Bal Bharati
PUBLIC SCHOOL
NISHATPURA, BHOPAL

## HOLIDAY HOMEWORK CLASS :XI A\&B

## SUBJECT

## MATHS

(Mr. Pradeep sir)

1. Two finite sets have $m$ and $n$ elements respectively. The total number of subsets of first set is 64 more than the total number of subsets of the second set. The values of $m$ and $n$ respectively are.
(a) 7,6
(b) 5,1
(c) 6,3
(d) 8,7
2. Which of the following is a null set?
(a) Set of even prime numbers.
(b) Set of composite numbers less than 10 .
(c) Set of prime numbers less than 2.
(d) Set of odd composite numbers.
3. If $A=\{1,2,6\}$ and $R$ be the relation defined on $A$ by $R=\{(a, b): a \in A, b \in$ A and $\mathrm{a}+\mathrm{b}$ is odd.\}, then no. of elements in R is equal to
(a) 2
(b) 3
(c) 4
(d) 5
4. Find the angle in radian through which a pendulum swings it its length is 75 cm and tip describes an arc of length 18 cm .
(a) $7 / 25$
(b) $6 / 25$
(c) $8 / 25$
(d) $3 / 25$
5. Express $50^{\circ} 37^{\prime} 30^{\prime \prime}$ in radian.
(a) $7 \pi / 32$
(b) $5 \pi / 32$
(c) $9 \pi / 32$
(d) $\pi / 32$
6. If $f(x)=x^{3}+\frac{1}{x^{3}}$, then $f(x)+f(-x)$ is equal to
(a) $2 x^{3}$
(b) $2 \frac{1}{x^{3}}$
(c) 0
(d) 1
7. The values of $a$ and $b$, if ordered pair is $(2 a-5,4)=(5, b+6)$
(a) $-2,5$
(b) 2,5
(c) 5,2
(d) $5,-2$
8. Which of the following cannot be the value of $\operatorname{Sin} \mathrm{A}$ if A lies in second quadrant?
(a) $1 / 4$
(b) $3 / 4$
(c) $2 / 4$
(d) $-3 / 4$
9. If $A=\{3,6,9,12,15,18,21\}, B=\{4,8,12,16,20\}, C=\{2,4,6,8,10,12$, $14,16\}, D=\{5,10,15,20\}$; find $(A \cup B) \cap(C \cup D)$.
10. Find the domain and range of the function (a) $\mathrm{f}(\mathrm{x})=\sqrt{9-x^{2}}$ (b) $\frac{x-2}{x-3}$
11. In a class of 60 students, 25 students play cricket and 20 students play tennis and 10 students play both the games. Find the number of students who play (a) neither cricket nor tennis. (b) only cricket.
12. Define different types of functions and draw their graphs. Write their domain and range?
13. Represent the following using Venn diagrams.
(a) $(A \cup B)$
(b) $(A \cap B) \cap C$
(c) $(\mathrm{A} \cap \mathrm{B}) \cup(\mathrm{A} \cap \mathbf{C})$
(d) $(A \cup B)^{\prime}$
(e) $(A \cap B)$

## ENGLISH

(Mrs. Unaiza)

1. Design a poster on the topic- 'How CNG can be the best alternative to diesel and petrol. ( 50 words)
2. On behalf of the Principal of your school, write an advertisement inviting applications for the post of PGT (English) teacher.
3. Can the act of stealing be justified? Give your views in the context of reading ' The Summer of the Beautiful White Horse.'
4. Learn the Q/A and read all the chapters \& poems done in class from both the books 'Hornbill and Snapshot.'
5. To read a Novel of your choice, then in June an activity will be based on it.

