

**HOLIDAY HOMEWORK 2018-19**
**Class: XI B**

This year, your holiday homework is a fun mix of all the aspects of learning. It has been designed to ensure that you enjoy and learn at the same time. Special attention has been taken to ensure that you use your creativity, your innovative ideas and your imagination to shape your holiday homework into fantastic 'creations'. So enjoy your holidays spending quality times with your near and dear ones and devote sometimes to learn new things.

**General Instructions:**

- Holiday Homework of all subjects to be done in **separate Stick Files** (only).
- The areas to be covered are suggested below. You can of course use your creativity and innovation for new ideas too!
- Credit will be awarded to original photographs/ drawings, illustrations and creative use of materials.
- Holiday Homework needs to be submitted on 10<sup>th</sup> July 2018.
- Holiday Homework needs to be developed and presented in this order:
  - Cover page showing title, student information, school and academic year and parent's signature.
  - List of contents with page numbers.
  - The last page should have Bibliography/ Sources of information from where you have collected your information.

**Subject: English**

Watch either of the following movies and write a movie review in about 250-300 words covering the following aspects: About the Cast, About the Director, Synopsis, and Review of the Movie.

*Dead Poet's Society (1989)*

**OR**

*A Beautiful Mind (2001)*

**Subject: Mathematics**

1. Solve. Show the graph of the solutions on the number line
2. Solve. Show the graph of the solutions on the number line
3. Solve. Show the graph of the solutions on the number line
4. John needs a minimum of 360 marks in four tests in English course to obtain an A grade. On his first three tests, he scored 88,96,79 marks. What should be his score in the fourth test so that he can make an A grade?
5. To receive grade A in a course, one must obtain an average of 90 marks or more in five examinations (each of 100 marks). If Sanjai's marks in first four examinations are 86,92,94 and 95, find minimum marks that sanjai must obtain in fifth examination to get grade A in the course Ans: atleast 82

6. 
$$\frac{1}{1 \cdot 2} + \frac{1}{2 \cdot 3} + \frac{1}{3 \cdot 4} + \dots + \frac{1}{n(n+1)} = \frac{n}{n+1}, \text{ where } n \geq 1$$

7. 
$$\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \dots + \frac{1}{2^n} = 1 - \frac{1}{2^n}$$

8. 
$$\frac{1}{2 \cdot 5} + \frac{1}{5 \cdot 8} + \frac{1}{8 \cdot 11} + \dots + \frac{1}{(3n-1)(3n+2)} = \frac{n}{(6n+4)}$$

9. 
$$\frac{1}{1 \cdot 2 \cdot 3} + \frac{1}{2 \cdot 3 \cdot 4} + \frac{1}{3 \cdot 4 \cdot 5} + \dots + \frac{1}{n(n+1)(n+2)} = \frac{n(n+3)}{4(n+1)(n+2)}$$

