four quantum numbers for 2p electrons in Nitrogen ($Z=7$)
- Q8. Write the electronic configuration of the elements with $Z=17$ and predict the a) number of p electrons b) number of filled orbitals c) number of half filled orbitals
- Q9. Write the electronic configuration of the following and report the number of unpaired electrons in each case:
 a) Mn^{4+} ($Z=25$) b) F^- ($Z=9$) c) Zn^{2+} ($Z=30$)
- Q10. a) Write the values of azimuthal and magnetic quantum numbers for $n=2$.
 b) Write the four quantum numbers for 21st electron of Sc ($Z=21$)
- Q11. From the following sets of quantum numbers, state which are possible:
 i) $n=0, l=0, m=0, s=1/2$ (iv) $n=1, l=0, m=1, s=1/2$ ii) $n=2, l=2, m=0, s=1/2$
 (v) $n=1, l=0, m=0, s=-1/2$
 iii) $n=2, l=2, m=0, s=-1/2$ (vi) $n=1, l=1, m=0, s=1/2$

Ch- 3 Periodic classification of elements

- Q1. Give the IUPAC name and the symbol of an element with $Z=109$.
- Q2. Elements A and B have the atomic numbers 12 and 29 respectively. Write down their electronic configuration and predict
 (i) group (ii) period (iii) block to which they belong.
- Q3. Which is largest in size Al^+ , Al^{2+} and Al , why?
- Q4. Among the elements with atomic number 9, 12 and 36. Identify the element which is a) highly electronegative b) an inert gas in nature c) highly electropositive in nature. Give reason for your answer.
- Q5. Arrange the following in increasing order of the property indicated:
 a) F, Cl, Br, I (Electron gain enthalpy)
 b) Mg^{2+} , O^{2-} , Na^+ , F^- , N^{3-} (Ionic size)
 c) Mg, Al, Si, Na (Ionization enthalpy)
 d) C, N, O, F (Second Ionization enthalpy)

Biology Assignment Class XI

Note-

Write all the answers in a separate project file/notebook.

Chapter : Plant Kingdom

- Q1. What are the differences between artificial and natural system of classification?
- Q2. Define phylogenetic classification systems, numerical taxonomy, cytotaxonomy and chemotaxonomy.
- Q3. Give general characteristics of Kingdom Algae & discuss its mode of reproduction also.
- Q4. Name two algae from which agar is obtained. Give commercial use of agar.
- Q5. Name two unicellular algae rich in proteins & which are used as protein supplements by space travelers.
- Q6. List the name divisions of kingdom Algae & give their characteristics.
- Q7. Explain life cycle of Bryophytes (Mosses).
- Q8. What is 'gemma'? Where do you find them?
- Q9. Describe male & female sex organs of an angiosperm.
- Q10. What is double fertilization?
- Q11. Give schematic representation of life cycle of an angiosperm.

Chapter: Animal Kingdom

- Q1. What is open and closed type of circulatory system?
- Q2. Which type of symmetry do the following animals have, explain the symmetry also:- sponges, echinoderms, annelids.
- Q3. Give single terms for:-
 - (a) Animals which have ectoderm & endoderm only.
 - (b) Animals which ectoderm, mesoderm and endoderm.
- Q4. Define coelom. Give e.g. of animals who are coelomates.
- Q5. What are pseudocoelomates & acoelomates animals? Give egs also.
- Q6. What is metamerisation ?
- Q7. Give flowchart of classification of animals.
- Q8. Explain the terms of Phylum Porifera: - Water canal system, coenocytes & types of skeleton sponges have.
- Q9 (a) In which phylum do you find endoblasts? What is its function?
 - (b) Give differences between polyp & medusa.
- Q10. What is bioluminescence?
- Q11. What is the function of flame cells? In which phylum are they found?
- Q12. Which phylum has the characteristic – bilaterally symmetrical, triploblastic, pseudocoelomates animal?
- Q13. What are the functions of parapodia & nephridia?
- Q14. Which is the largest phylum of Animalia?

Q15. Describe the following features of an arthropod (a) Body exoskeleton (b) appendages (c) organs of respiration, balance organs & organs of excretion.

THE MORE THAT YOU READ

THE MORE THINGS YOU WILL KNOW.

THE MORE THAT YOU LEARN,

THE MORE PLACES YOU'LL GO.

HAVE A HAPPY SUMMER VACATIONS

COMPUTER SCIENCE

Topic: Python Programming

- Q1. 'Python is an interpreted high level language'. What does it mean to you?
- Q2. What is the difference between interactive mode and script mode in Python?
- Q3. What does a cross platform language mean?
- Q4. What is the difference between a keyword and an identifier?
- Q5. How many types of strings are supported in Python?
- Q6. What factors guide the choice of identifiers in program?
- Q7. What is the error in following Python program with one statement? `print ("My name is ", name)`
Suggest a solution.
- Q8. Write a program to obtain temperature in Celsius and convert it into Fahrenheit using formula
 $F = C \times 9 / 5 + 32$.
- Q9. What will be the output of the following code? `x, y = 2, 6`
`x, y = y, x + 2`
`print(x,y)`
- Q10. Predict the output : `F = 2` `S = 3` `T = F * S`
`print(F,S,T)` `F = F + S + T` `T = S * F`
`print(F,S,T)`
- Q11. Find the output of the given code: `Name = "Komal"`
`Age = 18`
`print ("Your name & age are", Name + Age)`
- Q12. Write a program to accept radius from the user and print its area.
- Q13. Write a program that asks for your height in centimeters and then convert your height to feet and inches.
- Q14. Write a program to read details like name, class, age of a student and then print the details firstly in same line and then in separate lines. Make sure to have break lines in these two different types of prints.
- Q15. What are data types? What are Python's built in core data types?

PHYSICAL EDUCATION

1. Write notes on **Physical Fitness, Wellness & Lifestyle**

- Meaning & Importance of Physical Fitness, Wellness & Lifestyle
- Components of physical fitness and Wellness
- Components of Health related fitness

2. **Yoga**

- Meaning & Importance of Yoga
- Elements of Yoga
- Introduction - Asanas, Pranayam, Meditation & Yogic Kriyas
- Yoga for concentration & related Asanas (Sukhasana; Tadasana; Padmasana& Shashankasana, Naukasana, Vrikshasana (Tree pose), Garudasana (Eagle pose)
- Relaxation Techniques for improving concentration – Yog-nidra