## HINDI

(Mrs. Jaya Verma)

## 1 कार्य परियोजना

मुंशी प्रेमचंद जी का जीवन परिचय, साहित्यिक रचनाएं तथा उनकी प्रसिद्ध
रचनाओं पर विश्लेषण करते हुए एक कार्य परियोजना स्पाइरल बाईंडिंग में

## प्रस्तुत करें।

## 2 कला समेकित परियोजना

मध्यप्रदेश एवं बिहार के खानपान , वेशभूषा,लोकनृत्य, लोकनाटक, लोकगीत, साहित्यकार, कलाकेंद्र, पर्यटन और पर्व पर एक ब्रोशर बनाएं। 3 अनुच्छेद लिखें

## 'विद्यार्थी और शिष्टाचार' - विषय पर 120 शब्दों में

## Physics

(Mr. Vaseem)

## Topic: Dimensional Analysis

1. The value of stefan's constant is $\sigma=5.67 \times 10^{-8} \mathrm{~s}^{-1} \mathrm{~m}^{-2} \mathrm{~K}^{-4}$. Find its value in cgs system. [Ans: $5.67 \times 10^{-5} \mathrm{erg} \mathrm{s}^{-1} \mathrm{~cm}^{-2} \mathrm{~K}^{-4}$ ]
2. Convert one atmospheric pressure $\left(=10^{5} \mathrm{~N} \mathrm{~m}^{-2}\right)$ into dyne $\mathrm{cm}^{-2}$. [Ans: $10^{6}$ dyne $\mathrm{cm}^{-2}$ ]
3. If the unit of force, energy and velocity are $10 \mathrm{~N}, 100 \mathrm{~J}$, and $5 \mathrm{~ms}^{-1}$, find the units of length, mass and time.
[Ans: $10 \mathrm{~m}, 4 \mathrm{~kg} ; 2 \mathrm{~s}$ ]
4. The height of the mercury column in a barometer in a Calcutta laboratory was recorded to be 75 cm . Calculate the pressure in SI and cgs units using the following data: specific gravity of mercury $=13.6$, density of water $=$ $10^{3} \mathrm{~kg} / \mathrm{m}^{3}, \mathrm{~g}=9.8 \mathrm{~m} / \mathrm{s}^{2}$ at Calculate. Pressure $=\mathrm{h} \mathrm{pg}$ in usual symbols. [Ans: $9.996 \times 10^{4} \mathrm{~N} / \mathrm{m}^{2}, 9.996 \times 10^{5}$ dyne $/ \mathrm{cm}^{2}$ ]

## CHECKING THE CORRECTNESS OF FORMULAE

5. Volume $V$ of water which passes any point of a canal during $t \sec$ is connected with the cross section A of the canal and the velocity $u$ of water by the relation $V=K A t u$, where K is dimensionless constant. Verify the correctness of the relation. [Ans: correct]
6. the viscous force F acting on the body of radius r . moving with a velocity $u$ in a medium of coefficient of viscosity $\eta$ is given by $F=6 \pi \eta r u$. check the correctness of the formula.
[Ans: correct]
7. The dimensions of (angular momentum/ magnetic moment) are $\left[\mathrm{MA}^{-1} \mathrm{~T}^{-1}\right.$ ]. Is it correct? [Ans: yes]

## THE FACT THAT QUALITIES HAVING SAME DIMENSIONS CAN BE ADDED OR SUBTRACTED

8. The velocity $u$ of a particle depends upon time $t$, according to equation $U$ $=a+b t+\frac{c}{d+t}$ write the dimensions of $\mathrm{a}, \mathrm{b}, \mathrm{c}$ and d .
Ans: $\left[\mathrm{LT}^{-1}\right],\left[\mathrm{LT}^{-2}\right],[\mathrm{L}],[\mathrm{T}]$
9. Write the dimensions of $a / b$ in the relation $F=a \sqrt{x}+b t^{2}$ where $F$ is force, x is distance and t is time.
[Ans: $\mathrm{L}^{-1 / 2} \mathrm{~T}^{2}$ ]
10. Write the dimensions of $a / b$ in the relation $P=a-t^{2} / b x$ where where $P$ pressure, x is distance and t is time.
[Ans: [ $\mathrm{M}^{1} \mathrm{~T}^{-2}$ ]

