

HOLIDAY HOMEWORK(2023-24) CLASS-XI (SCIENCE)

English Core

Instructions:-

Each student is supposed to choose any 1 out of the below mentioned topics and present them in the form of projects.

1. Socio-Cultural Changes and How we react to them
 - Man's need of company
 - Grandparents and their bond with grandchildren
 - Religious Education- Necessary or Not
 - Rural Urban Divide- Many Aspects
 - Why do we have pets?
 - Education system in India
 - Sparrows
 - Change and Adaptation
 - Values are learnt at Home (The Portrait Of A Lady)
2. Resilience
 - Why do we travel
 - Family gives us strength
 - Practice makes a man perfect
 - Why do we write
 - Historical Voyages
 - Cards – How they help us express our feelings (We are Not Afraid To Die....)
3. Ancient Egypt and Egyptians
 - Pyramids
 - Archeology
 - Advances in Science
 - Ancient Myths – Beliefs and Rituals
 - Religious Intolerance – Its Effects and solutions
 - Socio-Cultural Myths (Discovering Tut: The Saga Continues)
4. Science Fiction- History and its impact on society
 - Third Battle of Panipat- Impact on Indian History
 - How East India Company won India
 - Unity is Power (Union is Strength)
 - Why should we read history?
 - Hard Work or Luck/Chance- What is important ?
 - Insanity-Reason, Effects and Solutions
 - Theory of Determinism (The Adventure)
5. Honesty
 - Poverty- Its effects on Social Values
 - Rootlessness / Loss of Motherland
 - Carefree or Careless- What is your take
 - Horses
 - Values and their Place in Society
 - Genetics
 - Kind words can change anyone
 - Thoughts matter more than the Actions
 - (The Summer of The Beautiful White Horse)

Art-integration is a cross-curricular pedagogical approach that utilizes various aspects and forms of art and culture as the basis for learning of concepts across subjects. As a part of the thrust on experiential learning, art-integrated education will be embedded in classroom transactions not only for creating joyful classrooms, but also for imbibing the Indian ethos through integration of Indian art and culture in the teaching and learning process at every level. This art-integrated approach will strengthen the linkages between education and culture.”

Under this project *Ek Bharat Shrestha Bharat* Programme of Government of India has paired State/UT, for Rajasthan is Nagaland. Groups have been already allotted to the students. Do a comparative study and adorn your file with beautiful handmade or print outs and research over the given topic.

PHYSICS

- Fill in the blanks by suitable conversion of units
 - $1 \text{ kg m}^2 \text{ s}^{-2} = \dots \text{ g cm}^2 \text{ s}^{-2}$
 - $1 \text{ m} = \dots \text{ ly}$
 - $3.0 \text{ m s}^{-2} = \dots \text{ km h}^{-2}$
 - $G = 6.67 \times 10^{-11} \text{ N m}^2 (\text{kg})^{-2} = \dots (\text{cm})^3 \text{ s}^{-2} \text{ g}^{-1}$
- A calorie is a unit of heat or energy and it equals about 4.2 J where $1 \text{ J} = 1 \text{ kg m}^2 \text{ s}^{-2}$. Suppose we employ a system of units in which the unit of mass equals a kg, the unit of length equals 8 m, the unit of time is s. Show that a calorie has a magnitude $4.2 \alpha^{-1} \beta^{-2} \gamma^2$ in terms of the new units.
- Explain this statement clearly:

“To call a dimensional quantity ‘large’ or ‘small’ is meaningless without specifying a standard for comparison”. In view of this, reframe the following statements wherever necessary:

 - atoms are very small objects
 - a jet plane moves with great speed
 - the mass of Jupiter is very large
 - the air inside this room contains a large number of molecules
 - a proton is much more massive than an electron
 - the speed of sound is much smaller than the speed of light.
- A new unit of length is chosen such that the speed of light in vacuum is unity. What is the distance between the Sun and the Earth in terms of the new unit if light takes 8 min and 20 s to cover this distance?
- State the number of significant figures in the following:
 - 0.007 m^2
 - $2.64 \times 10^4 \text{ kg}$
 - 0.2370 g cm^{-3}
 - 6.320 J
 - 6.032 N m^{-2}
 - 0.0006032 m^2
- A book with many printing errors contains four different formulas for the displacement y of a particle undergoing a certain periodic motion:

(a = maximum displacement of the particle, v = speed of the particle, T = time-period of motion) Rule out the wrong formulas on dimensional grounds.
- A famous relation in physics relates ‘moving mass’ m to the ‘rest mass’ m_0 of a particle in terms of its speed v and the speed of light c . (This relation first arose as a consequence of special relativity due to Albert Einstein). A boy recalls the relation almost correctly but forgets where to put the constant c . He writes:

Guess where to put the missing c .
- If $x = a + bt + ct^2$ where x is in metre and t in second, then what is the unit of a , b & c ?
- Do all physical quantities have dimensions? If no, name four physical quantities which are dimensionless.
- Learn all the dimensions given in your physics book.

