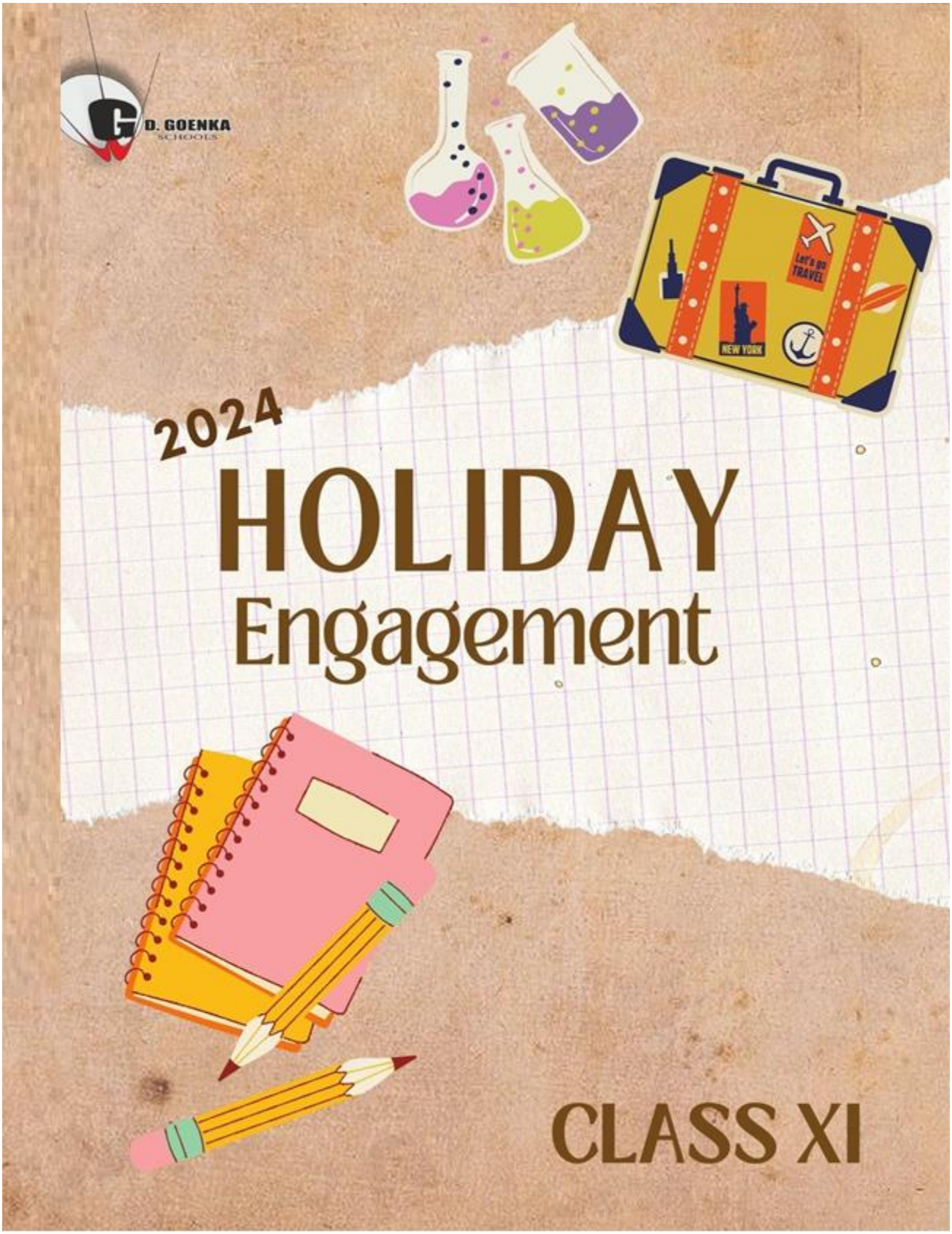
G. D. GOENKA PUBLIC SCHOOL, MAINAWATI MARG, KANPUR



From the Principal's desk

Dear Students

As the warm embrace of summer envelops us, let us pause and reflect upon the words of Helen Keller: "Life is either a daring adventure or nothing at all." Indeed, if life were devoid of challenges and uncertainties, it would lose its essence, its purpose, much like a ship adrift in calm waters.

The balmy months of May and June offer us an opportunity for self-reflection, a time to rejuvenate our spirits and nourish our minds. Amidst the tranquil respite, we find opportunities for familial bonds to flourish, for ventures into unexplored realms, for passions to be pursued and dreams to be realized.

It is said that an umbrella, a book, and the mind only serve their purpose when open! Let us heed these words and embrace the boundless possibilities that lie before us. Let our minds unfurl like the petals of a blooming flower, eager to absorb the wisdom and experiences that await us in the coming days.