## DERIVATION OF FORMULAE

11. If force, velocity and the time are taken as fundamental qualities, what would be the dimensions of work?
[Ans: $\mathrm{F} u \mathrm{t}$ ]
12. Experiments shows that frequency ( n ) of a tuning fork depends on the length (l) of the prong, density (d) and the young's modulus (y) of its material. On the basis of dimensional analysis, drive an expression for frequency of tuning fork.
[Ans: $\mathrm{n}=\mathrm{K} / \mathrm{l} \sqrt{ } \mathrm{y} / \mathrm{d}$ ]
13. The velocity ( $u$ ) of the transverse waves on a string may depend upon (i) length (l) of the string, (ii) tension T in the string and (iii) mass per unit
length (m) of the string. Derive the formula dimensionally. [Ans: $k \sqrt{ } \mathrm{~T} /$ m]
14. Assuming that the mass $m$ of the largest stone that can be moved by a flowing river depends on the velocity $u$, the density $\rho$ and the acceleration due to gravity g , show that m varies directly as the sixth power of velocity of flow.
15. Using the method of dimensions, drive an expression for the rate of flow $(\mathrm{V})$ of a liquid through a pipe of radius (r) under a pressure gradient ( $\mathrm{P} / \mathrm{l}$ ). given that V also depends on coefficient of viscosity $(\eta)$ of the liquid.
[Ans: $\mathrm{k}=\mathrm{Pr}^{4} / 1 \eta$ ]

## Chapter: Motion in a Straight Line

1. An automobile travels on a straight road for 40 km at $30 \mathrm{~km} / \mathrm{h}$. It then continues in the same direction for another 40 km at $60 \mathrm{~km} / \mathrm{h}$. Calculate the average speed of the car during this 80 km trip.
2. The position of an object moving in a straight line is given by $\mathrm{x}=0.3 \mathrm{t}-4 \mathrm{t}^{2}+$ $t^{3}$, where $x$ is in meters and $t$ in seconds. (a) Calculate the position of the object at $\mathrm{t}=1.0,2.0,3.0$, and 4.0 s . (b) Calculate the object's displacement between $\mathrm{t}=$ 0 and $\mathrm{t}=4.0 \mathrm{~s}$. (c) Calculate the average velocity for the time interval from $\mathrm{t}=$ 2.0 to $\mathrm{t}=4.0 \mathrm{~s}$.
3. Two trains, each having a speed of $30 \mathrm{~km} / \mathrm{h}$, are headed toward each other on the same straight track. A bird that can fly $60 \mathrm{~km} / \mathrm{h}$ flies off the front of one train when they are 60 km apart and heads directly for the other train. On reaching the other train it flies directly back to the first train, and so forth. Calculate the total distance the bird travels before the trains crash.
4. A particle had a velocity of $18 \mathrm{~m} / \mathrm{s}$ and 2.4 s later its velocity was $30 \mathrm{~m} / \mathrm{s}$ in the opposite direction. Calculate the average acceleration of the particle during this 2.4 s interval.
5. The position of a particle moving along the x -axis depends on clock reading according to the equation $\mathrm{x}=\mathrm{at}^{2}-\mathrm{bt}^{3}$, where x is in feet and t in seconds. (a) What dimensions and units must $a$ and $b$ have? For the following, let their numerical values be 3.0 and 1.0 , respectively. (b) Calculate the clock reading when the particle reaches its maximum positive x position. (c) Calculate the total length of path the particle covers in the first 4.0 s. (d) Calculate the displacement of the particle during the first 4.0 s . (e) Calculate the particle's speed at the end of each of the first 4 s . (f) Calculate the particle's acceleration at the end of each of the first 4 s .
6. A rocketship in free space moves with constant acceleration equal to $9.8 \mathrm{~m} / \mathrm{s}^{2}$.
(a) If it starts from rest, how long will it take to acquire a speed one-tenth that of light? (b) How far will it travel in so doing? (The speed of light is $3.0 \times 10^{8} \mathrm{~m} / \mathrm{s}$.) 10. An object has a constant acceleration of $3.2 \mathrm{~m} / \mathrm{s}^{2}$. At a certain clock reading its velocity is $+9.6 \mathrm{~m} / \mathrm{s}$. Determine its velocity (a) 2.5 s earlier and (b) 2.5 s later.
7. Find dy/dx, when
(i) $Y=3 x^{4}-7 x^{2}+5 x+9$
(ii) $\mathrm{Y}=1 /\left(\mathrm{x}^{2}+3\right)$
(iii) $\mathrm{Y}=\sqrt{x}-1 / \sqrt{x}$
(iv) $\quad \mathrm{Y}=(3 \mathrm{x}+2)(4 \mathrm{x}-5)$
(v) $\quad\left(x^{2}-x+1\right) /\left(x^{2}+x+1\right)$
(vi) $\quad(x+1) /(x+2)^{2}$
(vii) If $x=a t^{2}, y=2 a t$, find $d y / d x$.
(viii) If $x=a(\cos \theta+\theta \sin \theta)$ and $y=(\sin \theta-\theta \cos \theta)$, find $d y / d x$.
(ix) If the motion of the particle is represented by $S=t^{3}+t^{2}-t+2$, find
the position, velocity and acceleration of the particle after 2 s .

