DELHI PUBLIC SCHOOL-BPKIHS NEPAL (2023-24)

Class: XI Subject: English Holiday Homework (Dashain Vacation)

**I. SECTION A- 1 Marks Questions(1x50=50 Marks)**

1. **Read the following poem carefully and answer the questions that follow:**

**ELEGY ON THE DEATH OF A MAD DOG**

**Good people of every sort,**

**Give ear unto my song;**

**And if you find wond’rous short,**

**It cannot hold you long.**

**In Islington there was a man,**

**Of whom the world might say,**

**That still a Godly race he ran,**

**Whene’er he went to pray.**

**A kind and gentle heart he had,**

**To comfort friends and foes;**

**The naked everyday he clad,**

**When he put on his clothes.**

**And in that town a dog was found,**

**As many dogs there be,**

**But mongrel, puppy, whelp and hound,**

**And cur’e of low degree.**

**This dog and man at first were friends;**

**But when the pique began,**

**The dog, to gain some private ends,**

**Went and bit the man.**

**Around from all neighbouring streets,**

**The wond’ring neighbour ran,**

**And swore the dog had lost his wits,**

**To bite so good a man.**

**The wound it seem’d both sore and sad,**

**To every Christian eye:**

**And while they swore the dog was mad,**

**They swore the man would die.**

**But soon a wonder came to light,**

**That show’d the rouges they lied;**

**The man recovered of the bite,**

**The dog it was that died.**

**Questions: (1x8=8)**

1. **Why did the mad dog bite the man?**
2. **What did the people of the town predict about the man?**
3. **What miracle took place that surprised the people?**
4. **Why did the dog die?**
5. **What did the neighbours say about the dog?**
6. **The man in Islington seemed to lead a religious and pious life as \_\_\_\_\_\_\_\_\_\_\_\_.**
7. **He love dogs and fed them**
8. **He was self-centred and very busy**
9. **He ran charitable trust**
10. **He went to pray regularly**
11. **The dog was different from the other dogs of the town because \_\_\_\_\_\_\_\_\_\_\_\_.**

**i) It was not faithful**

**ii) It was not aggressive**

**iii) It lacked sensitivity to pain, punishment and rebuke**

**iv) It had human qualities of love, hate and revenge**

1. **The poetic device used in the last stanza of the poem is \_\_\_\_\_\_\_\_\_\_\_\_.**
2. **Simile ii) Metaphor iii) Irony iv) Repetition**
3. **Read the passage carefully and answer the questions that follow.**
The revolution in information technology (IT), far from helping India to leapfrog to a post-industrial society, threatens to rupture the social fabric by enriching a few at the cost of many.

In a very short time and quite unexpectedly, India has risen to considerable eminence in the world of information technology. This year, software products are expected to account for $ 5.7 billion in exports and will account for a quarter of the growth in the economy, which is expected to grow nearly seven per cent. Within eight years, predicts a recent study by McKinsey & Co. and the National Association of Software & Service Companies (Nasscom), India’s annual IT exports could hit $ 50 billion about 33 per cent of global software exports. Such a surge is expected to generate 2.2 million jobs—and push our growth rate near the double digits that many East Asian Tigers enjoyed before the 1997 crash.

For the rapidly growing middle class, which was desperate to make its presence felt but remained mired in the great Indian outback of the global economy and regretfully watched the industrial revolution pass it by, this is the moment they have been waiting for. When countries like Japan and Germany, the objects of Indian admiration, should come knocking on our doors to solicit our talent to invigorate their industry, it is indeed redemption of sorts. And IT is the cause of it all.

The big question is, will IT do an encore for India as a nation, and not just for a wafer thin percentage of IT-literate Indians, mostly the poster boys of the IITs?

IT has, as yet, failed to touch the lives of the average citizen and India is nowhere close to being a knowledge economy or society. As per the International Data Corporation (IDC), in a survey of 55 countries, India ranks 54th on its Information Society Index.

The fact is, it is a straightforward reflection of the deep inequality of our education system which breeds a few ‘geniuses’ at the cost of the entire nation. A study by former director of the National Centre for Software Technology, R. Narasimhan, points out that nowhere is the digital divide more glaring than in IT education. The report warns that India’s ‘obsession’ with the software industry and its exports orientation is leading to the churning out of unemployable students on one hand and bright whiz-kids on the other. While the latter are lured away by overseas employers, the former remain unemployable.
Narasimhan cautions against the ‘hype’ associated with the phenomenal growth of India’s software industry defying rational explanations and built up into a ‘mystique of sort’ which breeds false hopes. .

India’s software industry is a poor employment generator. In the mid-Nineties, some 20,000 people were actively employed in software export services. In contrast, there were three million registered unemployed graduates in the Nineties. While the ‘Narasimhan study doesn’t mention number of hobs lost due to computerisation, one could comfortably add a million to the number.

Answer the following questions by choosing the most appropriate option: (1x6=6)

1. The revolution in IT threatens to break apart the social fabric because…………………………
(a) the stocks of software companies have risen at BSE
(b) it has helped India to rise beyond the industrial society
(c) it is enriching a few at the cost of many
(d) it has created a gulf between the rural and urban sector
2. Growth in export of Indian software products and national economy have been achieved because of…………………………
(a) global recession
(b) liberalised economy
(c) public private cooperation
(d) eminence of Information Technology
3. It is a time of pride for the middle classes in India because…………………………
(a) developed industrial nations will require Indian software professionals to invigorate their industry
(b) they are desperate to make their presence felt
(c) they have remained stuck in the mud of global economy
(d) they have regretfully watched the industrial revolution pass by them
4. The digital divide is clearly visible in IT revolution because…………………………
(a) it has improved a lot of average Indian citizen
(b) it has benefitted only the products of IITs or some IT-literates
(c) it has made India a knowledge economy or society
(d) non-IT trained students run the IT institutes
5. Narasimhan’s report cautions against ‘hype’ around IT software industry because…………………………
(a) it is rational
(b) it breeds false hopes
(c) all look for foreign assignments
(d) it attracts even the dullards
6. The word ‘redemption’ in para 3 means…………………………
(a) recoupment
(b) recumbent
(c) recovery
(d) redeeming

Answer the following questions in brief: [1x4=4]
7. Why is the digital divide clearly visible in IT revolution?
8. Why is IT not beneficial for average Indians?
9. What does Narasimhan’s report highlight on IT software industry?
10.Find the words from the passage which are similar in meaning.
(a) Recovery (para 3)
(b) Very easily seen (para 6)

3. The following passage has not been edited. There is one error in each line. Write the incorrect word and the corrected one in your answer sheet as illustrated blow. (1x8=8)

He awkward shook hands with Vimal. e.g. awkward-awkwardly

I was silent. How could I explained to a) ……………..

Vimal that he have been so b) ……………..

blinded with that false puffed up c) ……………...

image of himself that he cannot d) ……………..

even recognized a joke! Now e) ……………..

he took everything in a test f) ……………..

of physical strong. I only g) …………….

hope that he can understand h) ……………

the truth about himself.

1. Rearrange the following jumbled phrases to form meaningful sentences: (1x3=3)
2. Covered/snow/in/lands/the/in/North/the/get
3. Fly/south/to/and/frost/they/starvation/escape/the
4. Greatest/missionaries/Mother Teresa/one of the/times/was/of our
5. Read the stanza given below and answer the questions given below: (1x4=4)

All three stood still to smile through their hair

At the uncle with the camera. A sweet face my mother’s that was before

I was born and the sea which appears to have changed less washed their

terribly transient feet.

* 1. Name the poem and the poet.
	2. Who are the three mentioned in the first line.
	3. Why is the reference to the sea significant?
	4. What is the significance of the last line?
1. Read the stanza given below and answer the questions given below: (1x4=4)

 I descend to love the droughts atomies dust layers of the globe.

 And all that in them without me were seeds only, latest unborn

 And forever by day and night, I give back life to my own origin.

* 1. What does ‘I’do on descending?
	2. Name the poem and the poet.
	3. How does ‘I’ affect those that have seeds in them.
	4. Explain the meaning of the last line.
1. Read the text carefully and answer the questions: (1x3=3)
The first indication of impending disaster came at about 6 p.m., with an ominous silence. The wind dropped, and the sky immediately grew dark. Then came a growing roar, and an enormous cloud towered aft of the ship. With horror, I realised that it was not a cloud, but a wave like no other I had ever seen. It appeared perfectly vertical and almost twice the height of the other waves, with a frightful breaking crest.

a.Which word in the extract mean forthcoming?

* 1. Ominous
	2. Growing
	3. Roaring
	4. Impending

 b.Why the sky had become dark?

* 1. lights of the ship were switched off
	2. a wave was approaching ship
	3. a cloud was approaching ship
	4. night was approaching

c. What is the wind dropped?

* + 1. Wind slipped out the hands of author
		2. Wind started coming from below the ship
		3. Wind fell down
		4. Speed of wind greatly reduced
1. Read the text carefully and answer the questions: (1x3=3)
A FLAWLESS half-moon floated in a perfect blue sky on the morning we said our goodbyes. Extended banks of cloud like long French loaves glowed pink as the Sun emerged to splash the distant mountain tops with a rose-tinted blush. Now that we were leaving Ravu, Lhamo said she wanted to give me a farewell present. One evening I’d told her through Daniel that I was heading towards Mount Kailash to complete the kora, and she’d said that I ought to get some warmer clothes. After ducking back into her tent, she emerged carrying one of the long-sleeved sheepskin coats that all the men wore.
2. The author was heading towards which place?
	1. Mount Everest
	2. None of these
	3. Mount Kailash
	4. K2
3. Which of the following figure of speech has been used in the line banks of cloud like long French loaves?
	1. Alliteration
	2. Metaphor
	3. Oxymoron
	4. Simile
4. Which of the following facts can be inferred from the above extract?

a) Lhamo didn’t try to understand author

b) Daniel was the translator of the author

c) Daniel was the translator of the author and Moon and Sun were both visible in the sky

d) Moon and Sun were both visible in the sky

1. Read the text carefully and answer the questions: [4]
CYRIL: [moving to the table; annoyed] Why not?
MRS. PEARSON: [coolly] I couldn’t bother.
CYRIL: Feeling off-colour or something?
Mrs. PEARSON: Never felt better in my life.
CYRIL: [aggressively] What’s the idea then?
MRS. PEARSON: Just a change.
CYRIL: [briskly] Well, snap out of it, Ma-and get cracking. Haven’t too much time.
2. What can you say about Cyril from the given lines?
	1. He is dumb and acts superior in front of his mother
	2. He takes his mother for granted
	3. He is arrogant and egoistic
	4. He always disrespect his mother
3. The phrase feeling off colour means
	1. feeling sleepy
	2. feeling tired
	3. feeling ill
	4. feeling lazy
4. Why does Cyril act aggressive?
	1. Because he was getting late
	2. Because his mother had not made tea for him
	3. Because his mother was behaving strangely
	4. Because his mother insulted him
5. The change referred to Cyril is a change in the way she is treated by the neighbour.
	1. True
	2. False
6. Read the text carefully and answer the questions: (1x4=4)
At the corner of the road I looked up at the name-plate. Marconi Street, it said. I had been at Number 46. The address was correct. But now I didn’t want to remember it any more. I wouldn’t go back there because the objects that are linked in your memory with the familiar life of former times instantly lose their value when, severed from them, you see them again in strange surroundings.
	1. Where was the name plate of Marconi Street put up?
		1. at the far end of the road ASKUS
		2. at the edge of the road
		3. at the front of the house
		4. at the corner of the road
	2. How did author convince herself that she had come at the right address?
		1. she had looked at the name of the street
		2. she had looked at the number of the house
		3. she had looked at the number of the house and name of the street
		4. she had looked at the colour of the house
	3. Why did she not want to remember the address?
		1. number of the house was already displayed
		2. she did not want to go there again
		3. name of the street was already displayed
		4. she had a poor memory
	4. Why did author not want to go back there again?
		1. she noticed her own thing there
		2. her own things had lost their importance for her
		3. her former life was still in her memory
		4. the surrounding was unfamiliar

**II. SECTION B- 2 Marks Questions (40x2=80 Marks)**

1. Read the unseen passage and answer the following question.

 Every moment of life is precious. Time is the essence of life. It is the wealth given to us by Nature. Everyday all of us get 24 hours; nothing less, nothing more. Now, it is up to us how we use it. People who know how to make the best use of every moment easily open the doors of success in their lives and those who misuse time get failures one after the other. There is a saying that, ‘‘Spent time and spent words cannot come back.’’ Everybody is tied by the limits of time; even God respects the boundaries of time.

 Work wins appreciation only when it gets completed in a requisite time frame. Beyond the time allotted, work loses all its utility however good may have been its quality. Just as falling of rains after the crops have dried up have no use; likewise, when the time is past the deadline, the work loses its importance and value. When iron is hot it can be cast into whichever shape we want.

 Once it gets cold nothing can be made out of it, however, much we may beat the same. In the same way, a person who has learnt to wisely use his time and has understood how to cast himself according to the need of the time has actually learnt the true mantra of life.