The Summer Holiday Engagement of 2024 beckons with a unique purpose—a purpose to embark on a journey to elevate Social Emotional and Experiential Learning, as well as foster Financial Literacy! Let us immerse ourselves in delightful and enlightening endeavours to equip our youngsters with invaluable financial acumen and nurture empathy. Each challenge, each endeavour, will be a stepping stone towards personal growth and enlightenment.

As we engage ourselves in these activities, let us not forget the joy of learning, the thrill of exploration, and the warmth of companionship. Let us involve our families, for in their support and guidance, we find strength and inspiration.

I hold in high regard the creativity and individual strengths of each and every one of you. Your efforts, your contributions, are invaluable in shaping our collective journey.

Hope this Goenkan initiative of the Summer Holiday Engagement 2024-25 is a testament to our capacity for growth and is replete with learning and laughter.

Let us redefine who we are and embrace the spirit of collaboration, innovation, and compassion.

M. Dutta

Contents

ENGLISH

Learning from unexpected places !

Insights can come from seemingly irrelevant sources, cross disciplinary connections, serendipitous encounters, and even seemingly unrelated experiences can trigger new perspectives and spark creative solutions.

Multitasking is the need of the hour!

This summer, the English assignment is interesting, challenging and designed to be useful too – the home work entails some literary and research 'work outs' for you.
We have provided an excellent Reading list for you too….so that you can curl up with a book and detox from the digital and screen distractions !!

GENERAL INSTRUCTIONS:
Use 2 pages of your Literature notebook. Make a neat and attractive research project on any ONE of the following:

1. Make a 2 page pictorial display of Kailash Mansarovar! Also the Kailash Mansarovar 'Yatra". Include pictures, narrative descriptions and experiences of pilgrims and travellers. Do this task on 2 A4 sheets. Plan this as a collage or a travel diary.

2. Make a 2 page pictorial display on King Tutankhamun and the Valley of the Kings. Include pictures details, articles and information regarding the ancient Egyptian Civilization. Add interesting facts and myths regarding King Tut. Do this task on 2 A4 sheets. Your research can also be presented as a Treasure hunt or an Escape Room display.

3. Poster Making A poster is a large sheet that is placed either in a public space to promote something or to give a message on relevant social/other issues. Typically, posters include both textual and graphic elements, although a poster may be either wholly graphical or wholly text. Posters are designed to be both eye-catching and informative.

4. Design an attractive poster on ANY ONE of the following:
    - For the promotion of your school GD GOENKA PUBLIC SCHOOL KANPUR
    - Save the common sparrow

5. Newspaper Activity: Cut out and paste (minimum 2 each) clippings of classified advertisement from the newspaper under the heading:
   * Situation Wanted * Situation Vacant * Property For Sale * To-Let

6. Newspaper Activity Reading the newspaper is a habit that will help you throughout your life, because of the many benefits it has. This vacation, use the newspaper to enhance your vocabulary. As you read the newspaper, pick out a new word that you come across. Cut out the portion of the paper that contains the word. Paste it in your copy and highlight that word. Look up the meaning and usage and frame 2 sentences using the new word you have learnt. You have just made friends with a new word!! Do this activity till you have at least 15 new words in your repertoire.

7. The lesson 'The Portrait of a Lady' suggests a growing distance between the younger and older generation. Write a speech in about 150 words to be delivered in the morning assembly of the school on the above topic, on the basis of your reading of the text.

***CHOOSE ANY THREE**

CURATEDCOMPILATIONS FROM ENGLISH DEPARTMENT

Let us do away with monotony and explore the wonderful world of fiction. A great work offiction can allow us to see the truths that may be hidden from us in real life.

- The Catcher in the Rye — J D Salinger
- Lord of the Flies — William Golding
- The Thorn Birds — Colleen Mc Cullough
- Gone with the Wind — Margaret Mitchell
- The Godfather — Mario Puzo
- Kane and Abel — Jeffrey Archer
- Siddhartha — Herman Hesse
- The Kite Runner — Khaled Hosseini

We should look for books that make us think harder, not easier. Personal growth is tucked away in the pages that question our world view !