SUBJECT

## Home work

COMPUTER SCIENCE
(Mrs Ridhima mam)

|  | Q. 1 What is None literal in Python? <br> Q. 2 What is the error in following code: $x, y=7$ ? <br> Q. 3 what will the following code do: $\mathrm{a}=\mathrm{b}=18$ ? <br> Q. 4 Following code is creating problem $X=0281$, find reason. <br> Short Answer Type Questions <br> Q. 1 What is the difference between a keyword and an identifier? <br> Q. 2 What are literals in Python? How many types of Literals allowed in Python? <br> Q. 3 How many types of sequences are supported in Python? <br> Q. 4 What factors guide the choice of identifiers in program? <br> Q. 5 What is the difference between an expression and a statement in Python? <br> Q. 6 What are tokens in Python? How many types of tokens allowed in Python? <br> Q. 7 What are operators? What is their function? Give examples of some unary <br> and binary <br> operators. <br> Q. 8 Write a Program to obtain temperature in Celsius and convert it into <br> Fahrenheit using <br> formula - <br> C $\times 9 / 5+32=F$ <br> Q. 9 WAP to read todays date (only date Part) from user. Then display how many days are <br> left in the current month. <br> Q. 10 WAP to print the area of circle when radius of the circle is given by user. <br> Q. 11 WAP to print the volume of a cylinder when radius and height of the <br> cylinder is given <br> by user. <br> Q. 12 WAP that asks your height in centimeters and converts it into foot and inches. <br> Q. 13 WAP to find area of a triangle. <br> Q. 14 WAP to calculate simple interest. <br> Q. 15 WAP to read a number in n and prints n 2 , $\mathrm{n} 3, \mathrm{n} 4$ <br> Chapter - 3: DATA HANDLING <br> Short Answer Type Questions <br> Q. 1 What are data types? What are Python"s built-in core data types? <br> Q. 2 Which data types of Python handle Numbers? <br> Q. 3 Why is Boolean considered a subtype of Integers? <br> Q. 4 What do you understand by term „immutable"? <br> Q. 6 What are mutable and immutable types in Python? List both of them. <br> Q. 7 What are augmented assignment operators? How are they useful? |
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| Physical Education (Mr Deepak Sir) |  |
| ACCOUNTS AND BUSINESS STUDIES (Mr Dhanraj sir) | Accounts- <br> *Assignment on History of Accounting. <br> *Process of accounting. <br> Types of accounting. <br> Accounting terminology . |


|  | Business studies- |
| :--- | :--- |
|  | *Assignment on History of Trade and Commerce. |
|  | *Important Trade Centre in India. |
| ECONOMICS | *Students As part of your Assignment prepare a 15 page analytical |
| (Mrs Archana Mam) | project on any one of the given topics using diagrams and tabular <br> presentation submit in a file on 19th June 2023. |
|  | *Link between Poverty and Crime in India |
|  | *Globalisation and its impact on Indian Economy |
|  |  |

## Compiled by: (Mr Vaseem)