 Shakespeare wrote in one of his plays, ‘‘I wasted time, and now doth time waste me.’’ It is true that a person who wastes even a little bit of time loses wonderful opportunities that he could have otherwise availed of by utilizing that time. All the great leaders have one thing in common. They wisely utilize every moment of their time. When other people are busy in wasting time in laziness, great men are busy in making plans for the future. There is no person in history who wasted his time and still managed to achieve greatness.

 Therefore, there is great need to manage time wisely. ‘‘Careful Time Management’’ refers to careful planning of time and sincere execution of this plan. This is the only mantra to attain success in any endeavour. A simple change in outlook and some modification in one’s daily routine can result in a big jump forward towards greater achievements

Questions

(a) What is the essence of life? (2)

(b) What kind of work loses its utility? (2)

(c) What is needed for careful time management? (2)

(d) What kind of people open the doors of success of their life? (2)

 (e) When does the work lose its importance and value? (2)

(f) Suggest a suitable title for the above given unseen passage. (2)

**2.Fill in can, have to, may, might, must, need, should or (not) allowed to. [2]**

1. He \_\_\_\_\_\_\_ go skating because he broke his leg.
2. Many children in Britain \_\_\_\_\_\_\_ wear school uniforms.
3. I’m not sure but Jane”, \_\_\_\_\_\_\_ come to visit me this afternoon.
4. Didn’t you see the sign? You \_\_\_\_\_\_\_ drive more than 30 miles.

3. Read the following extract and answer the questions that follow:

Now she’s been dead nearly as many years as that girl lived.

And of this circumstance

There is nothing to say at all,

Its silence silences

a) What is ‘this circumstance’? [2]

 b) Explain: ‘Its silence silences’. [2]

(2) The poet’s mother laughed at the snapshot. What did this laugh indicate? [2]

(3) Which thought about the grandmother was often revolting and for whom? [2]

(4) The three stanzas depict three different phases in “A Photograph”. What are they? [2]

4.Fill in the blanks with the suitable forms of the verbs given in the bracket. [2]

I \_\_\_\_\_\_\_\_ (park) my car at a place, where there was a ‘No Parking’ sign and \_\_\_\_\_\_\_\_ (ran) to buy some flowers. When I \_\_\_\_\_\_\_\_\_\_\_ (return) a few minutes later I \_\_\_\_\_\_\_ (find) that the car was not there anymore.

5.Fill in the blanks using suitable determiners. [2]

\_\_\_\_\_\_(a/an/the) man went for \_\_\_\_\_\_\_ (a/an/the) holiday to a place near \_\_\_\_\_ (a/a/the) sea. He spent \_\_\_\_\_ (every/all/some) his days watching the waves crash against the shore.

6. Fill in the blanks using suitable modals. [2]

1. You \_\_\_\_\_\_\_\_\_ not worry anymore.

2. If I were rich I \_\_\_\_\_\_\_\_ buy a car.

3. You are quite well. You \_\_\_\_\_\_\_\_ not go to a doctor.

4. He \_\_\_\_\_\_\_\_ play football when he was young.

7.Read the text carefully and answer the questions: [2x3=6]
The Laburnum Top is silent, quite still
In the afternoon yellow September sunlight ,
A few leaves yellowing, all its seeds fallen.

a. Identify the correct combination of the (given) poem and the poet.

1. Ted Hughes : The Voice of the Rain
2. Walt Whitman : The Laburnum Top
3. Ted Hughes : The Laburnum Top
4. Shirley Toulson : Childhood

b.Mary said: Close your cluttered closet. Identify the similar figure of speech in the above extract used by Mary.

1. Repetition
2. Metaphor
3. Alliteration
4. Onomatopoeia

c.Which of the following is not a part of the dominant ‘yellow’ colour in the poem?

1. Goldfinch’s face
2. The tree and its leaves
3. The bird’s feathers
4. The sunlight
5. Read the text carefully and answer the questions: (2x3=6)
Where did my childhood go?
It went to some forgotten place,
That’s hidden in an infant’s face,
That’s all I know
	1. Where does the poet think childhood can be found?
		* 1. Infant’s face
			2. Mother’s lap
			3. Childhood alleys
			4. Forgotten place
	2. Through the given lines of the poem, the poet wants to convey that \_\_\_\_\_\_\_\_
		1. Growing up involves maturity and logical thinking
		2. Imaginary places do not actually exist in the world
		3. Double-faced behaviour of the people in society
		4. Innocence of childhood disappears as one grows up
	3. The tone of the poet in the given poem is
		1. Contented
		2. Remorseful
		3. Jovial
		4. Happy
6. Read the following extract and answer the questions that follow: (2x4=8)
That year we lived at the edge of town, on Walnut Avenue. Behind our house was the country: vineyards, orchards, irrigation ditches, and country roads. In less than three minutes we were on Olive Avenue, and then the horse began to trot. The air was new and lovely to breathe. The feel of the horse running was wonderful. My cousin Mourad who was considered one of the craziest members of our family began to sing. I mean, he began to roar.
	* 1. Complete the sentence appropriately.
		The phrase ” he began to roar” suggests that \_\_\_\_\_\_\_\_.
		2. List ant two sensory details present in the extract.
		3. Identify a line from the extract that supports the fact that the narrator and his cousin resided in a rural area.
		4. What is the central idea of this extract?
			1. A boy’s joyful ride with his cousin
			2. A boy’s dark secret
			3. A boy’s school picnic
			4. A boy’s narrow escape from a fatal accident
7. Read the following extract and answer the questions that follow: (2x3=6)
My grandmother always went to school with me because the school was attached to the temple. The priest taught us the alphabet and morning prayer. While the children sat in rows on either side of the verandah singing the alphabet or the prayer in a chorus, my grandmother sat inside reading the scriptures. When we had both finished, we would walk back together. This time the village dogs would meet us at the temple door. They followed us to our home growling and fighting with each other for the chapattis we threw to them. When my parents were comfortably settled in the city, they sent for us. That was a turning-point in our friendship. Although we shared the same room, my grandmother no longer came to school with me. I used to go to an English school in a motor bus. There were no dogs in the streets and she took to feeding sparrows in the courtyard of our city house.
	1. What role did the temple dogs play in the speaker’s childhood, and how did this change when they moved to the city?
	2. What significant event marked a turning point in the narrator’s friendship with their grandmother?
	3. Pick evidence from the passage that suggests there was a significant change in the protagonist’s daily routine and environment when they moved to the city.
8. Read the extract given below and answer the questions that follow:  (2x3=6)
I descend to lave the droughts, atomies, dust-layers of the globe,
And all that in them without me were seeds only, latent, unborn;
And forever, by day and night, I give back life to my own origin,
And make pure and beautify it.
	1. What does ‘I’ do day and night?
	2. What is the origin of ‘I’?
	3. What does ‘I’ do for its origin?
9. Fill in the following blanks given below choosing the most appropriate options from the ones that follow. (2x4=8)
Most Indian schools fail to ensure their students’ adequate playtime and fitness regime. Two out of every five school, going children \_\_\_\_(a)\_\_\_\_ have a healthy Body Mass Index (BMI) and 50% of children \_\_\_\_(b)\_\_\_\_ adequate lower body strength. Some schools \_\_\_\_(c)\_\_\_\_ found to offer three or \_\_\_\_(d)\_\_\_\_ physical education periods per week.
	* 1. (i) does (ii) does not (iii) don’t (iv) do
		2. (i) lack (ii) lacked (iii) have lacked (iv) had lacked
		3. (i) was (ii) are (iii) is (iv) have
		4. (i) much (ii) many (iii) more (iv) less
10. Look at the sentences given below in a disorderly form. Re-order (Rearrange) them to form meaningful sentences: (2x2=4)
	* 1. We / live / eat / we / may / that /so
		2. we / I / succeed / am / will / sure
11. Read the text carefully and answer the questions:
There are two problems which cause great worry to our educationist – the problem of religious and moral instruction in a land of many faiths and the problem arising out of a large variety of languages. Taking up the education of children, we see that they should be trained to love one another, to be tender to the lower animals, and to observe and think right. The task of teaching them how to read and write and to count and calculate is important, but it should not make us lose sight of the primary aim of moulding personality in the right way.
For this, it is necessary to call into aid, culture, tradition, and religion. But in our country we have, in the same school, to look after boys and girls born in different faiths and belonging to families that live diverse ways of life and follow different forms of worship associated with different denominations of religion. It will not do to tread the easy path of evading the difficulty by attending solely to physical culture and intellectual education. We have to evolve a suitable technique and method for serving the spiritual needs of school children professing different faiths. We would thereby promote an atmosphere of mutual respect, a fuller understanding, and helpful co-operation among the different communities in our society. Again we must remain one people and we’ve therefore to give basic training in our schools to speak and understand more language than one and to appreciate and respect the different religions prevailing in India. It is not right for us in India to be dissuaded from this by considerations as to overtaking the young mind. What is necessary must be done. And it is not in fact too great a burden.
Any attempt to do away with or steamroll the differences through governmental coercion and indirect pressure would be as futile as it would be unwise. Any imposition of a single way of life and form of worship on all children or neglect of a section of the pupils in this respect or barren secularization will lead to a conflict between school and home life which is harmful. On the other hand, if we give due recognition to the different prevailing faiths in the educational institutions by organizing suitable facilities for religious teaching for boys and girls of all communities, this may itself serve as a broadening influence of great national values.
	1. Complete the sentence by choosing an appropriate option. (2)
	Besides teaching students how to read and write and to count and calculate, our primary aim should be of \_\_\_\_\_\_\_\_.
		1. giving them vocational training
		2. moulding their personality in the right way
		3. providing them free meal
		4. giving extra focus on their career
	2. Comment on the problems which cause great worry to our educationist as mentioned in paragraph one. (2)
	3. List two ways in dealing with education of children to solve the aforementioned problems. (2)
	(Clue: what should be taught to them)

**III. SECTION C- 3 Marks Questions (30x3=90 Marks)**

1. Behind the apparent simplicity, the poem hides a deep meaning. What exactly does the poem convey to the reader? (The Voice of the Rain) [3]
2. How did Amenhotep IV initiate one of the strangest periods in the history of ancient Egypt? (3)
3. Why does the rain call itself eternal’? (3)
4. Why did the grandmother not like teaching of English School? (3)
5. Why did the narrator of the story want to forget the address? (3)
6. What does the word ‘çardboard’ denote in the poem ‘The Photograph’? why has this word been used? (3)
7. Describe in brief how the grandmother spent half-an-hour with the sparrows. How did she feel then? Answer in the context of The Portrait of a Lady. [3]
8. Give a brief description of the *Wavewalker*. (3)
9. What was the outcome of the interview between Mrs. Dorling and the narrator? Answer in the context of The Address. [3]
10. The wisest man said that the arch must be hanged. Then how did the arch escape the punishment? Answer in the context of The Tale of Melon City. (3)
11. What dilemma did Andrew face when the child was born? How did he resolve it? (3)
12. What was the narrator’s purpose of making the voyage from Plymouth in 1976? (3)
13. Why did Aram find it hard to believe that Mourad had stolen the horse? (3)
14. List the steps taken by the captain to check the flooding of the water in the ship? (3)
15. Describe the second visit of Mrs. S’s daughter to the house of Mrs. Dorling. Why did she not wait to meet Mrs. Dorling? (3)
16. Describe the events that led to the hanging of the king by hi own order? (3)
17. Draw the character sketch of Khuhwant Singh’s grandmother as portrayed in the lesson “The Portrait of a Lady.” (3)
18. What do you think are the reasons for the extinction of languages? (Discovering Tut) (3)
19. To what is the bird’s movement compared? What is the basis for the comparison?(The Laburnum Top) (3)
20. How did Sue try to enliven the gloomy atmosphere? (3)
21. How do social interactions kill a child in a childhood? Answer in the context of Childhood.(3)
22. Under what circumstances did the narrator’s mother allow their valuable possessions to be carried away? Answer in the context of the The Address. (3)
23. Who was Doris? What was it that surprised her about her mother? (3)
24. Answer ANY ONE of the following two questions, in about 120-150 words. (3)
25. Gangadharpant could not help comparing the country he knew with what he was witnessing around him. Briefly explain in context of the plot,The Adventure. (3)
26. The poet Shirley Toulson has paid a tribute to her mother. Similar instances can be seen in The Portrait of a Lady. This made you think that writing about a loved one is much better than building their statues or drawing their portraits. Comment. (3)
27. Narrate The Tale of Melon city in your own words. (3)
28. Give a brief character sketch of Mrs. Pearson. (3)
29. Write the character sketch of Mrs. Fitzgerald. (3)
30. Write the character sketch of Cyril. (3)

**IV. SECTION D- 4 Marks Questions (20x4=80 Marks)**

1. In spite of the humour involved, the play, Mother’s Day succeeds in addressing a very common social issue. Comment. (4)
2. It really pained the grandmother that the schools did not teach anything about God and the scriptures. Should moral education be taught in schools? What do you think? (4)
3. One day back there in the good old days when I was nine and the world was full of every imaginable kind of magnificence, and life was still a delightful and mysterious dream...” The story begins in a mood of nostalgia. Can you narrate some incident from your childhood that might make an interesting story. (4)
4. What did Carter do to remove mummy from the coffin? Why was Zahi Hawaas regretful about it?(4)
5. Suggest a few instances in ‘**The Tale of Melon City’ which highlights humour and irony. (4)**
6. What were the troubles that they faced on the morning of 2 January in the lesson ‘We’re Not Afraid to Die… If We can All Be Together’? How did they counter nature’s wrath? (4)
7. What did Aram feel about the crazy streak’ in the family? (4)
8. In the words of the captain of the ‘Wavewalker,’the crew was ‘cheerful and optimistic under the direct stress.’ James Branch Cabell, the American novelist says, ‘The optimist proclaims that we live in the best of worlds and the pessimist fears this is true.’ How does optimism help us to overcome the hurdles in our life? (4)
9. You will probably agree that the story, The Summer of the Beautiful White Horse, does not have breathless adventure and exciting action. Then what in your opinion makes it interesting? [4]
10. For doctors, the duty towards the patients is foremost, irrespective of their own personal affairs. Discuss with reference to the chapter, Birth. (4)
11. Read the following passage carefully and answer the questions that follow: (2x4=8)

Much before medical science discovered it, Reader’s Digest came out with the prescription – Laughter is the Best Medicine. Newspapers and magazines which regularly run humour columns are, therefore, doing their bit to keep the readers in good health. Reading light articles, whether they be satirical, comical or just humorous, relieves the tension.