- Think and Grow Rich — Napolean Hill
- The Power of Now — Eckhart Tolle
- Freakonomics — Steven D Levitt
- Vagabonding — Rolf Potts

CLASSIC FAVOURITES

TOP FIVE AMERICAN NOVELS

• Of Mice and Men	John Steinbeck
• Moby Dick	Herman Melville
• The Scarlet Letter	Nathaniel Hawthorne
• The Great Gatsby	F Scott Fitzgerald
• To Kill a Mockingbird	Harper Lee

TOP FIVE BRITISH NOVELS

• Pride and Prejudice	Jane Austen
• Wuthering Heights	Emily Bronte
• Mayor of Casterbridge	Thomas Hardy
• Oliver Twist	Charles Dickens
• Mill on the Floss	George Elliot

TOP FIVE BOOKS BY INDIAN AUTHORS

• A Suitable Boy	Vikram Seth
• God of Small Things	Arundhati Roy
• Train to Pakistan	Khushwant Singh
• Difficult Daughters	Manju Kapoor
• The Namesake	Jhumpa Lahiri

TOP FIVE BOOKS SET IN INDIA

• The Far Pavilions	M M Kaye
• The City of Djinns	William Darymple
• Shantaram	Gregory David Roberts
• The White Tiger	Aravind Adiga
• City of Joy	Dominique Lapierre

TOP FIVE MOVIE/BOOK ADAPTATIONS

• The Godfather	Mario Puzo

• Forrest Gump	Winston Groom
• The Shawshank Redemption	Stephen King
• Murder on the Orient Express	Agatha Christie
• The Notebook	Nicholas Sparks

MATHEMATICS

Project Work (To be done in project file)
1. Mathematical modelling
2. Sets

- Project should be of atleast 10 pages not exceeding 15 pages.
- It should be hand written, will not be accepted in the printed form.
- Proper diagrams should be made with the coloured pens or coloured papers should be pasted.
- References must be mentioned at the end of the project work.
- it should not be copied from internet completely.

PHYSICS

A. Solve the following questions in your Physics registers.

1. Give an example of
   (a) a physical quantity which has a unit but no dimensions.
   (b) a physical quantity which has neither unit nor dimensions.
   (c) a constant which has a unit.
   (d) a constant which has no unit.
2. The volume of a liquid flowing out per second of a pipe of length l and radius r is written by a student as

$$V = \frac{\Pi P r^4}{8\eta l}$$

   where P is the pressure difference between the two ends of the pipe and η is coefficent ofviscosity of the liquid having dimensional formula $ML^{-1}T^{-1}$. Check whether the equation is dimensionally correct.
3. If momentum (p), area (A) and time ( ) T are taken to be fundamental quantities, then what is the dimensional formula of energy?
4. The vernier scale of a travelling microscope has 50 divisions which coincide with 49 main scale divisions. If each main scale division is 0.5 mm, calculate its least count.
5. What is the nature of position-time graph for uniform motion and what does the slope of position-time graph indicate?
6. A ball is thrown vertically upwards. Draw its velocity-time curve.
7. The v-t graphs of two objects making an angle of 30º and 60º with the time axis. Find the ratio of their accelerations.
8. A car moving with a speed of 50 km/h can be stopped by brakes after at least 6m. What will be the minimum stopping distance, if the same is moving at a speed of 100 km/h?
9. If a body loses half of its velocity on penetrating 3 cm in a wooden block , then how much will it penetrate more before coming to rest?
10. A body starts from rest and moves with constant acceleration. Find the ratio of the distance covered in the nth second to the distance covered in n seconds.

B. Investigatory projects are part of obligatory assignment involving purely experimental procedures so that you report on, duplicate, or adapt something that someone else has already discovered. It may involve some other form of investigation also.

Prepare a PHYSICS INVESTIGATORY PROJECT on any topic of your choice. Use A4 size sheets for the project including various newspaper clippings, images, latest discoveries and inventions relevant to the topic.
A format, such as given below, can be followed.

(i) Title of the investigatory project: Write the title of the project, for example, 'Investigating effect of pressure on rebound height of a basketball.'

(ii) Objectives: Express as clearly as possible the effect of one variable that the experiment is designed to investigate.
(iii) Materials needed: This might be just a list of apparatus used.
(iv) Method: Describe the procedure stepwise including the precautions taken, if any.
(v) Result: A suitable chart or table for recording and organizing your readings or measurements should be made out before you start the experiment.
(vi) Analysis and interpretation: Observation data are factual, and may not be as expected by you.
(vii) Discussion: Discuss briefly the implication of your results and suggest extensions of any kind that can be undertaken.
(viii) Conclusion: In view of the results obtained and related work done on the topic of the project, write the conclusion briefly.
(ix) References: Any work related to the project which you have come across through books/articles or any other source should be written as reference, for example: Michael Michalco (2001), Cracking Creativity, Berkeley, Ten Speed Press.

Suggestive Topics

1. Investigating effect of pressure on rebound height of a basketball.
2. Relationship between surface area of beaker and evaporation levels of water
3. Hydraulic lift
4. Effect of detergents on surface tension
5. Study of Centre of gravity.
6. Effect of temperature on elasticity of a material
7. Exploring the factors affecting the efficiency of a solar cell by varying the intensity oflight and the angle of incidence.
8. Investigating the relationship between the length of a pendulum and its period of oscillation.
9. Verification of Hooke's Law
10. Study the effect of various factors on the resistance of a material

CHEMISTRY

1. **GENERAL INSTRUCTIONS:**

Students are required to submit holiday homework in the form of Project file / elaborated case study on any relevant topic of chemistry.