10.  $10^{2n-1} + 1$  is divisible by 11

14.  $10^n + 3 \cdot 4^{n+2} + 5$  is divisible by 9

11.  $41^n - 14^n$  is divisible by 27
12.  $x^{2n} - y^{2n}$  is divisible by  $(x+y)$
13.  $n(n+1)(n+2)$  is a multiple of 6
14.  $3^{2n+2} - 8n - 9$  is divisible by 8
15.  $6^{n+2} + 7^{2n+1}$  is divisible by 43
16.  $n(n+1)(n+5)$  is a multiple of 3
17.  $n(n+1)(n+5)$  is a multiple of 3
18. Let  $U = \{a, b, c, d, e, f, g, h, I, j\}$ ,  $A = \{a, b, c\}$ ,  $B = \{d, e, f, g\}$ ,  $C = \{a, c, e, g, I\}$  and  $D = \{f, g, h\}$ . Find the following
- (i)  $(B \cup C)'$  (ii)  $(B \cap C)'$  (iii)  $(B \cup D)'$  (iv)  $(A - B)'$
- (v)  $(B - C)'$  (vi)  $(D - C)'$  (vii)  $(C \cap D)'$  (viii)  $(C - D)'$
19. Given,  $A = \{1, 2, \dots, 11\}$ ,  $B = \{1, 3, 5, \dots, 9\}$  and  $C = \{2, 3, 5, 7, 11\}$ . Verify the following for the above sets:
- (i)  $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$  (ii)  $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$
20. Verify the following by using Venn diagram:
- (i)  $A - (B \cap C) = (A - B) \cup (A - C)$  (ii)  $A - (B \cup C) = (A - B) \cap (A - C)$
21. In a committee, 50 people speak French, 20 speak Spanish and 10 speak both Spanish and French. How many speak at least one of these two languages
22. In a survey of 600 students in a school, 150 students were found to be taking tea and 225 taking coffee, 10 were taking both tea and coffee. Find how many students were taking neither tea nor coffee?
23. In a survey of 60 people, it was found that 25 people read newspaper H, 26 read newspaper T, 26 read newspaper I, 9 read both H and I, 11 read both H and T, 8 read both T and I, 3 read all three newspapers.
- (i) Find the number of people who read at least one of the newspapers
- (ii) Find the number of people who read none of the newspapers
24. In a survey it was found that 21 people liked product A, 26 liked product B and 29 liked product C. If 14 people liked products A and B, 12 people liked products A and C, 14 people liked products B and C and 8 liked all three products. Find how many liked product C only.

Ans: 11

### Subject: Physics

Name of the student	Topic for Project
Purab Golecha	Research, prepare and submit a project on quantum and classical mechanics.
Divyansh Chikara	Research, prepare and submit a project on quantum and classical mechanics.
Stanzin Stobzor	Research, prepare and submit a project on lifecycle of stars.
Aditi Yengkhom	Research, prepare and submit a project on lifecycle of stars.
Harsh	Research, prepare and submit a project on gravitational field of earth, effect of rotation of earth on time and season during a year.
Adyasa Panda	Research, prepare and submit a project on gravitational field of earth, effect of rotation of earth on time and season during a year.
Aditya Bahl	Research, prepare and submit a project on gravitational field of earth, effect of rotation of earth on time and season during a year.

### Subject: Chemistry

For better understanding of an atom, you are need to research and explain the following and then deduce the structure of an atom based on the sequential findings of the following:

- Bohr's Model of an atom with its characteristics, mathematical implications and drawbacks.
- Hydrogen spectrum with all the series discovered till now.
- Broglie's Equation and its implication on mass and wave length.
- Heisenberg's Uncertainty Principle.
- Quantum Model of an atom: with s,p,d and f notations. Support your explanations with proper diagrams and clarification on :
  - n+l rule
  - Aufbau's Principle
  - Hund's Rule
  - Pauli's Exclusion Principle.
  - Give pictorial electronic configuration of Scandium, Titanium, Vanadium and Chromium.
- Also, prepare a short report on the latest development on atomic structure by CERN team.

**Subject: Computer Science**

**Prepare a Power Point Presentation on “Object Oriented programming” which includes the following points:**

- a) Fundamentals of Object oriented programming:
  - i. Data Abstraction
  - ii. Encapsulation
  - iii. Inheritance
  - iv. Polymorphism
- b) Effect of Object Oriented methodology on software design:
  - i. Maintenance
  - ii. Extensibility
  - iii. Re-usability
- c) Algorithms and Flowcharts

**Guidelines for Power Point Presentation:**

- Presentation should include minimum 40 slides.
- It should run automatically according to the text displayed over particular slide.
- Proper Effects and animations should be used to define the particular topic.
- Presentation should be precise and interactive.

**Subject: Psychology**

**QUANTITATIVE PROJECT WORK**

**Description:**

Step 1: Decide upon a Human Behaviour you want to research upon.

Step 2: Frame a Hypothesis.

Step 3: Describe your methodology and data collection method.

Step 4: Data Collection.

Step 5: Statistical Analysis of Result.

Step 6: Conclusion.

Step 7: Revising the Conclusion.

**Subject: Painting**

**Prepare one geometrical design in half imperial sized sheet and color it in assorted color scheme.**