It is said that if you laugh for ten minutes, you will be in a better position to put up with pain for two hours. According to US researchers, laughter is a good antidote to stress that tones up the system. Facial laugh muscles instruct the brain to feel good regardless of how you feel.

According to a French doctor, laughter deepens breathing, improves blood circulation, speeds up the process of tissue healing and stabilizes many body functions. In short, it acts as power drug with no side effects.

Researches state that laughter stimulates production of ‘beta-endorphins’, natural painkillers in the body and improves digestion. Those who laugh are less prone to digestive disorders and ulcers.

Some people in France have made it a career. You can hire a ‘Jovialist’ who cracks jokes and laughs and promises to make you dissolve your worries in helpless laughter.

A word of caution. Although laughing is a good exercise for toning up the facial muscles, laughing at others ‘expense, particularly at their disabilities, is in bad taste and to be avoided. Secondly, laughing with food in mouth I dangerous as the foodstuff can get into the windpipe and may choke the respiratory system.

Laughter comes best when it is free of encumbrances, whether it is constricting food or the need to humour the boss.

1. On the basis of your reading, make notes on the above passage, using headings and subheadings. Use recognizable abbreviations wherever necessary. (4)
2. Write the summary of the passage in about 80 words and also suggest a suitable title. (4)
3. Read the passage carefully and answer the following questions. (2x4=8)

Conversation is indeed the most easily teachable of all arts. All you need to do in order to become a good conversationalist is to find a subject that interests you and your listeners. There are, for example, numberless hobbies to talk about. But the important

Thing is that you must talk about other fellow’s hobby rather than your own. Therein lies the secret of your popularity. Talk to your friends about the things that interest them, and you will get a reputation for good fellowship, charming wit, and a brilliant mind. There is nothing that pleases people so much as your interest in their interest.

It is just as important to know what subjects to avoid and what subjects to select for good conversation. If you don’t want to be set down as a wet blanket or a bore, be careful to avoid certain unpleasant subjects. Avoid talking about yourself, unless you are asked to do so. People are interested in their own problems not in yours. Sickness or death bores everybody. The only one who willingly listens to such talk is the doctor, but he gets paid for it.

To be a good conversationalist you must know not only what to say, but how also to say it. Be mentally quick and witty. But don’t hurt others with your wit. Finally try to avoid mannerism in your conversation. Don’t bite your lips or click your tongue, or roll your eyes or use your hands excessively as you speak.

Don’t be like that Frenchman who said, “How can I talk if you hold my hand?”

* 1. Make notes on the contents of the above paragraph in any format, using abbreviations. Also, supply a suitable title to it. [4]
	2. Make a summary of the passage. (4)
1. You are Anjali/Amit, Secretary of Welfare Association, ABC Colony, Chennai. Draft a notice in not more than 50 words for the notice board informing the residents that there would be no water supply for two days in your colony due to major pipeline repair work. (4)
2. You are Anjali/Amit, Secretary of Greenland Enterprise Ltd, Delhi-6. Your chairman has asked you to draft an advertisement for the vacant posts of one accountant and two office assistants. Draft the AD in not more than 50 words. (4)
3. Students usually come to school without taking breakfast and eat junk food from the school canteen. This habit has started to affect them adversely, both in academics and sports. Write a speech in about 150-200 words, to be given at your school assembly about the necessity of balanced diet. You are Sagun/Sameer. (4)
4. Your school is organizing an article writing competition on the topic “Importance of Newspaper”. Write your article in not more than 150 words. You are Vikram/Varsha. (4)
5. Write a letter to Mr. Ojha & Sons, Chennai complaining about the quality of the computers received in response to your order. Sign as Meera/Krish in No. 7322, Sector 22, Pune. (100-150 words) (4)
6. Write a letter to the editor of a local newspaper telling her/him about your reasons for supporting their campaign to stop the construction of a car park on an open playfield near your school. Mention how useful the park is for the children in the locality. [4]

**BIOLOGY**

SECTION A 1 MARK QUESTIONS

1 What is photorespiration?

2Write about Blackmans law of limiting factor.

3 Draw floral diagram of family Solanaceae

4 Write scientfic name of wheat and Potato

5 What are prions and viroids ?

6 A.Rhizopus belongs to which class

a.phycomycetesb.Ascomycetesc.Basidiomycetes d. deuteromycetes

7.Volvox is

a.green algae b. brown algae c. red algae d. none

8. Double fertilization is seen in

a.bryophytesb.angiospermsc.gymnospermd.algae

9. Why are lysososomes called suicide bags of cell?

10.What are nuclear pores? State their function

11What are ribosomes and cytoskeleton?

12What is centrosome.

13Define biomolecules and enzymes

 14. What is nucleoside and nucleotide.

 15.Define respiration and breathing.

 16.What is heterocyst?

 17 What are methanogens? Give an example .

18.Define Tidal capacity and residual volume

19 What are mesosomes and plasmid?

20 Name one organism with two nucleus and write functions of golgi bodies

21Write uses of heterotrophic bacteria and define mycoplasma

22 Write two difference between chordates and nonchordates

23 Draw diagram of one brown algae

24Write about two modification of roots with example

25Write two types of phyllotaxy?

26 How are archaebacteria differ from other bacteria

27 What are nematocytes and homoiotherms

28 The scientific name of mango is

 A Mangifera indica b Magnifera indica c Manifera indica d none

29 Fungi used in genetic work is

 A Aspergillus b Neurospora c claviceps d Ustilago

30 Citrus canker is caused by

 A bacteria b fungi c algae d cat

31 Nematocytes are found in

 A cnidaria b porifera c protozoa d mammals

32 Tomato belongs to

 a Solanaceae b Fabaceae c Liliaceae d none of the above

33The duration of cardiac cycle is

 A 0 8 seconds b 07 seconds c 06 seconds d 05 seconds

34Scoliodon is

 A dog fish b Goat fish c cat fish d none of these

Below question consists of two statements Assertion (A) and Reason(R) Answer these questions selecting the appropriate option given below

A Both A and R are true and R is the correct explanation of A

B Both A and R are true and R is not the correct explanation of A

C A is true but R is false

D A is false but R is true

 35 Assertion –Viruses are not considered organisms

Reason-Viruses are merely nucleoprotein particles and lack cytoplasm and metabolic machinery

 36 What are open and closed vascular bundle

37 Based on position of centromere mention two types of chromosome

38 Write any two disorder of respiratory system.

39 Write about emphysema.

40 Draw diagram to show only transport of oxygen in bloo

41 .Draw regions of root tip and label.

42.Write about stilt root and prop roots with example.

43.Give reason why potato is stem not root.

44How can you identify fat from the market.

45.What is venation and its two types

46.Define pulvinous.

47.What is simple and compound leaf?

48What are the types of compound leaves write about them

49.What are parthenocarpic fruits? Give an example

50 Define aleurone layer

51Differentiate between one difference only

1 Racemose and Cymose inflorescence

2.Apocarpous and Syncarpous ovary.

52 Write five kingdom names according to whittaker

53 Write two Features of cnidarians

54 Draw diagram of one red algae

 SECTION B 2MARK QUESTIONS

1.What are zoological parks and botanical garden.

2.Write the three steps in sexual cycle of fungi .

3.Write four features of Euglenoids.

4.What are mycoplasma and slime moulds?

5What is heterocyst? Draw diagram of bacteria of different shapes.

6Why deuteromycetes members commonly called imperfect fungi give two examples

7Write four features of double helical structure of DNA.

8.What are polysaccharides ?Write in brief about them.

9.Give examples of each –pigments,alkaloids,toxins and drugs

10Explain three properties of enzymes.

11.Explain the term viroids

12.Explain three factors that affect enzyme activity

13. Write vegetative characters of family Solanaceae?

14Write the function of haemoglobin bulliform cells and air bladder.

15Draw diagram of human respiratory system.

16 On the position of floral part on thalamus explain any one kind of flower

 with diagram

17.Write about four classes of enzymes.

18 What is inhibition,competitive inhibitor ?Explain competitive

 inhibitor with example.

19 What is plasmid and function of primary wall in plant cell? Write about cell theory and the scientist

20.Write the function of collagen,Trypsin and GLUT 4.

21What are primary and secondary metabolites? Write in brief

22Draw structure of amino acid alanine and glycine.

23Explain mechanism of breathing in humans with diagram in brief

24 Write four features of Echinodermata

25 Draw Hatch and Slack pathway

26What are two main features of metaphase stage of meiosis I

27 Write about primary and tertiary structure of protein

28 Write about respiratory balance sheet and draw diagram of an alveolus

29 Write about four features of Eubacteria

30 Explain male reproductive system of frog in brief

31 Draw labeled diagram of bacteriophage

32 Draw labelled diagram of Thallus of Marchantia male and female both

33What is a vector? Name one. Write two difference between bryophytes and pteridophytes

 34.Explain liverworts and prions.

 35 Why respiration is called amphibolic pathway

 36 What is fermentation Name the enzymes involved

 37 What are the four differences between cartilage fish and bony fish

 38 What are scutes? Explain about dinoflagellates

 39Write about symmetry and its two types

 40 Write in brief about importance of meiosis

 SECTION C 3MARK QUESTIONS

1.What is aestivation ?Explain its types with diagram and example.

2.What is Placentation? Explain all the five types with diagram

3.Write in brief about four whorls of flower. What are the two types of symmetry in flowers

4.What are hypogynous ,epigynous and perigynous flowers ? Give one example of each

5 a. What are Lichens? Explain.

 b. What are heterotrophic bacteria.

6 what is taxonomy and taxon? Explain lifecycle of gymnosperms

7 What are rusts and smuts? Explain about members of basidiomycetes

8 What are chrysophytes? Explain types of protozoans

9 Write about excretory system of cockroach in detail

10 What are biomacromolecules? Why happens when milk is converted to curd from understanding of proteins

11 Explain bell jar and half leaf experiment with diagram

12 Explain Calvin cycle with its diagram

13 Write 6 differences between C3 and C4 plants

14 Write factors affecting photosynthesis any three

15 Explain electron transport system

16 Write about regulation of respiration

17 Explain human respiratory system

18 Schematically show glycolysis

19 What are cilia and flagella explain with diagram

20 What are polysomes and inclusion bodies?

21 Write about vascular tissue system in plants

22 With diagram write two difference between dicot and monocot stem

23 Define phylogenetic classification and numerical classification.

24Write scientific name of sea anemone and tapeworm. Write about coelom and segmentation Write two main features of porifera

25 Write about cell cycle Diagrammatically show cell cycle indicating formation of two cells from one What is karyokinesis and cytokinesis

26 Write four key features of meiosis

27 Explain prophase I of meiosis I

28 In a tabular form show difference s between chlorophyceae and rhodophyceae

29 Write four main features of gymnosperm Write economic importance of gymnosperm

30 What are slime moulds? What is algal bloom and red tide? Write two difference between virus and viroids.

 4 MARKS QUESTION.

 1 Draw Kreb cycle show all steps Write the number of ATP formed.

 2.i )What are the steps of respiration and what is spirometer ?

 ii) What is R.Q? Write RQ for proteins and fats.

3.i What is cyclic photophosphorylation?

 ii. Write six difference between mitosis and meiosis

4i.Write key events in telophase of mitosis

ii. How cytokinesis in plant cell differ from animal cell.

5 Write in brief about Monera and draw diagram also

6.Write about life cycle of bryophytes with one diagram of bryophyte.