SOME SUGGESTED TOPICS:

1 Chemistry in everyday life: Sanitizers, disinfectants and Polymer PPE.
2 Chromatography as one of the techniques of separating coloured components.
3 Astrochemistry : Understanding the chemical cosmos.
4 CNG v/s Petrol and Diesel: The emissions and cleanliness match up.
5. DNA fingerprinting : Purpose ,procedure and its use.
6 Green chemistry as an alternative tool for reducing air pollution?
7 Preparing Aspirin (a pain killer) in the lab.

2 Complete the worksheets **attached at the last** on structure of atom and Periodic classification of elements.

BIOLOGY

GENERAL INSTRUCTIONS:

1. *All experiments to be written in the practical file.*
2. *Prepare an investigatory project on any topic of your interest related to BIOLOGY but do get it approved by your teacher. The format will be discussed in the group.This is a part of your board practical schedule.*
3. *The project should be hand written with a case file attached to it.*

HISTORY

I-Do research work during the holidays for any one topic related to your syllabus. **Certain** topics with guidelines are given below.You can choose any other topic from Book1 or Book2.This research will be for your project work.

1. You studied in detail about the civilisation of Mesopotamia in the theme-'Writing and city life'.
   1.Writing and city life- Role of writing in mesopotamia's social and economic life.
2. 2.An empire across three continents-The great Roman empire and its legacy.

POLITICAL SCIENCE

I-Do research work during the holidays for any one topic related to your syllabus. **Certain** topics with guidelines are given below.You can choose any other topic from Book1 or Book2.This research will be for your project work.

1. Election and representation- Election commission of India and its role and responsibilities .
2. Rights in Indian constitution-Right to freedom and its role in carving our life .

PSYCHOLOGY

Each student has to make a project file and do the holiday homework in it. Project can be in the form of a spiral folder with a plain cover sheet. Creativity and dedication are important aspects. It should be handwritten.

1. Make a project on any 1 branch of psychology (refer to chapter 1)
2. Choose an eminent psychologist. Write a paper about him/her considering the following elements
   a. Biography
   b. Professional history
   c. Theories/ influences on Psychology
3. In the school register write question answers of chapters 1,2 and 4 (given at the end of chapter of NCERT book)

SOCIOLOGY

1- Choose any ONE ppt/project from the given two options:

(A) Make a ppt/project on one Indian as well as one western sociologist.

You could choose from amongst the sociologists given in the 2nd book: Understanding Society

Chapter 9: Introducing Western Sociologists AND

Chapter 10: Indian Sociologists

OR

(B) Prepare a power point presentation on any one raging issue of societal importance:

(a) Introduce the issue, stating its impact on society, societal structure and institutions.

(b) Incorporate related current affairs/news, draw an analysis of governmental laws, schemes and news related to the issue.

(c) Critically examine the issue and mention what actions, according to you, could be taken to effectively mitigate the issue.

2-Do the Assignments and worksheets given for chapter 1 and 2

ECONOMICS

Dear Students,
Please follow the guidelines enlisted below for the project work which you have to do for the holiday engagement. Do carry out research, read extensively, explore and think 'out of the box' to make your project unique and more meaningful.

Date of Submission: 5th July 2024

Guidelines for Project Work :

1. Make a Project file on any one of the following topics:
    - Rural Development
    - Sustainable Development
2. Project must be of 40-45 pages (including diagrams & graphs).
3. It should be handwritten.
4. It should be an independent, self-directed piece of study.
5. Following essentials are required to be fulfilled in the project.
    - Content/Index
    - Acknowledgement
    - Certificate
    - Introduction
    - Details of the topic
    - Pros and Cons of the economic event/happening.
    - Major criticism related to the topic (if any)

- Students' own views / opinion and learning from the work
- Any other valid idea as per the perception of the student who is presenting the Project-Work.
- Case Study
- Bibliography

6. Arrange a presentation of the project file

ENTREPRENEURSHIP

Dear Students, Please follow the guidelines enlisted below for the project work which you have to do for the holiday engagement.
Do carry out research, read extensively, explore and think 'out of the box' to make your project unique and more meaningful.

Guidelines for the Project Work :
Topic for the project - **Detailed journey of any two successful entrepreneurs**

Date of Submission: 5 July 2025
The expectations of the project work are :

1. Project should be of 25-30 pages (including diagrams & pictures).
2. It should be handwritten.
3. It should be an independent, self-directed piece of study.