CHEMISTRY

1. Carbon is found to form two oxides which contain 42.9% and 27.3% of carbon respectively. Show that these figures illustrate the law of multiple proportions.
2. How many atoms and molecules of sulphur are present in 64.0 g of sulphur (S_8)?
3. Calculate the number of atoms of the constituent elements in 53 g of Na_2CO_3 ?
4. Arrange the following in order of their increasing masses in grams? (i) one atom of silver (ii) one gram atom of nitrogen (iii) one mole of calcium (iv) one mole of oxygen molecule (v) 10^{23} atoms of carbon and (vi) one gram of iron.
5. Calculate the volume at STP occupied by (i) 14 g of nitrogen (ii) 1.5 moles of carbon dioxide and (iii) 10²¹ molecules of oxygen.
6. A solution of oxalic acid $(COOH)_2 \cdot 2H_2O$ is prepared by dissolving 0.63 g of the acid in 250 cm³ of the solution. Calculate molarity of solution.
7. How many grams of NaOH should be dissolved to make 100 cm³ of 0.15 M NaOH solution?
8. Calculate the mole fraction of ethylene glycol ($C_2H_6O_2$) and water in a solution containing 20% of $C_2H_6O_2$ by mass.
9. Find molarity and molality of a 15% solution of H_2SO_4 (density of $H_2SO_4 = 1.020$ g cm⁻³).
10. The mole fraction of benzene in a solution in toluene is 0.50. Calculate the weight percent of benzene in the solution.
11. Calculate the molality of sulphuric acid solution in which the mole fraction of water is 0.85.
12. Calculate the percentage composition of the various elements in $MgSO_4$.
13. An inorganic salt gave the following percentage composition Na=29.11, S=40.51, O=30.38. Calculate the empirical formula of the salt.
14. Volume of a solution changes with change in temperature then will the molality of the solution be affected by temperature? Give reason for your answer.
15. Calculate the wavelength; frequency and wave number of a light wave whose period is 2.0×10^{-10} s.
16. An element with number 81 contains 31.7% more neutrons as compared to protons. Assign the atomic symbol.
17. An ion with mass number 37 possesses one unit of negative charge. If the ion contains 11.1% more neutrons than the electrons, find the symbol of the ion.
18. Following results were observed when sodium metal is irradiated with different wavelengths. Calculate (a) Threshold wavelength and (b) Planck's constant.
 λ (nm) 500 450 400
 $\nu \times 10^{-6}$ (m s⁻¹) 2.55 4.35 5.20
19. Calculate the kinetic energy of the electron ejected when yellow light frequency 5.2×10^{14} sec⁻¹ falls on the surface of potassium metal. Threshold frequency of potassium is 5×10^{14} sec⁻¹.
20. Write limitations of electromagnetic wave theory.

BIOLOGY

1. Explain the different basis of classification of animals.
2. Give 6 characteristics of porifera.
3. Give 4 characteristics of angiosperms.
4. Give 4 characteristics of gymnosperms.
5. Give 4 characteristics of liverwort.
6. Give 4 characteristics of moss.
7. Give 4 characteristics of bryophytes.
8. Draw table 3.1

INFORMATICS PRACTICES

1. Create a program of a simple calculator using if-else statements, take operator from the user.
2. Create a project of fitness calculator, wherein take the following inputs from the user:
Name, Age, Height, Weight and calculate the BMI

Using if else statements, check and display that the person is fit or not (on the basis of BMI) and suggest some fitness tips (like diet, cardio exercises, walking, weight lifting, floor exercises, zumba etc.) if required. Write the code in your practical file record. Submit the code on the below mentioned email address:

dpsrajshree@gmail.com

MATHEMATICS

LAB MANUAL ACTIVITY

1. To represent set theoretic operations using venn diagram.
2. To distinguish b/w a relation and function.
3. To interpret geometrically the meaning of $i=\sqrt{-1}$ and its integral power.

WORKSHEET QUESTIONS

1. Assume that $P(A)=P(B)$. Show that $A=B$
2. In a survey of 600 students in a school ,150 students were found to be taking tea and 225 taking coffee,100 were taking both tea and coffee. Find how many students were taking neither tea nor coffee?
3. Define set and its types.
4. Find domain and range of real function f defined by $|x-1|$.
5. Find domain of the function $f(x)=x^2+2x+1/x^2-8x+12$.
6. Define equivalence relation and its types.
7. For any two complex no's z_1 and z_2 Prove that
 $Re(z_1z_2)=Re z_1 Re z_2-Im z_1 Im z_2$
8. solve $21x^2-28x+10=0$
9. $(x+iy)^3 =U+iV$, then S.T $U/X+V/Y=4(X^2-Y^2)$.
10. If $(1+i/1-i)^m=1$, then find the least positive integral value of m .

PHYSICAL EDUCATION

RECORD FILE WORK

Record file shall include:-

1. Complete details of any one game of your choice out of the given list:
 - Basketball, Football, Kabaddi, Kho-Kho, Volleyball, Handball, Hockey, Cricket.
 - CWSN (Children With Special Needs – Divyang): Bocce/Boccia , Sitting Volleyball, Wheelchair Basketball, Unified Badminton, Unified Basketball, Unified Football, Blind Cricket, Goalball, Floorball, Wheelchair races and throws, or any other sport/games of choice.
 - Children With Special Needs may opt any one sport/game from the list as alternative for Yogic Practices.
 - However, the sport/game must be different for skill of Game and alternate to yogic practices. (Labeled diagram of Field & Equipment, Rules, Terminologies & Skills)
2. SAI Khelo India Fitness Test administration for all items.
3. Detailed procedure for Asanas, Benefits & contradiction for any Two Asanas for each given lifestyle diseases :Obesity, Diabetes, Hypertension, Asthma and Back Pain & Arthritis. (You can take the help of your textbook)