7 a. What is genus, order and species? Write all conventions of nomenclature.

b. Differentiate between

i. liverworts and mosses.

ii. syngamy and triple fusion.

8a.Define cell and write about eukaryotic and prokaryotic cell.

b. Name the membrane structure formed by extensions of plasma membrane and its function

9.Write characteristics of two cell organelles with double membrane structure with labeled diagram.

b. Describe the structure of nucleus.

10a.Draw neat and labeled diagram of chloroplast.

bHow does lysosomes differ from vacuole in terms of function.Write function of tonoplast in plants.

11a.Draw diagram of animal cell and label six part

bWhat is plasmodesmata and nucleoplasm

12.What is difference between pilli and fimbriae. Write four difference between plant cell and animal cell.

b. Describe the structure of cell membrane with diagram

13aWhat is plastid.Write about all the types of plastids.

b.What is Placentation ?Explain all the five types with diagram

14a. What is active transport ?

b. Describe the structure of mitochondria with diagram

15.Write uses of algae. Write in brief about different classes of pteridophyta and also write about pollengrain.

16What is centromere? How does the position of centromere form the basis of classification of chromosomes.Draw the diagram also.

17.Write about exchange of gases in humans with neat and labeled diagram.

 B What is occupational respiratory disorder?

 18a Draw neat and labeled diagram of Nostoc and dividing bacteria.

b.What is staminode,epipetalous and polydelphous.

19. a. Illustrate a glycosidic and peptide bond.

b. Explain about cofactor and apoenzymes.

20 Value based question

Algae reproduce by vegetative, asexual and sexual methods

Algae show a variety in their modes of sexual reproduction which may be isogamous anisogamous or oogamous but they do not produce any embryo

 A What is oogamy? Give an example

 B How is anisogamy different from isogamy

 C What are zoospores and name flagellated algae

 D Which among three is most advanced in evolution

**PHYSICS**

ONE MARK QUESTIONS

1. Define the conservative and non-conservative forces? Give example of each?
2. A light body and a heavy body have same linear momentum. Which one has greater K.E? (Ans: Lighter body has more K.E.)
3. If the momentum of the body is doubled by what percentage does its K.E changes? (300%)
4. A truck and a car are moving with the same K.E on a straight road. Their engines are simultaneously switched off which one will stop at a lesser distance? (Truck)
5. What happens to the P.E of a bubble when it rises up in water (decrease)
6. Define spring constant of a spring?
7. What happens when a sphere collides head on elastically with a sphere of same mass initially at rest? 8.
8. Derive an expression for K.E of a body of mass m moving with a velocity v by calculus method.
9. After bullet is fired, gun recoils. Compare the K.E. of bullet and the gun. (K.E. of bullet > K.E. of gun)
10. In which type of collision there is maximum loss of energy?
11. What do you mean by work? Why it is called scalar quantity?
12. Define angular momentum and torque? Also state the direction of it?
13. How the value of acceleration due to gravity varies as we go to height from the surface of the earth?
14. Define moment of inertia and radius of gyration
15. **What do you mean by derived physical quantity?**
16. **Define 1 one parsec? Write its value in meter.**
17. **What do you mean by significant figure?**
18. **Each side of cube is measured to be 7.203 meter. What are the total surface area of the cube? Express your answer in terms of appropriate significant figure?**
19. **What do you mean by instantaneous velocity? Draw a graph to explain your answer.**
20. A laser light aimed at the moon takes 2.56 second to return after reflection at moon’s surface. What will the radius of the lunar orbit around earth?

3.84×108m. b. 2.84×108m. c. 3.8×106m. d. None of given

1. Which of the following quantities has not been expressed in proper units?
2. Stress/stain, N/m2
3. Surface tension, N/m
4. Energy, kg m2/s2
5. Pressure , dyne/m2
6. A car travels first half distance between two places with a speed of 40km/hrs and the rest half distance with a speed of 60km/hrs. What is the average speed of the car?
7. 48km/hrs
8. 38km/hrs
9. 50km/hrs
10. 49.5km/hrs
11. A ball is thrown with constant horizontal velocity of 10m/s from the top of the tower. What will be the displacement of the ball after 2 second?

$A. 20\sqrt{2 }$m

1. 21.5m

$C. 2\sqrt{20 }$m

1. 22.5m
2. The coordinates of a particle at a time t sec are x=2t+4t2 and y=5t, where x and y are in meter and t in second. The acceleration of the particle at t=5sec is
3. Zero
4. 20m/s2
5. 8m/s2
6. 40m/s2
7. Work done by frictional force is …………..
8. Conservative
9. None conservative
10. Both a and b
11. None of given
12. The temperature of a gas filled in a box is raised from 270 c to 870c. the initial pressure of 2 atm of the gas changes to
13. 1 a.t.m
14. 1.6 a.t.m
15. 2.4 a.t.m
16. A real gas behaves like an ideal gas if it’s:
17. Pressure and temperature are both high
18. Pressure and temperature are both low
19. Pressure is high and temperature is low
20. Pressure is low and temperature is high.
21. Choose the correct statement.
22. The ratio of specific heat capacity at constant pressure to the constant volume is always than greater than 1.5 for dia-atomic.
23. The ratio of specific heat capacity at constant pressure to the constant volume is always less than 1 .44 for dia-atomic.
24. The ratio of specific heat capacity at constant pressure to the constant volume is equal to 1.41 for dia-atomic.
25. The ratio of specific heat capacity at constant pressure to the constant volume is always equal to 1.61 for dia-atomic.
26. The degree of freedom of tri-atomic gas is 6. It has 3 translational motion and two rotational motion and one is oscillatory motion.
27. First sentence is wrong and second is correct
28. Both Sentences are correct
29. First sentence is correct and second is wrong.
30. Both sentence is wrong.
31. Hooke’s law states……..
32. Stress is directly depends upon stain
33. Stress inversely depends upon strain
34. Stress is equal to stain
35. None of above.
36. The value of acceleration due to gravity
37. Increases along height and decreases along depth
38. Decreases along height and increases along depth
39. Both a and b
40. Decreases along depth and height
41. Two satellites are revolving in the same circular orbit. Their :
42. Masses are same.
43. Velocities are same.
44. Angular impulses are same.
45. Kinetic energies are same.
46. A 60kg man goes around earth in a satellite. His weight in the satellite will be:
47. 60 kg
48. 60 N
49. 600 N
50. Zero.
51. A boy starts from a point A, travels to a point B at a distance of 3 km from A and returns to A. If he takes two hours to do so, his speed is
(a) 3 km/h
(b) zero
(c) 2 km/h
(d) 1.5 km/h

**For question numbers 16, 17, 18 two statements are given-one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (A), (B), (C) and (D) as given below.**

1. Assertion: Moment of inertia depends upon mass of the rigid body.

Reasons: Moment of inertia is the product of total mass of the rigid body and square of the distance measured from axis of rotation.

1. Assertion: Elastic collision does not violet the conservation of energy.

 Reasons: The total kinetic energy during elastic collision is same.

1. Assertion: Hydraulic press is possible.

Reasons: Liquid cannot be compressed to desire volume.

1. The number of significant figure in 0.06900 is
2. 5
3. 4
4. 3
5. 2
6. The mean length of an object is 5 cm. which of the following measurement is most accurate?
7. 4.9 cm
8. 4.805 cm
9. 5.25 cm
10. 5.4 cm
11. Which of the following statement is true:
12. Acceleration is only zero for an object is at rest
13. Acceleration is acting along the direction of displacement
14. Acceleration is zero for an object is uniform motion and is at rest
15. Acceleration is scalar quantity.
16. Parallelogram law of vector addition method can be used to add two given vector as if they are.
17. Co-initial vectors
18. Co-planar vectors
19. Vectors in different order
20. Vectors in same order.
21. Which one of the following statements is true?
22. a scalar quantity is the one that is conserved in a process
23. a scalar quantity is the one that can never take negative values
24. a scalar quantity is the one that does not vary from one point to another in space
25. a scalar quantity has the same value for observers with different orientations of the axes
26. The horizontal range of a projectile fired at an angle of 15o is 50 m. If it is fired with the same speed at an angle of 45o, its range will be
27. 60
28. 50
29. 80
30. 100
31. In a two dimensional motion, instantaneous speed v is a positive constant. Then which of the following are necessarily true?
32. the average velocity is not zero at any time
33. average acceleration must always vanish
34. displacements in equal time intervals are equal
35. equal path lengths are traversed in equal intervals
36. **Conservation of momentum in a collision between particles can be understood from**
37. **conservation of energy**
38. **Newton’s first law only**
39. **Newton’s second law only**
40. **Both Newton’s second and third law**
41. A body is said to be in motion equilibrium if
42. Net force action on body is less than required
43. Net force action on body is more than required
44. Net force action on body is zero
45. Not mentioned above.
46. Which of the following is independent upon moment of inertia?
47. Angular velocity
48. Axis of rotation
49. Axis of rotation chosen about center of mass
50. Angular diameter.
51. Angular momentum is conserved if
52. External force is zero
53. Restoring couple is zero
54. Torque is zero
55. Both a and c.
56. A bicyclist comes to a skidding stop in 10 m. During this process, the force on the bicyclist due to the road is 200 N and is directly opposed to the motion. The work done by the cycle on the road is
57. +2000 J
58. -200 J
59. Zero
60. -20,000 J
61. A body is falling freely under the action of gravity alone in a vacuum. Which of the following quantities remain constant during the fall?
62. kinetic energy
63. potential energy
64. total mechanical energy
65. total linear momentum
66. A body of mass 0.5 kg travels in a straight line with velocity v = ax3/2 where a 5 m-1/2s-1.The work done by the net force during its displacement from x = 0 to x = 2 m.
67. **10j**
68. **20j**
69. **30j**
70. **50j**
71. The net external torque on a system of particle about any axis is zero. Which of the following are compatible with it?
72. the forces may be acting radially from a point on the axis
73. the forces may be acting on the axis of rotation
74. the forces may be acting parallel to the axis of rotation
75. All obove mentioned.
76. The acceleration due to gravity may vary according to shape of the earth so at the centre of the earth the value becomes
77. Can be Zero
78. Positive and 1
79. Can not be zero
80. Negative and 1
81. A satellite is said to be geostationary satellite if its time period of revolution is
82. Same as time revolution of moon
83. Same as time revolution of earth
84. Same as time revolution of sun
85. Same as time of revolution of other satellite.
86. The SI unit of angular momentum is
87. Kg m/s
88. Kg m2/s
89. Kg m/s2
90. Kg m s

GROUP-B

TWO-MARK QUESTIONS

1. State Impulse with suitable example.
2. What is the meaning of banking of roads? Why do we need it?
3. Describe How Newton’s second law is called real law?
4. What are the basic difference between accuracy and precision write your answer with suitable examples?
5. What do you mean by acceleration due to gravity? How it varies according to altitude?
6. Find the coordinates of center of mass if a diatomic molecule have mass are equal and their molecules are situated at (0, 1) and (-1, 0) draw a diagram to support your answer.
7. Show that linear momentum of a moving body always constant if there is no external force involved?
8. Show that angular momentum is conserved when there is no external force is applied
9. Define angular momentum. A cricket ball of mass 150 gm moving with speed of 12 m/s is hit by a bat so that the ball  is turned back with a velocity of 20 m/s. Calculate the impulse received by the ball.
10. A constant force acting on a body of mass 3.0 kg changes its speed from 2.0 m s-1 to 3.5 m s-1 in 25 s. The direction of the motion of the body remains unchanged. What is the magnitude and direction of the force?
11. Show that the total energy conserve when a body is moving in vertical circle?
12. A truck starts from rest and accelerates uniformly at 2.0 m s-2. At t = 10 s, a stone is dropped by a person standing on the top of the truck (6 m high from the ground). What are the (a) velocity, and (b) acceleration of the stone at t = 11s? (Neglect air resistance.)
13. **A ball is thrown vertically upwards with a velocity of 20m/s from the top of a multistory building. The height of the point from where the ball is thrown is 25 meter from the ground. How height the ball rise? And how long will it be before the ball hits the ground? Take g is 10 m s-2.**
14. State and derive a relation which can explain conservation of energy as work energy theorem.
15. Draw a graph (schematic) of moving man uniformly by bus. Write what are the significance of such graph?
16. What do you mean by vector quantity? How two vector can be multiplied? Explain the direction of new vector generated after cross product of two vector.
17. **Define how can a physical quantity known as vector? Define unit vector and find the unit vector for a vector force is given as F=2i+3j.**
18. **Draw the necessary graph for the following:**
19. **Positive acceleration but motion started from rest –draw V-T graph.**
20. **Uniformly accelerated motion with initial speed is not zero- Draw V-T graph.**
21. **A body covered a distance of z meter along a semicircular path. Calculate the magnitude of displacement of the body, and the ratio of distance to displacement?**
22. **A particle moving with an initial velocity of 5m/s is subjected to a uniform acceleration of 2.5m/s2. Find the displacement in the next 4 sec.?**
23. **A train is travelling at a speed of 60 km/ h. Brakes are applied so as to produce a uniform acceleration of −0.5 m /s2. Find how far the train will go before it is brought to rest.**
24. **A Truck covers 30km at a uniform speed of 30km/hr. what should be its speed for the next 90km if the average speed for the entire journey is 60km/h?**
25. **A stone is thrown in a vertically upward direction with a velocity of 10 m/s. If the acceleration of the stone during its motion is 10 m /s2 in the downward direction, what will be the height attained by the stone and how much time will it take to reach there?**
26. Define angular momentum. A cricket ball of mass 150 gm moving with speed of 12 m/s is hit by a bat so that the ball  is turned back with a velocity of 20 m/s. Calculate the impulse received by the ball.
27. A constant force acting on a body of mass 3.0 kg changes its speed from 2.0 m s-1 to 3.5 m s-1 in 25 s. The direction of the motion of the body remains unchanged. What is the magnitude and direction of the force?
28. Show that the total energy conserve when a body is moving in vertical circle?
29. A truck starts from rest and accelerates uniformly at 2.0 m s-2. At t = 10 s, a stone is dropped by a person standing on the top of the truck (6 m high from the ground). What are the (a) velocity, and (b) acceleration of the stone at t = 11s? (Neglect air resistance.).
30. State and derive a relation which can explain conservation of energy as work energy theorem.
31. Draw a graph (schematic) of moving man uniformly by bus. Write what are the significance of such graph?
32. What do you mean by vector quantity? How two vector can be multiplied? Explain the direction of new vector generated after cross product of two vector.
33. Draw a V-T graph for non-uniform motion to show the instantaneous velocity. And also write the equation for instantaneous acceleration?
34. Find the equation of motion which can explain the motion of an object along straight direction.
35. A calorie is a unit of heat energy and equals about 4.2j where 1j=1kgm2s-2. Suppose we employ a system of units in which the unit of mass equals α kg, the unit of length equals β m, the unit of time is ϒ sec. show that a calorie has a magnitude 4.2 α-1 β-2 ϒ2 in terms of the new units.
36. Define light year? Write the value of light year in meter? Also define parsec and express it in terms of meter.
37. Define displacement and distance? Write three major difference between distance and displacement?
38. Draw a position time graph (D-T) for motion with (a) positive acceleration (b) negative acceleration and (c) zero acceleration.