Following essentials are required to be a part of the project.

- Content/Index
- Acknowledgement
- Certificate
- About the entrepreneurs
- Their product / service
- Their business performance analysis
- Their Competitor Analysis
- Students' own views/ opinion and learning from the work
- Any other valid idea as per the perception of the student who is presenting the Project-Work.
- Bibliography

BUSINESS STUDIES

Guidelines for Project Work :

Topic for the project :

- Make a project on Forms of business organization

Date of Submission: 7 July 2024

Scope of the project:

The expectations of the project work are :

1. Project should be of 40-45 pages
2. It should be handwritten.
3. It should be a well researched piece of study.
4. The practical file should include:
   Content/Index
   Acknowledgement
   Certificate
   Introduction
   Details of the topic
5. Students should add their own key learning in conclusion.

ACCOUNTANCY

Write 50 business transaction

1- Find out Two aspects of each transaction

2- State the type of account -Personal real or nominal

3- State the nature of aspect- asset liability expense income debtors creditor

4- Mention Dr and credit of both aspects

PAINTING

***Theory** : Research work on prehistoric rock painting and art of Indus valley civilization.*

1. *Write an essay on prehistoric rock paintings.*
2. *Give the brief description on the 'Art of Indus Valley Civilization ".*
3. *Explain the following artwork :*
    - *Dancing Girl*
    - *Male Torso*
    - *Mother Goddess*
    - *Bull*
    - *Painted earthenware*

***Practical** :*

1. *One canvas painting size 30"×30" or 30"x40" can use the style of your favorite artist.*
2. *Five paintings on the theme of 'Nature, Still life, Figurative compositions and Landscapes' Size should be half imperial.*

***GENERAL INSTRUCTIONS**:*

- *Write the answers of the following questions in your notebook.*
- *The name of the work should be Holidays Engagement_2024-25*
- *Complete all the questions.*
- *Choose any medium for practicals.*

PHYSICAL EDUCATION

PROJECT WORK - 1

Prepare the project on any one game of your choice out of the topics given in class.
The project has to be written based on following guidelines:-

- History of the game
- Draw the diagram of court/field of related game
- Specifications of the playfield and sports equipment
- Latest general rules of the game

- Fundamental skills of the game
- Terminology
- Important tournaments of related game

PROJECT WORK - 2

Do the worksheet given in class on the topic olympism.

MUSIC

Make an assignment on the following topics -

1) Detailed information about any one gharana
2) Biography on any one famous classical musician

G.D. GOENKA PUBLIC SCHOOL, KANPUR
CLASS- XI, SUBJECT- CHEMISTRY, UNIT 2 – STRUCTURE OF ATOM
Revision Worksheet

MCQ (1 Mark Questions)

1.Which of the following options does not represent ground state electronic configuration of an atom?
(a) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^8\ 4s^2$ (b) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^9\ 4s^2$
(c) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^{10}\ 4s^1$ (d) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^5\ 4s^1$

2.Number of angular nodes for 4d orbital is _____.
(a) 4 (b) 3 (c) 2 (d) 1

3. The number of radial nodes for 3p orbital is _____.
(a) 3 (b) 4 (c) 2 (d) 1

4. g subshell is characterized by:
(a) n = 5 (b) m = 3 (c) l = 4 (d)l = 5

5. Which expression represents de Brogile relationship?
(a) h/mu = p (b) λ = h/mv (c) λ = h/mp (d)λ = u/p

6.Which of the following is responsible to rule out the existence of definite paths or trajectories of electrons?
(a) Pauli's exclusion principle. (b) Heisenberg's uncertainty principle.
(c) Hund's rule of maximum multiplicity. (d) Afbau principle

7. For which of the following sets of quantum numbers, an electron will have the highest energy?
(a) 3, 2, +1, +1/2 (b) 4, 2,-1,+1/2 (c) 4,1,0,-1/2 (d) 5,0,0,+1/2

8.Which of the following atoms or atom/ion have identical ground state configuration ?
(a) Li+and He^+ (b) Cl^- and Ar (c)Na and K 9d)F^+ and Ne

9.The number of spherical nodes for 4d orbital is
(a) zero (b) one (c)two (d)three

10. The configuration $1s^2\ 2s^2 2p^5 3s^1$ shows:
(a) ground state of fluorine (b)exited state of fluorine (c)exited state of neon (d) excited state of O^{2-} ion

Assertion –Reason type question(1 Mark Questions)

The questions given below consist of assertion (A)and reason (R).Use the following key to select the correct answer.
(a)If both assertion and reason are correct and reason is correct explanation for assertion.
(b) If both assertion and reason are correct and reason is not correct explanation for assertion.
(c) If assertion is correct and reason is in correct
(d) If both assertion and reason are incorrect.