GROUP-C

TREE MARKS QUESTIONS

1. **By studying following graph give the answer of the following questions.**
2. **What kind of motion represented by graph from A to C.**
3. **In time 10 second find distance covered by the body.**



1. The average velocity of a body moving with uniform acceleration is given by (u + v)/2. If the acceleration changes from point to point can the average velocity be still given by this expression? Give reason. Also state one example which meets your answer.
2. State parallogram law of vector addition also derive a necessary relation to calculate magnitude of resultant vector?
3. A body constrained to move along the z-axis of a coordinate system is subject to a constant force F given by

where i, j, k, are unit vectors along the x- y- and z-axis of the system respectively. What is the work done by this force in moving the body a distance of 4 m along the z-axis?
4. A bullet fired at an angle of 300with the horizontal hits the ground 3km away. By adjusting its angle of projection, can one hope to hit a target 5 km away? Assume the muzzle speed to be fixed, and neglect air resistance.
5. A scientist tries to find distance of nearby stars by using parallax method, show the suitable relation and drawing for calculation.
6. In Vander wall’s equation ( p+a/v2)(v-b)=RT what are the dimension of a and b? Here, P is pressure, V is volume, T is temperature and R is gas constant.
7. When two vectors are acting on a particle at the same time are represented in magnitude and direction by two sides of a triangle taken in the same order. Find the magnitude and direction of the resultant vector.
8. Find the relation between linear velocity, angular velocity and linear acceleration with angular acceleration.

OR

1. Prove that the momentum is constant for any dynamic system if there is no application of force.
2. What do you mean by concurrent forces? If F1, F2, F3 concurrent forces will be in equilibrium then show that sum these forces is zero.
3. It is the variable force which is encountered more commonly. Find the relation for work done by variable force. Show your result by drawing a necessary graph.
4. The linear momentum of a body is increased by 10%. What is the percentage change in its kinetic energy?
5. What do you mean by center of mass, and moment of force? Also explain concept of torque on any physical body.
6. Find a expression for the torque in polar coordinate.
7. What is the physical meaning of radius of gyration? Also find necessary relation for it.
8. A body is rolling on the inclined plane with angular velocity ω, linear velocity about the center of mass of the body is Vcm and moment of inertia is ‘I’. Find the kinetic energy for that rolling body.
9. State the Newton’s law of gravitation and show the result for two heavenly bodies.
10. Having seen a big stone falling from the top of a tower Ravi pulled his friend Kiran away. The stone hit Ravi slightly and he got hurt. But he was saved from a major accident.

(a)What made Ravi act in such a way.

1. (b)From the top of a tower 100 m in height, a ball is dropped and at the same time another ball is projected vertically upwards from the ground with a velocity of 25 m/s. finds when and where the two balls meet. Take g = 9.8 m/sec2.
2. Having seen a big stone falling from the top of a tower Ravi pulled his friend Kiran away. The stone hit Ravi slightly and he got hurt. But he was saved from a major accident.

(a)What made Ravi act in such a way.

(b)From the top of a tower 100 m in height, a ball is dropped and at the same time another ball is projected vertically upwards from the ground with a velocity of 25 m/s. finds when and where the two balls meet. Take g = 9.8 m/sec2.

1. A football player kicks the ball at an angle Ɵ with certain velocity. The ball reaches the highest point and falls on the ground. Calculate
2. The maximum height reached by ball.
3. The time at which the ball reaches the highest point.
4. The distance covered along horizontal ground.
5. Show that the path covered by body is parabolic in nature.

OR

Define centripetal acceleration and find the relation for acceleration when the body is moving in circular path with velocity and constant speed.

1. How Newton’s third law of motion gives the concept of conservation of momentum? Also show that the maximum velocity with which a vehicle can go round a level curve; without skidding is V=$\sqrt{\begin{array}{c}µrg \\\end{array}}$ where the symbol has their usual meaning.
2. An arrow is fired by person from certain height h Calculate
3. The maximum height reached by ball.
4. The time at which the ball reaches the highest point.
5. The distance covered along horizontal ground.
6. Show that the path covered by body is parabolic in nature.
7. Define centripetal acceleration and find the relation for acceleration when the body is moving in circular path with velocity and constant speed.
8. The average velocity of a body moving with uniform acceleration is given by 12 (u + v). Ii the acceleration changes from point to point can the average velocity be still given by this expression? Give reason.
9. Two trains each of the length 109 m and 91 m are moving in opposite directions with velocities 34 km h-1 and 38 km h-1 respectively. At what time the two trains will completely cross each other?
10. Draw the position-time graphs for two objects initially occupying different positions but having zero relative velocity.
11. Is Physics more of a philosophy or more of a mathematical science?
12. In science sometimes we observed certain phenomena experimentally but are unable to give a logical equation or theory for that sometimes, it also happens that we have a scientific theory supported by’ mathematical formulation yet are unable to test it immediately. Site one such example

GROUP-D

FOUR MARKS QUESTIONS

1. **Derive the necessary equation of motion for a moving body on a straight line by using graphical method.**
2. **Define instantaneous velocity and draw different graphs for uniform and non-uniform motion as wel as for negative slope of acceleration.**
3. **What are the necessary limitation of dimension? List out its importance also.**
4. **What do you mean by error and how it occurs in our measurement? What do you mean by absolute error? Also explain the combination of error when the data is expressed in terms of** division
5. Define projectile and projectile motion. Also show that the path followed by a projectile fired from ground level will follow the parabolic path. Also calculate the horizontal range if the inclination of the projectile is 450.
6. State Newton’s second laws of motion? Derive a necessary relations to explain Newton’s second law is a real law. Give example if it is necessary relations.
7. State elastic collision? Find the expression to obtain the relation for final velocity achieved by the colliding bodies.
8. Also calculate the moment of inertia of the rod of mass 20 kg length L about an axis perpendicular to it through one end?
9. Define projectile and prove that a projectile fired along vertical direction attains a path is parabolic in nature. Also calculate its time of flight.
10. Rain is falling vertically with speed of 30m/s. A woman rides a bicycle with speed of 10 m/s in the north to south direction. What is the direction in which she should hold her umbrella?
11. OR
12. Find an expression for the acceleration of a body moving inside the circular path. Hence name the acceleration and mention necessary vector diagram.
13. An aircraft is flying at a height of 3400 m above the ground. If the angle subtended at a ground observation point by the aircraft positions 10 s apart is 300. What is the speed of the aircraft?
14. State Laws of inertia in following case:

perpendicular axis

 parallel axis

Also explain about radius of gyration with necessary relations.

Also calculate what is the moment of inertia of a ring about a tangent to the circle of the ring?

1. Derive a necessary relation to explain amount of potential energy stored by the spring. When it is elongated with some external force?
2. A pump on the ground floor of building can pump up water to fill a tank of volume 30m3 in 15 minutes, if the tank is 40 m above the ground and efficiency of pump is 30%. How much electric power is consumed by the pump?
3. Derive the necessary equation for minimum speed with which a car can take safe turn at a banked circular road.
4. Two uniform solids spheres of equal radii R, but mass M and 4M have a center separation 6R. The two spheres are fixed. A projectile of mass m is projected from the surface of the sphere of mass M directly towards the center of the second sphere. Obtain an expression for the minimum speed V of the projectile so that it reaches the surface of the second sphere.
5. If a body is at height h above the earth’s surface one time and another time it locates at certain depth of the earth. Then Show that the variation of acceleration due to gravity with altitude and with depth of the earth is minimum.
6. **What are the major significance or importance of the velocity time graph?**

**A calorie is a unit of heat energy and it equals about 4.2 joule. Where 1j= kgm2s-2. Suppose we employ a system of units in which the unit of mass equals α kg, the unit of length β meter and unit of time is ϒ second. Show that a calorie has a magnitude 4.2 α -1β-1 ϒ2 in terms of new unit system.**

**CHEMISTRY**

**SECTION – A**

**(50 questions, 1 mark each)**

1. Which of the following compounds has the maximum dipole moment?

(a) XeF4 (b) CH4 (c) SF4 (d) PCl3

1. The hybridization of the central atom in BCl3 is:

(a) sp (b) sp2 (c) sp3 (d) sp3d2

1. The atomic number of the element with IUPAC name Unniltrium is:

(a) 101 (b) 102 (c) 103 (d) 130

1. In one molal solution that contains 0.5 mole of a solute , there is:
2. 500 mL of solvent
3. 500 g of solvent
4. 100 mL of solvent
5. 1000g of solvent
6. The IUPAC name of an element with atomic number 119 is:
	1. Ununennium (b) Unnilennium (c) Unununnium (d) Ununoctium
7. Amongst the following which one will have maximum ‘lone pair – lone pair’ electron repulsions?
	1. ClF3 (b) IF5 (c) SF4 (d) XeF2
8. The number of moles of hydrogen molecules required to produce 20 moles of ammonia through Haber’s process [N2 + 3H2$→$ NH3 ] is :

(b) 20 (c) 30 (d) 40

1. Which of the following items are temperature dependent?
2. (a) Molarity (b) Molality (c) Mole fraction (d) None of these
3. The de Broglie wavelength associated with a ball of mass 1 kg having kinetic energy 0.5 J is :

(a) 6.6 X 10-34 m (b) 13.20 X 10-34 m (c) 10.38 X 10-21 m (d) 6.6 X 10-34 Å

1. Which one of the following has largest ionic radius ?
2. (a) Li+ (b) O22- (c) B3+ (d) F-
3. The number of possible resonance structure for CO32- is :

(a) 2 (b) 3 (c) 6 (d) 9

1. The screening effect of ‘d’ electron is :

(a) much less than s -electrons

(b) much more than s- electrons

(c) equal to s-electrons

(d) equal to p-electrons

1. If magnetic quantum number of a given atom represented by -3, then what will be its principal quantum number ?

(a) 2 (b) 3 (c) 4 (d) 5

1. According to Bohr’s theory, the angular momentum of an electron in 5th orbit is:

(a) 10h/ π (b) 2.5h/ π (c) 25h/ π (d) h/ π

1. Which of the following elements represents highly electropositive as well as highly electronegative character in its period?

(a) Hydrogen (b) Nitrogen (c) Fluorine (d) None

1. If the principal quantum number of an atom is 3, then the angular quantum number is

(a) 0 (b) 1 (c) 2 (d) All of these

1. An element X occurs in short period having configuration ns2np1. The formula and nature of its oxide is:

(a) XO3 , basic (b) XO3 , acidic (c) X2O3 , basic (c) X2O3 , acidic

1. Which of the following will be octahedral?

(a) SF6 (b) BF4- (c) PCl5 (d) BO3-

1. The empirical formula of a compound is CH2Cl. Its molecular weight is 99. The molecular formula of the compound is

(a) C4HCl4 (b) C3H6Cl3 (c) C4H15Cl (d) C2H5Cl2

1. What is the maximum number of orbitals that can be identified with the following set of quantum numbers?

(a) 1 (b) 2 (c) 3 (d)

1. Which of the following will have largest number of atoms?

(a) 1g Na (b) 1g Cl2 (c) 1g Li (d) 1 g Mg

1. 1 amu is equal to

(a) $\frac{1}{14}$ of O-16 (b) $\frac{1}{12}$ of C-12

(c) 1 1g of H2 (d) 1.66 x 10-23 kg

1. Which of the following elements outermost orbit’s slast electron has magnetic quantum number m= 0 ?

(a)Na (b) O (c) Cl (d) N

1. The total number of orbitals in a shell with principal quantum number ‘n’ is:

(a) n2  (b) n+1 (c) 2n (d) 2n2

1. The electronegativity follows the order:

(a) F > O > Cl > Br (b) F > Cl > Br > O

(c) O > F > Cl > Br (d) Cl > F > O > Br

1. The increasing order of the radii of Ar, K+ and Ca2+ is:

(a) Ca2+<Ar< K+ (b) Ca2+< K+ <Ar

(c) K+<Ar< Ca2+ (d) Ar< K+< Ca2+

1. Highest electron affinity is shown by :

(a) O- (b) F- (c) Cl2 (d) F2

1. The empirical formula of a compound is CH2O.its molecular weight is 180. The molecular formula of the compound is:

(a) C4HO4 (b) C3 H6 O3  (c) C6 H12 O6 (d) C5 H10 O5

1. Calculate the energy in joule of corresponding to light of wavelength 45 nm:

(a) 6.67 x 1015 (b) 6.67 x 1011 (c) 4.42 x 10-15  (d) 4.42 x 10-18

1. Which property is same in elements of same group of periodic table:

(a) Ionization potential

(b) Electronegativity

(c) Electron affinity

(d) Number of valence electron

1. An element having electronic configuration [Ar]4s1 forms

(a) Acidic oxide (b) basic oxide (c) amphoteric oxide (d) neutral oxide

1. What are degenerate orbitals?
2. Define atomic mass unit.
3. The number of significant figures in 0.0101 is \_\_\_\_\_\_ .
4. Arrange the following in increasing order of energy : 3d , 4s , 2p , 4p , 3s , 5s , 6s , 5p , 7s , 4f
5. Which of the following do or don’t make sense?

7p , 2d , 3s3 , 3py3 , 4f

1. What will happen to the wavelength associated with a moving particle if its velocity is reduced to half?
2. What is the mass percentage of carbon in carbon dioxide?
3. What will be the molarity of the solution containing 18.25 g of HCl gas in 500 ml water?
4. What is the ratio of the molar volumes of SO2 and SO3?
5. Define limiting reagent.
6. What is Rydberg Constant?
7. Differentiate between molarity and molality

**ASSERTION-REASONING QUESTIONS:**

***(a) Both Assertion and Reason are true but Reason is the correct explanation of Assertion.***

***(b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion.***

***(c) Assertion is false and Reason is true.***

***(d) Assertion is true but Reason is false.***

1. Assertion : The ionic radii follow the order I-> I > I+

Reason : These are isoelectronic species.

1. **ASSERTION:** Nitrogen has higher ionisation energy than that of oxygen.

**REASON:** Nitrogen has smaller atomic size than that of oxygen.

1. **Assertion :**1.231 has three significant figures.
**Reason :**All numbers right to the decimal point are significant.
2. **Assertion :**One atomic mass unit is defined as one twelfth of the mass of one carbon – 12 atom.
**Reason :**Carbon-12 isotope is the most abundant isotope of carbon and has been chosen as standard.
3. **Assertion :**The empirical mass of ethene is half of its molecular mass.
**Reason :**The empirical formula represents the simplest whole number ratio of various atoms present in a compound.

**SECTION – B**

**(40 questions, 2 marks each)**

1. State the limitations of octet rule.
2. Explain the concept of hybridization using CO32- ion.
3. 7 grams of chlorine reacts with 0.40 g of hydrogen to yield hydrochloric acid. Calculate the amount of product formed?
4. Differentiate between molecular formula and empirical formula.
5. State the significance of

(a) Principal quantum number

(b) Magnetic quantum number

1. Find out the number of unpaired electrons in :

(a) Nitrogen

(b) Chlorine

1. Explain the reasons for the stability of half-filled and fully filled orbitals.
2. What do you understand by Aufbau principle? Arrange the following orbitals in order of increasing energies?
3. State :

(a)Pauli exclusion principle

(b) Hund’s rule of maximum multiplicity

1. Differentiate between isotopes and isobars.
2. How many grams of chlorine are required to completely react with 0.40 g of hydrogen to yield hydrochloric acid? Also calculate the amount of HCl formed?
3. Boron occurs in nature in the form of two isotopes $$ and $$ in ratio 81 % and 19 % respectively. What will be its average atomic mass.
4. Calculate the volume of 34 g of NH3 at STP.
5. Calculate the mole fraction of a solution having 1 m concentration in aqueous solution.
6. A solution is prepared by adding 2 g of a substance A to 18 g of water. Calculate the mass percent of the solute.
7. How many significant figures are present in the following :

(a) 0.002014 (b) 56.320

1. Round-off the following upto 3-significant figures:

(a) 4.598 (b) 2.575

1. Give reasons:
2. Axial bonds are longer than equatorial bonds in PCl5.
3. The geometry of CO2 is linear but that of SO2 is bent.
4. Calculate the percentage composition of each element in Na2SO4.
5. State Heisenberg’s Uncertainty Principle. What is the cause of this uncertainty in measurement?
6. Write the general outer electronic configuration of p-block elements. Mention two distinct properties of p-block elements.
7. Compare the dipole moment of NH3 and NF3.
8. Calculate the formal charge on each atom of CO32- ion.
9. What are the frequency and wavelength of a photon emitted during a transition from n=5 state to n=2 state in the hydrogen atom ?
10. Calculate the molarity of Na2CO3 in the solution prepared by dissolving its 53g in water to form 250 ml of solution.
11. Consider the following species: [2]

N3-, O2-, F-, Na+, Mg2+, Al3+

1. What is common in them?
2. Arrange them in decreasing order of ionic radii.
3. Explain why?
4. BeF2 molecule is linear while SF2 is angular though both are triatomic.
5. B-Cl bond has dipole moment. Explain why BCl3 has zero dipole moment.
6. Give reasons.
7. Why does Be has higher first ionization enthalpy than B ?
8. What do you mean by diagonal relationship of elements. Give examples.
9. Why are the elements at the extreme left and extreme right of the periodic table highly reactive?
10. Give some properties of the s-block elements.
11. Give some properties of the p-block elements.
12. Give some properties of the d-block elements.
13. Give some properties of the f-block elements.
14. Explain Aufbau principle. Arrange the following in order of increasing energies: 2s, 3d, 3s, 4p, 4s, 4f, 5s, 5p, 5d, 5f, 6s, 6p, 7s,7p.
15. Mention some da salient features of hybridisation.
16. Write short notes on : (i) exchange energy (ii) stability of half filled orbitals.
17. Calculate the average atomic mass of hydrogen using the following data :



1. State the following :
2. Law of conservation of mass
3. Law of Constant proportion
4. Avogadro law
5. Show that the sum of mole fractions of each component of a solution is 1.
6. State Heisenberg’s Uncertainty Principle. A golf ball has a mass of 40 g and a speed of 45 m/s. If the speed can be measured within accuracy of 2% , calculate the uncertainty in the position.
7. Find the radius of the 3rd orbit of Li2+ according to Bohr’s theory.

**SECTION – C**

**(30 questions, 3 marks each)**

1. State Heisenberg’s Uncertainty principle. A table-tennis ball has a mass 10 g and a speed of 90 m/s. If speed can be measured with an accuracy of 4 % what will be the uncertainty in speed and position?
2. Consider the elements: Cs , Ne, I , F

(a) Identify the element that exhibits only negative oxidation state.

(b) Identify the element that exhibits only positive oxidation state.

(c) Identify the element that exhibits positive and negative oxidation states.

(d) Identify the element that exhibits neither negative nor positive oxidation state.

(e) Arrange them according to increasing of their electronegativity.

1. Calculate the frequency, energy and wavelength of radiation corresponding to the spectral line of lowest frequency in Lyman series in the spectra of hydrogen atom.
2. Calcium carbonate reacts with aqueous hydrogen chloride to give chloride and carbon dioxide according to following reaction,

CaCO3 + 2HCl 🡪 CaCl2 + CO2

What mass of calcium chloride will be formed when 250ml of 0.76M HCl reacts with 100g of CaCO3 . Name the limiting reagent. Calculate the number of moles of calcium chloride formed in the reaction.

1. Give reasons:

(a) The dipole moment of NH3 is greater than NF3.

(b) Ionisation enthalpy of nitrogen is greater than that of oxygen.

1. (c) The position of hydrogen is not fixed in the periodic table
2. Explain the variation of the following properties across a period in a periodic table:

(a) Atomic radius

(b) Ionisation enthalpy

(c) Electronegativity

1. Mention few postulates of Bohr’s atomic model for hydrogen atom.
2. Calculate the mass percentage of each element in sodium sulphate.
3. Give the electronic configuration of :

(a) Scandium

(b) Chromium

(c) Sodium

1. State Heisenberg’s Uncertainty principle. A table-tennis ball has a mass 10 g and a speed of 90 m/s. If speed can be measured with an accuracy of 4 % what will be the uncertainty in speed and position?
2. Explain de Broglie’s equation for wave-particle relationship. Compare the wavelengths of an electron, proton and alpha particle travelling with the same velocity.
3. 2.82 g of glucose (C6H12O6) are dissolved in 30 g of water. Calculate the (a) molality (b) mole fraction of glucose and water.
4. Complete the following :

(a) 28.7 pm = \_\_\_\_\_\_\_ cm = \_\_\_\_\_\_\_\_ km

(b) 4.86 kg L-1 = \_\_\_\_\_\_\_\_ g L-1

(c) 46 0 C = \_\_\_\_\_\_\_\_ K = \_\_\_\_\_\_\_\_ F

1. Calculate the frequency , energy and wavelength of radiation corresponding to the spectral line of lowest frequency in Lyman series in the spectra of hydrogen atom.
2. The equilibrium constant Kc = 0.061 at 500 K for the reaction.

N2 (g) + 3H2 (g) 🡪 2NH3 (g)

At a particular time, the composition of the reaction mixture is 3.0 mol L-1 N2, 2.0 mol L-1 H2, 0.5 mol L-1 NH3. Is the reaction at equilibrium? If not, in which direction does the reaction tend to proceed?

1. Write short notes on :
	1. Resonance
	2. Bond order
	3. Hybrdisation
2. If 20 g of CaCO3 is treated with 20 g of HCl , how many grams of CO2 can be generated according to the following reaction ?
3. Calculate the molar mass of the following :

(a) Sodium carbonate

(b) Carbon dioxide

(c) Calcium sulphate

1. Give two examples each of :

(a) monoatomic divalent cation

(b) polyatomic ion

(c) diatomic monovalent anion

1. Define :

(a) Atomic mass

(b) Molality

(c) Saturated solution

1. What do you understand by mole fraction. `Show that the sum of mole fraction of all the components of a solution is 1.
2. Concentrated HCl is 38 % HCl by mass. What is the molarity of this solution if density = 1.19 g cm-3.
3. Mention the postulates of Dalton’s atomic theory.
4. State Heisenberg’s Uncertainty principle. Why is it not significant for macroscopic particles?
5. Dinitrogen and dihydrogen react with each other to produce ammonia according to the following chemical equation: N2 + 3H2🡪 2NH3

(a) Calculate the mass of ammonia produced if 2 kg of dinitrogen react with 1 kg of dihydrogen.

(b) Will any of the two reactants remain unreacted?

(c) If yes, which one? What would be its mass?

1. Define: (a) Accuracy (b) Limiting reagent (c) Metre
2. Define: (a) Molarity (b) Mass percent (c) Precision
3. An organic compound on analysis gave the following data: C= 57.82% ; H= 3.6%; O= 38.58%. If its molecular mass is 166u find its empirical and molecular formula.
4. An atom of an element contains 29 electrons and 35 neutrons. Deduce

(i)the number of protons

(ii) the electronic configuration of the element

(iii) Identify the element

**SECTION – C**

**(20 questions, 4 marks each)**

1. Answer the following questions:

(a) Draw the structure and comment on the polarity of the following compounds:

 SF4 , PCl5 , BF3

(b) Calculate the formal charge on each atom of O3.

1. Answer the following questions:

(a) What do you understand by diagonal relationship of elements in periodic table? Give examples.

(b) Explain shielding effect in an atom.

(c) Arrange the following in increasing order of size: F­­- , Ne, Ar, Na+ .