1.A: Photoelectric effect is most readily shown by cesium.
R: Photons have easiest access to the surface of cesium metal.

2.A: An orbital cannot have more than 2 electrons and their spin must be opposite.
R: No two electrons in an atom can have same set of all four quantum numbers.

3. A: Both position and momentum of an electron can not be determined simultaneously with maximum accuracy.
R: This is because of microscopic nature of electron.

4. A: The energy of an electron is mainly determined by principal quantum number.
R: The principal quantum number is the measure of the most probable distance of finding the electron around the nucleus.

5. A: Fe^{3+} ion is more stable than Fe^{2+} ion in ground state.
R: Fe^{3+} ion has more number of unpaired electrons than Fe^{2+} ion.

6. A: An orbital cannot have more than two electrons.
R: The two electrons in an orbital create opposite magnetic field.

Short answer questions(2 Marks Question)

1. We don't see a car moving as a wave on the road why?
2. What is the physical significance of Ψ^2?
3. Which orbital is non- directional?
4. What is quantization of charge?
5. The two electrons in the 1s orbital of He have anti-parallel spin. Why do not they have parallel spin?
6. Why are 2d and 3f orbitals not possible?
7. Heinsberg uncertainity principle has no significance in our every day life. Explain.
8. Out of 3d and 4s orbitals which is filled first?
9. How many electrons can be filled in all the orbitals with n+l=5?

Short answer questions(3 Marks Question)

1. Which of the followings are iso-electronic species, i.e. those having the same number of electrons? Na^+, K^+, Mg^{2+}, Ca^{2+}, S^{2-}, Ar.

2. An atom of an element contains 29 electrons and 35 neutrons. Deduce
(i) Number of protons.
(ii) Electronic configuration of the element.
(iii) Number of paired electrons.
(iv) Number of unpaired electrons.

3. What is the uncertainty in locating its position? [Given, $m_e = 9.11 \times 10^{-31}$ kg] An electron speed Of 40 m s^{-1} accurate upto 99.9 percent.
4. Yellow light emitted from a sodium lamp has a wavelength (2) of 580 nm. Calculate the frequency (v) and wave number (v) of yellow light.
5. What is the number of photons of light with wavelength 4000 pm which provide 1 Joule of energy ?

6. Calculate the wave number for the longest wavelength transition in the Balmer series of atomic hydrogen.
7. Show that the circumference of the Bohr orbit for the hydrogen atom is an integral multiple of the de Broglie wavelength associated with the electron revolving around the orbit.
8. Calculate the wavelength of an electron moving with a velocity of 2.05×10^7 m s-1

9. The mass of an electron is 9.1 × 10-31 kg. If its kinetic energy is 3.0 × 10-25 J, calculate its wavelength.

Case study based question(4 Marks Question)

The presence of positive charge on the nucleus is due to the protons in the nucleus. As established earlier, the charge on the proton is equal but opposite to that of electron. Atomic number (Z) = number of protons in the nucleus of an atom = number of electrons in a neutral atom. Protons and neutrons present in the nucleus are collectively known as nucleons. The total number of nucleons is termed as mass number (A) of the atom.
mass number (A) = number of protons (Z) + number of neutrons (n).
Isobars are the atoms with same mass number but different atomic number for example, $_6{}^{14}C$ and $_7{}^{14}N$. On the other hand, atoms with identical atomic number but different atomic mass number are known as Isotopes. For example, considering of hydrogen atom again, 99.985%of hydrogen atoms contain only one proton. This isotope is called protium ($_1{}^1H$). Rest of the percentage of hydrogen atom contains two other isotopes, the one containing 1 proton and 1neutron is called deuterium ($^2{}_1D$, 0.015%) and the other one possessing 1 proton and 2neutrons is called tritium ($_1{}^3T$).The studies of interactions of radiations with matter have provided immense information regarding the structure of atoms and molecules. Neils Bohr utilized these results to improve upon the model proposed by Rutherford. Two developments played a major role in the formulation of Bohr's model of atom. Isobars are the atoms with same mass number but different atomic number for example, $_6{}^{14}C$ and $_7{}^{14}N$. On the other hand, atoms with identical atomic number but different atomic mass number are known as Isotopes. For example, considering of hydrogen atom again, 99.985%of hydrogen atoms contain only one proton. This isotope is called protium ($_1{}^1H$). Rest of the percentage of hydrogen atom contains two other isotopes, the one containing 1 proton and 1neutron is called deuterium ($^2{}_1D$, 0.015%) and the other one possessing 1 proton and 2 neutrons is called tritium ($_1{}^3T$).The studies of interactions of radiations with matter have provided immense information regarding the structure of atoms and molecules. Neils Bohr utilized these results to improve upon the model proposed by Rutherford. Two developments played a major role in the formulation of Bohr's model of atom.

1. The pair of ions having same electronic configuration is _____.
   (a) Cr^{3+}, Fe^{3+} (b) Fe^{3+}, Mn^{2+} (c) Fe^{3+}, Co^{3+} (d) Sc^{3+},Cr^{3+}
2. They have same mass number, different atomic number. These are isobars.
   In which of the following pairs, the ions are isoelectronic?
(a) Na^+, Mg^{2+} (b) Al^{3+}, O^- (c) Na^+, O^{2-} (d) N^{3-}, Cl^-
3. Two atoms are said to be isobars if.
(a) they have same atomic number but different mass number.
(b) they have same number of electrons but different number of neutrons.
(c) they have same number of neutrons but different number of electrons.
(d) sum of the number of protons and neutrons is same but the number of protons is different.
4. Write names of three isotopes of hydrogen.

Long answer question(5 Marks Question)

1. (i) List two main differences between orbit and orbital.
   (ii) If an electron is moving with a velocity 600 m/s which is accurate upto 0.005%, then calculate the uncertainty in its position.
   (h = 6.626×10^{-34} J s and mass of electron = 9.11×10^{-31} kg)
2. The electronic energy in hydrogen atom is given by En (-2.18 × 10-18 s) / n2 J. Calculate the energy required to remove an electron completely from the n = 2 orbit. What is the longest wavelength of light in cm that can be used to cause this transition?
3. 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 wavelength of light emitted when the electron returns to the ground state ? The ground state electronic energy is – 2.18 × 11-11 ergs.
4. (i) Write outer electronic configuration of Cr atom. Why are half filled orbitals more stable?
   (ii) A 25 watt bulb emits monochromatic yellow light of wavelength 0.57 μm. Calculate the rate of emission of quanta per second.

G.D. GOENKA PUBLIC SCHOOL, KANPUR
CLASS- XI, SUBJECT- CHEMISTRY, UNIT 3 – PERIODIC CLASSIFICATION OF ELEMENTS Revision Worksheet

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MCQ (1 Mark Questions)

1. The screening effect of d - electrons is -
(A) equal to the p - electrons (B) much more than p - electron
(C) Same as f – electrons (D) less than p – electron

2. The increasing order of effective nuclear charge in Na, Al, Mg and Si atoms
(A) Na < Mg < Si <Al (B) Na < Mg <Al < Si
(C) Mg < Na <Al< Si (D) Na = Mg =Al = Si

3. The Vander Waal's radii of O, N, Cl, F and Ne increase in the order
(A) F, O, N, Ne, Cl (B) N, O, F, Ne, Cl
(B) Ne, F, O, N, Cl (D) F, Cl, O, N, Ne

4. Whenever a list of radii is given, we find that the size of the noble gases is larger than the size of their adjacent halogens. The reason is
(A) Noble gases have a complete octet
(B) They have a higher inter electronic repulsion
(C) In halogens it is covalent radii and in noble gases it is Vander walls radii
(D) Noble gases cannot be liquefied

5. Which of the following has the largest size
(A) N^{-3} (B) O^{-2} (C) K^{+1} (D) Ca^{+2}

6. Which one of the following is correct order of the size of iodine species?
(A) I > I– > I+ (B) I > I+ > I– (C) I+ > I– > I (D) I– > I > I+

7. Which of the following should be the order of increasing values of second ionization potential of C_6, N_7, O_8 and F_9?
(A) C > N > F > O (B) C < F < N < O (C) C < F < N < O (D) C < N < F< O

8. The incorrect statement in the following is:
(A) The third ionization potential of Mg is greater than the third ionization potential of Al
(B) The first ionization potential of Na is less than first I.P of Mg
(C) The first I.P. of Al is less than the first I.P. of Mg
(D) The second I.P. of Mg is greater than the second I.P. of Na

9. O(g) + 2e– O–2(g) –E = + 744.7
The reason for the positive value of E is
(A) endothermic reaction (B) exothermic reaction
(C) Both 1 and 2 (D) All of the above are wrong

10. The increasing order of electron affinity values of O, S and Se is
(A) O < S < Se (B) S < O < Se (C) O < Se < S (D) Se < O > S

11. Of the following element of which electronic configuration will have the highest electron affinity
(A) $1s^2\ 2s^2\ 2p^3$ (B) $1s^2\ 2s^2\ 2p^5$ (C) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^5$ (D) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^3$