***CASE STUDY- 1***

Read the following and answer the questions that follow :

A majority of reactions in the laboratories are carried out in solutions. Therefore, it is important to understand as how the amount of substance is expressed when it is present in the solution. The concentration of the solution or the amount of substance present in its given volume can be expressed in any of the following ways:

* Mass percent
* Molarity
* Molality
* Mole fraction
1. (i) \_\_\_\_\_\_\_\_ is the ratio of number of moles of a particular component to the total number of moles of the solution.

(a) Mass percent

(b) Mole fraction

(c) Molarity

(d) Molality

1. Molarity is defined as the number of moles other in \_\_\_\_\_\_\_\_\_ of the solution.

(a) 1 litre

(b) 1 kg

(c) 1 gram

(d) 1 %

1. Molality is defined as the number of moles other in \_\_\_\_\_\_\_\_\_ of the solution.

(a) 1 litre

(b) 1 kg

(c) 1 gram

(d) 1 %

1. \_\_\_\_\_\_\_\_ = $\frac{Mass of solute }{Mass of solution} X 100 $

(a) Molarity

(b) Molality

(c) Mass percentage

(d) Mole fraction

1. Which of the following is dependent on temperature ?

(a) Molarity

(b) Molality

(c) Mass percentage

(d) Mole fraction

***CASE STUDY - 2***

Read the following and answer the questions that follow :

The French physicist, de Broglie , in 1924 proposed that matter, like radiation, should also exhibit dual behaviour i.e both particle and wave like properties. This means that just as the photon has momentum as well as wavelength, de Broglie, from this analogy, gave the relation between wavelength (λ) and momentum (p) of a material particle. Werner Heisenberg a German physicist in 1927, stated uncertainty principle which is the consequence of dual behaviour of matter and radiation. In Bohr model, an electron is regarded as a charged particle moving in well-defined circular orbits about the nucleus. The wave character of the electron is not considered in Bohr model. Bohr model not only of hydrogen atom ignores dual behaviour of matter but also contradicts Heisenberg’s uncertainty principle. The structure of atom was needed which could account for wave –particle duality of matter and be consistent with Heisenberg uncertainty principle. This came with the advent of Quantum mechanics. When Schrodinger equation is solved for hydrogen atom, the solution gives possible energy levels the electron can occupy and the corresponding wave functions of the electron associated with each energy level.

1. The princpal quantum number is denoted by :

(a) n

(b) l

(c) ml

(d) ms

1. \_\_\_\_\_\_\_\_\_\_ is also known as orbital angular momentum or subsidiary quantum number.

(a) principal quantum number

(b) electron spin quantum number

(c) magnetic orbital quantum number

(d) azimuthal quantum number

1. The number of orbitals associated with n=3 is :

(a) 3

(b) 6

(c) 9

(d) 18

1. The probability of finding an electron in the nodes of an orbtal is :

(a) 1

(b) 0.5

(c) 0.25

(d) 0

1. In Bohr’s theory the radius ‘r’ of the orbit is proportional to:

(a) n

(b) n2

(c) n-1

(d) n-2

***CASE STUDY -3:***

Read the passage below and answer the questions follows:

When covalent bond is formed between two similar atoms, for example in H2, O2, Cl2, N2 or F2, the shared pair of electrons is equally attracted by the two atoms. As a result electron Pair is situated exactly between the two identical nuclei. The bond so formed is called nonpolar covalent bond. As a result of polarisation, the molecule possesses the dipole moment which can be defined as the product of the magnitude of the charge and the distance between the centres of positive and negative charge. It is usually designated by a Greek letter ‘µ’. Mathematically, it is expressed as follows :

Dipole moment (µ) = charge (Q) × distance of separation

Dipole moment is usually expressed in Debye units (D). The conversion factor is 1 D = 3.33564×10–30 C m where C is coulomb and m is meter. Just as all the covalent bonds have some partial ionic character, the ionic bonds also have partial covalent character. The partial covalent character of ionic bonds was discussed by Fajans in terms of the following rules:

* The smaller the size of the cation and the larger the size of the anion, the greater the covalent character of an ionic bond.
* The greater the charge on the cation, the Greater the covalent character of the ionic bond.
* For cations of the same size and charge, the one, with electronic configuration (n-1) d0 ns0, typical of transition metals, is more polarising than the one with a noble gas configuration, ns2 np6 , typical of alkali and alkaline earth metal cations.
	1. BeH2 molecule has a zero dipole moment although the Be – H bonds are polar. Explain.
	2. Arrange the following bonds in order of increasing ionic character giving reasons:

N – F , F – H , C – H and O – H

1. Answer the following questions :

(a) If radius of second orbit He+ ion is 105.8 pm, what is the radius of third Bohr orbit of Li2+ ion? Also , calculate the energy associated with the third orbit of Li2+ ion.

(b) An electron in the third orbit of an atom is completely removed from its shell. To which spectral series would the wavelength of emitted radiation lie?

(c) The energies of the electron in the stationary states are quantized. Explain.

1. Represent diagrammatically the bond moments and the resultant dipole moment in CO2 , NF3 and CHCl3.
2. A compound on analysis gave the following percentage composition:

Na = 14.1 % , S = 9.97 % , H= 6.22 % , O = 69.5 %

1. Calculate the molecular formula of the compound on the assumptions that all the hydrogens in the compound are present in combinations with oxygen as water of crystallization. The molecular mass of of the compound is 322.
2. What do you understand by empirical formula and molecular formula? Give examples. The molecular mass of benzene is 78 and its percentage composition is 92.3 % C and 7.69 of H. Determine the molecular formula of benzene.
3. (a) Calculate the number of atoms of each type in 18 g of glucose ( C6H12O6)

(b) Calculate the number of molecules in:

* 1. 5.6 L of O2
	2. 10.8 g of water
	3. 11.2 L of ammonia
1. Answer the following:

(a) How much energy is required to ionize a H-atom if the electron occupies n=5 orbit? Compare your answer with the ionization enthalpy of H-atom (energy required to remove the electron from n=1 orbit ) ?

(b) Explain screening effect.

1. Arrange the following species in increasing order as directed below:

Polarizing power: K+ , Ca+ , Mg+ , Be+

Dipole moment: BF3 , NH3 , NF3

Strength: lp-bp, lp-lp, bp-bp

Atomic radius: Li, B, N, Na, K

Electronegativity: F , O , Cl , Br

Bond angle SO2 , NH3 , H2O , BeCl2

**MATHEMATICS**

SECTION-A(50X1M)

Q1. If nC12 = nC8, then n is equal to

a)20(b)12(c)6

2The number of possible outcomes when a coin is tossed 6 times is

(a)36(b)64(c)12(d)32

3. The number of different four-digit numbers that can be formed with the digits

2, 3, 4, 7 and using each digit only once is

(a) 120 (b)96(c)24(d) 100

4The sum of the digits in unit place of all the numbers formed with the help of 3,4, 5 and 6 taken all at a time is

(a)432(b)108(c)36(d)18

5. The total number of words formed by 2 vowels and 3 consonants taken from 4 vowels and 5 consonants is

(a) 60(b) 120 (c) 7200(d) 720

6. A five-digit number divisible by 3 is to be formed using the numbers 0, 1,2,4, and 5 without repetitions. The total number of ways this can be done is

(a) 216 (b) 600 (c) 240 (d) 3125.

7 Everybody in a room shakes hands with everybody else. If the total number of hand shakes is 66, then the total number of persons in the room is

(a)11 b)12(c)13(d)14

8The number of triangles that are formed by choosing the vertices from a set of 12 points, seven of which lie on the same line is

(a)105 (b 5 (c) 175 d) 185

9. The number of parallelograms that can be formed form a set of four parallel lines intersecting another set of three parallel lines is

(a)6 (b)18 (c)12 (d)9

10)The number of ways in which a team of eleven players can be selected from 22 players always including 2 of them and excluding 4 of them is

a)16C11 (b)16C5 (c)16C9 (d) 20C9

11The number of ways in which we.can choose a committee from four men and six women, so that the committee includes at least two men and exactly twice as many women as men is

(a) 94 (b) 126 (c) 128 (d) none of these

13)The total number of 9-digit numbers which have all different digits is

(a) 10!(b)9! (c) 9×9!(d) 10×10!

14The number of words which can be formed out of the letters of the word ARTICLE, so that vowels occupy the even place is

(a) 1440 (b) 144 (c)7! (d)4C4 x 3C3.

15Given five different green dyes, four different blue dyes and three different red dyes, the number of combinations of dyes which can be chosen taking at least one green and one blue dye is

(a) 3600 (b) 3720 (c) 3800 (d) 3600

Q.16 . Which of the following are well-defined sets?

1. All the colors in the rainbow.

2. All the points that lie on a straight line.

3. All the honest members in the family.

4. All the efficient doctors of the hospital.

5. All the hardworking teachers in a school.

6. All the prime numbers less than 100.

Q.17. Write the following sets in the set builder form.

1. A = {2, 4, 6, 8}

2. B = {3, 9, 27, 81}

3. C = {1, 4, 9, 16, 25}

4. D = {1, 3, 5, ......}

5. E = {4, 6, 8, 9, 10, 12, 14, 15, 16, 18, 20, ......., 52}

6. F = {-10, ......, -3, -2, -1, 0, 1, 2, ......, 5}

7. G = {O}

8. P = { }

Q18. Write the following sets in the roster form.

1. A = {x : x ∈ W, x ≤ 5}

2. B = {x : x ∈ I, -3 < x < 3)

3. C = {x : x is divisible by 12}

4. D = {x : x = 3p, p ∈ W, p ≤ 3}

5. E = {x : x = a2, a ∈ N, 3 < a < 7}

6. F = {x : x = n/(n + 1), n ∈ N and n ≤ 4}

Q.19. Which of the following are the examples of an empty set?

1. The set of even natural numbers divisible by 3.

2. The set of all prime numbers divisible by 2.

3. {x : x ∈ N, 5 < x < 6}

4. The set of odd natural numbers divisible by 2.

5. P = {x : x is a prime number, 54 < x < 58}

6. Q = {x : x = 2n + 3, n ∈ W, n ≤ 5}

Q20Classify the following as finite and infinite sets.

1. The set of days in a week

2. A = {x : x ∈ N x > 1}

3. B = {x : x is an even prime number}

4. D = {x : x is a factor of 30}

5. P = {x : x ∈ Z, x < -1}

Q.21 The set A={x, x∈N , and x2-3x+2 = 0} is

1. Null set

2. Finite set

3. Infinite set

4. None of these

22The set A={x, x∈R , and x2=9, 2x = 4} is

1. Empty set

2. Singleton set

3. Infinite set

4. None of these

23 Let A= {x: x is a letter in the word FOLLOW}, B= {y: y is a letter in the word WOLF}

1. A & B are disjoint

2. A=B

3. A B

4. None of these

24 Are the following pairs of sets equal?

1. A = {2} B = {x : x ∈ N, x is an even prime number}.

2. P = {1, 4, 9} Q = {x : x = n2, n ∈ N, n ≤ 3)

3. X = {x : x ∈ W, x < 5} Y = {x : x ∈ N, x ≤ 5}

4. M = {a, b, c, d} N = {p, q, r, s}

5. D = {x : x is a multiple of 30} E = {x : x is a factor of 10}

25. Which of the following are equivalent sets?

1. A = {1, 2, 3} B = {4, 5}

2. P = {q, s, m} Q = {6, 9, 12}

3. X = {x : x is a prime number less than 10} Y = {x : x ∈ N, x ≤ 4}

4. R = {x : x = 2n + 3, n < 4, n ∈ N} S = {x : x = n/(n + 1), n ∈ R, n ≤ 4}

5. The set of vowels in the English alphabet

6. The set of consonants in the English alphabet

26. Find the cardinal number of the following sets.

1. A = {x : x ∈ I, 2 < x < 7}

2. B = {x : n ∈ N, x = n2, n < 3}

3. The set of months in a year

4. C = {x : x ∈ Z+, x < 100}

5. D = {x : x = n3, n ∈ W, n < 5}

6. The set of letters in the word MALAYALAM

27 State whether true or false:

1. {5, 7, 9} = {9, 7, 5}

2. Sets {4, 9, 6, 2} and {6, 2, 4, 9} are not same.

3. Sets {0, 1, 3, 9, 4} and {4, 0, 1, 3, 9} are same.

4. {a, b, c, c, d} = {a, b, c}

5. {2, 3, 3, 4, 4} = {2, 3, 4}

6. Sets {5, 4} and {5, 4, 4, 5} are not same.

7. Sets {8, 3} and {3, 3, 8} are same.

8. {x | x is a vowel in the word ‘equation’}

9 . If M is the set of letters used in the word ‘KOLKATA’; then M = {k, o, l, a t}.