12. Which oxide of N is isoelectronic with CO_2 :
(A) NO_2 (B) NO (C) N_2O (D) N_2O_3

13. Atomic radius decreases in a period, but after halogens, the atomic radius suddenly increases. Thus, inert gases have almost highest radius in a period. The explanation for such an increase is-
(A) Inert gases have most stable configuration.
(B) Inert gases do not take part in bonding.
(C) Vander Wall's radius is reported in case of inert gases.
(D) None of these

14. Which one of the following groups represents a collection of isoelectronic species?
(At. no. Cs = 55, Br = 35)
(A) N^{3-}, F^-, Na^+ (B) Be, Al^{3+}, Cl^- (C) Ca^{2+}, Cs^+, Br (D) Na^+, Ca^{2+}, Mg^{2+}

15. Consider the following statements:
I. The radius of an anion is larger than that of parent atom
II. The I.E. increases from left to right in a period generally
III. The electronegativity of an element is the tendency of an isolated atom to attract an electron
The correct statements are -
(A) I alone (B) II alone (C) I and II (D) II and III

Assertion -Reason type question(1 Mark Questions)

The following questions consist of two statements, one labeled as Assertion A and the other labeled as Reason R. Examine both the statements and mark the correct choice according to the instructions given below:

(a) If both A and R are correct and R is the correct reason of A
(b) If both A and R are correct but R is not the correct reason of A
(c) If A is correct and R is wrong
(d) If A is wrong and R is correct.

1. Assertion A: Noble gases have highest ionization energies in their respective periods.
Reason R.: Noble gases have stable electronic configurations.

2. Assertion A: Nitrogen has higher I.E. than that of oxygen.
Reason R: Nitrogen atom has smaller atomic size than that of oxygen.

3. Assertion A: Chlorine has higher greater negative electron gain enthalpy than that of fluorine.
Reason R: Fluorine is stronger oxidizing agent than chlorine.

4. Assertion A: Helium has the highest value of ionization enthalpy among all the elements.
Reason R: Helium has the highest value of electron affinity among all the elements.

5. Assertion A: Sixth period is the longest period of the periodic table.
Reason R: Sixth period involves the filling of all the orbitals of sixth energy level.

6. Assertion A: F atom has a less negative electron affinity than Cl atom.
Reason R: Additional electrons are repelled more effectively by 3p electron in Cl atom than by 2p electrons in F atom.

Short answer questions(2 Marks Question)

Q.1. Describe the two merits of long form periodic table over the Mendeleev's periodic table?
Q.2. What is meant by periodicity in properties of elements? What is the reason behind this?
Q.3. How do atomic radii vary in a group and a period?
Q.4. Name the factors which affect the ionization enthalpy of an element.
Q.5. Noble gases have zero electron gain enthalpy values. Explain.

Short answer questions(3 Marks Question)

Q.1. The first ionization enthalpy of magnesium is higher than that of sodium. On the other hand, the second ionization enthalpy of sodium is very much higher than that of magnesium. Explain.
Q.2. Among the elements of the second period Li to Ne pick out the element:
(i) With the highest first ionization energy
(ii) With the highest electronegativity
(iii) With the largest atomic radius Give the reason for your choice.
Q.3. Arrange the following as stated:
(i) N_2, O_2, F_2, Cl_2 (Increasing order of bond dissociation energy)
(ii) F, Cl, Br, I (Increasing order of electron gain enthalpy)
(iii) F_2, N_2, Cl_2, O_2 (Increasing order of bond length)
Q.4. Consider the following species: N^{3-}, O^{2-}, F^-, Na^+, Mg^{2+} and Al^{3+}
(a) What is common in them?
(b) Arrange them in the order of increasing ionic radii.
Q.5. Explain why are cations smaller and anions larger in size than their parent atoms?

Case study based question(4 Marks Question)

Read the passage given below and answer the following questions:
In the periodic table electronegativity increases from left to right in a period and decreases from top to bottom in a group. The non-metallic character of an element is directly related to the electronegativity while the metallic character is inversely related to it.

1. The element with maximum electronegativity belongs to
(a) Period-1, Group-18 (b) Period-2, Group-17
(c) Period-3, Group-17 (d) Period-2, Group-1.

2. Which of the following groups contains metals, non-metals as well as metalloids?
(a) Group-1 (b) Group-17 (c) Group-14 (d) Group-2.

3. The least, metallic element of group-13 is
(a) Aluminum (b) Boron (c) Gallium (d) Indium.

4. The electronegativity increases with:
(a) decrease in nuclear charge (b) increase in atomic mass
(c) decrease in atomic size (d) increase in atomic number.

Long answer question(5 Marks Question)

Q.1 What is the cause of the periodicity in the properties of the elements? How do the following properties vary in (a) a group and (b) in a period.
(i) electronegativity
(ii) ionization enthalpy
(iii) Atomic size