28. Write each of the following sets in the shortest possible way:

1. {2, 7, 7, 2, 3, 7, 8}

2. {10 - 5, 20 - 15, 30 - 25, 40 - 35, 37 - 32}

3. {2 + 8, 3 + 7, 4 + 6, 5 + 5, 6 + 4, 7 + 3}

4. 3, 5, 15, 45, 75 and 90

29 Let A = set of natural numbers less than 8, B = {even natural numbers less than12} C = {Multiples of 3 between 5 and 15},and D = {Multiples of 4 greater than 6 andless than 20}; Find:

1. (B ∩ D) B ∪ C

2. A ∪ D

3. C ∪ D

4. A ∩ C

5. (B ∩ C) ∪ A

6. (D ∪ A) ∩ B

7. (A ∩ C) ∪

8. (B ∪ D) ∩ (C ∪ A)

30 If A {5, 7, 8, 9}, B = {3, 4, 5, 6} and C = {2, 4, 6, 8, 10}; where n is total number ofdistinct elements in a set. Find:

1. n(A) + n(B)

2. n(A ∪ B)

3. n(A ∩ B)

4. n(A ∪ B) + n(A ∩ B)

5. n(B) + n(C) – n(B ∩ C)

6. n(A) + n(B) = n(A ∪ B) + n(A ∩ B)?

7. Is n(B ∪ C) = n(B) + n(C) - n(B ∩ C)?

31 Find the cardinal number of the following sets:

1. { }

2. {0}

3. {3, 7, 11, 15}

4. {3, 3, 3, 4, 4, 5}

5. {x : x is a letter in the word ‘STATISTICS’}

6. {x : x is an odd whole number less than 12}

7. {x : x ∈ N and x2 < 50}

8. {x : x is a factor of 12}

32Show by Venn diagrams the relationship between the following pairs of sets:

1. X = {letters of English alphabet upto ‘h’}; Y = {all the vowels of English alphabet}

2. A = {even numbers less than 10}; B = {odd numbers less than 10}

3. C = {multiple of 5 less than 30}; D = {multiple of 3 less than 20}

4. M = {all girls of your school}; N = {all boys of your school}

5. P = {boys who play hockey}; Q = {boys who play cricket}

6.. R = {people who speak Hindi}; S = {people who speak Tamil}

7. U = {people who live in India}; V = {people who live in Bihar}

8. E = {men}; F = {kings}

9. (ix) S = {all animals}; T = {people who wear shirts}

33. . If: A = Set of natural numbers, B = Set of prime numbers and C = Set of evenprime numbers

Draw Venn-diagram showing the relationship among the given sets A, B and C.

33. Let M = {Natural numbers between 10 and 40; each divisible by 3}

N = {Natural numbers upto 40; each divisible by 4}.

Draw a Venn-diagram showing the relationship between sets M and set N.

34. Show by Venn diagrams the relationship between the following pairs of sets:

If: A = Set of natural numbers, B = Set of prime numbers andC = Set of even prime numbers.

Draw Venn-diagram showing the relationship among the given sets A, B and C.

35 Let M = {Natural numbers between 10 and 40; each divisible by 3}

N = {Natural numbers upto 40; each divisible by 4}.

Draw a Venn-diagram showing the relationship between sets M and set N.

36 If A = then total number of elements in P(A) are

1. No element 2. Zero 3. Two 4. one

37 Let A= { a,b,c} and B= { 1,2} then the number of relations from A into B are

1. 6 2. 5 3. 32 4. 64

38 Let R is the set of all triangles in a plane aRbiff a is congruent to b , then R is

1. Only reflexive 2. Only Symmetric 3. Only Transitive relation4. Equivalence relation

39 The relation “ is parallel” on the set A of all coplanar straight line is :

1. Only reflexive2. Only Symmetric 3. Only Transitive relation4. Equivalence relation

40 Let A= {a,b,c} and R= {(b,b), (c,a),(a,c)} , then the relation R on A is

1. Only reflexive 2. Only Symmetric 3. Only Transitive relation 4. None of these.

4 1 The relation “ congruence modulo m” is

1. An equivalence2. Reflexive only3 . Symmetric only4. Transitive only

42 The sets A& B have 6 & 9 elements respectively, such that A is proper subset B , then

the total number of elements A B are

1. 6 2. 9 3. 3 4. 15

43 The sets A& B have 5 & 9 elements respectively, such that A is proper subset B , then

the total number of elements A ∪ B are

1. 5 2. 9 3. 14 4. 4

44 The smallest set A such that A∪{4,5}= {1,2,3,4,5} is

1. {3,4,5} 2. {1.2.3} 3. {1,2} 4. { 1,2,3,4,5}

45 Which set is the subsets of all given sets

1. {1}

2. {0}

3.

4. {0,1,6.7}

46 If A= { 1,2,3} & B= { 4,5,6} then , n(A is equal to

1. 6

2. 9

3. 27

4. None of these

Long answers

1. The 4th term of A.P is equal to 3 times the 1st term and the seventh term exceeds twice the

3rd term by 1. Find the 1st term and the common difference?

2. In an A.P, pth , qth and rth terms are a,b and c. prove that p(b-c)+q(c-a)+r(a-b)=0?

3. If a2, b2, c2 are in A.P, prove that a/(b+c), b/(c+a), c/(a+b) are in A.P?

4. If the roots of the equation a(b − c)x2 + b(c − a)x + c(a − b) = 0 are equal.Prove that 1/a, 1/b, 1/c are in A.P?

5. The sum of n-terms of two arithmetic progressions are in the ratio (7n+1)4n+27), findthe ratio of their 11th terms?

6. The sum of three consecutive numbers in A.P is 18 and their product is 192. Find thenumbers?

7. If the sum of p terms of an A.P is q and sum of q terms is p, then show that the sum of

(p+q) terms is –(p+q)?

8. The ratio of the 2nd to 7th of ‘n’ A.M’s between -7 and 65 is 1:7, find ‘n’?

9. Three numbers whose sum is 15 are in A.P. if 8,6 & 4 be added to them respectively, then

these are in G.P. find the numbers?

10. Three numbers whose sum is 15 are in A.P. if 8,6 & 4 be added to them respectively, then

these are in G.P. find the numbers?

11. Between 1 and 31, ‘m, numbers have been inserted in such a way that the resulting

sequence is an A.P. and the ratio of 7th and (m-1)thnumbers is 5:9. Find the value of ‘m’

12. The sum of two numbers is 6 times their geometric mean, show that numbers are in the

ratio (3 + 3√2): (3 − 3√2)

13. Find the sum of n terms of the sequence 7, 77, 777, 7777, .......?

14. Find the sum 0.6+0.66+0.666+........ up to n terms?

15. Prove that the sum to n terms of the series 11+103+1005+ -------- is

16. 150 workers were engaged to finish a job in a certain no. of days, 4 workers dropped out

on the second day, 4 more workers dropped out on the third day and so on. It took 8 more

days to finish the work . find the number of days in which the work was completed?

17. A person writes a letter to four of his friends. He asks each one of them to copy the letter

and mail to four different persons with instruction that they move the chain similarly.

Assuming that the chain is not broken and that it costs 50 paise to mail one letter. Find the

amout spent on the postage when 8th set of letter is mailed?

18. The lengths of three unequal edges of a rectangular solid block are in G.P. the volume of

the block is 216 cm3 and the total surface area is 252 cm2. Find the length of the longest side?

19. If a, b, c are in A.P. , b, c, d are in G.P, and 1/c, 1/d, 1/e are in A.P. prove that a, c, e are in

G.P?

20. Find four numbers in G.P, whose sum is 85 and product is 4096?

Short answers 2 mark

1. In an A.P the first term is 2 and the sum of the first five terms is one-fourth of next five terms.

Show that 20th term is -112?

2. The sum of n terms of two A.P’s are in the ratio (3n+8):(7n+15). Find the ratio of their 12th

terms?

3. Show that the sum of (m+1)th and (m-n)th terms of an A.P is equal to twice the mth term

4. Let the sum of n, 2n, 3n terms of an A.P be S1, S2 and S3 respectively. Show that

S3 = 3(S2 − S1)

5. The sum of 1st four terms of an A.P is 56. The sum of the last four terms is 112. If its 1st term is 11, then find the number of terms?

6. Find the sum of first 24 terms of the A.P. a1, a2, a3, ... .... if it is known thata1 + a5 + a10 + a15 + a20 + a24 = 225

7. If the sum of n terms of an A.P is 3n2+n and its mth term is 164. Find the value of m

8. Write the following sets in the roaster from (i) A = {x : x ∈ R, 2x + 11 = 15}

(ii) B = {x | x2 = x, x ∈ R} (iii) C = {x | x is a positive factor of a prime number p}

9 Write the following sets in the roaster form. (i) A = {x | x is a positive integer less

than 10 and 2x – 1 is an odd number} (ii) C = {x : x2 + 7x – 8 = 0, x ∈ R}

10.If X and Y are subsets of the universal set U, then show that (i) Y ⊂ X ∪ Y (ii) X ∩

Y ⊂ X (iii) X ⊂ Y ⇒ X ∩ Y = X

11. State which of the following statements are true and which are false. Justify your

answer. (i) 35 ∈ {x | x has exactly four positive factors}. (ii) 128 ∈ {y | the sum of all the

positive factors of y is 2y} (iii) 3 ∉ {x | x4 – 5x3 + 2x2 – 112x + 6 = 0} (iv) 496 ∉ {y |

the sum of all the positive factors of y is 2y}.

12. Given L = {1, 2, 3, 4}, M = {3, 4, 5, 6} and N = {1, 3, 5} Verify that L – (M ∪ N) =

(L – M) ∩ (L – N).

13. If A and B are subsets of the universal set U, then show that (i) A ⊂ A ∪ B (ii) A ⊂ B

⇔ A ∪ B = B (iii) (A ∩ B) ⊂ A 7. Given that N = {1, 2, 3, ... , 100}. Then write (i) the

subset of N whose elements are even numbers. (ii) the subset of N whose element are

perfect square numbers

14. Given that N = {1, 2, 3, ... , 100}. Then write (i) the subset of N whose elements are

even numbers. (ii) the subset of N whose element are perfect square numbers.

15. If X = {1, 2, 3}, if n represents any member of X, write the following sets containing

all numbers represented by(i) 4n (ii) n + 6 (iii)2 n (iv) n – 1

16. If Y = {1, 2, 3, ... 10}, and a represents any element of Y, write the following sets,

containing all the elements satisfying the given conditions. (i) a ∈ Y but a2 ∉ Y (ii) a + 1

= 6, a ∈ Y (iii) a is less than 6 and a ∈ Y

17. A, B and C are subsets of Universal Set U. If A = {2, 4, 6, 8, 12, 20} B = {3, 6, 9, 12,

15}, C = {5, 10, 15, 20} and U is the set of all whole numbers, draw a Venn diagram

showing the relation of U, A, B and C.

18. Let U be the set of all boys and girls in a school, G be the set of all girls in the school,

B be the set of all boys in the school, and S be the set of all students in the school who

take swimming. Some, but not all, students in the school take swimming. Draw a Venn

diagram showing one of the possible interrelationship among sets U, G, B and S.

19. For all sets A, B and C, show that (A – B) ∩ (C – B) = A – (B ∪ C) Determine

whether each of the statement in Exercises 13 – 17 is true or false. Justify your answer.

20. For all sets A and B, (A – B) ∪ (A ∩ B) = A

21. For all sets A, B and C, A – (B – C) = (A – B) – C

22. For all sets A, B and C, if A ⊂ B, then A ∩ C ⊂ B ∩ C

23. For all sets A, B and C, if A ⊂ B, then A ∪ C ⊂ B ∪ C

24. For all sets A, B and C, if A ⊂ C and B ⊂ C, then A ∪ B ⊂ C.

Using properties of sets prove the statements given in Exercises

18 to 21

25. For all sets A and B, A ∪ (B – A) = A ∪ B

26. For all sets A and B, A – (A – B) = A ∩ B

27. For all sets A and B, A – (A ∩ B) = A – B

28. For all sets A and B, (A ∪ B) – B = A – B



Very short 3 mark question

VERY SHORT ANSWER QUESTIONS

1. If 𝑎𝑛 =$\frac{n^{2}+1}{2n}$, find first five terms?

2.Find the 6th term from the end of the sequence 9, 12, 15, …..20th term

3.In an A.P. if mth term is n and the nth term is m, where 𝑚 ≠ 𝑛, find the pth term ?

4.If the sum of n terms of an A.P is 𝑛𝑝 +1 𝑛2(𝑛 − 1)𝑄, where P and Q are constants, find the common difference.

5.If the sum of n terms of an A.P is 𝑝𝑛 + 𝑞𝑛2. Find the common difference?

6.The sum of three consecutive terms of an A.P is 15 and their product is 105. Find the numbers?

7.Find the sum of 20 terms of an A.P, whose first term is 3 and last term is 57?

8.How many terms of A.P: -9, -6, -3, …. Must be added together so that the sum may be 66?

9.Find the sum of odd integers from 1 to 2001

10.If 9 times of 9th term of an A.P is equal to 13 times the 13th term, then find 22nd term of the A.P?

11.Insert 6 numbers between 3 and 24 such that the resulting sequence is an A.P?

12.Which term of the sequence √3, 3,3√3 … …, is 729?

13. Evaluate ∑11 (2 + 3𝑘)

𝑘=1

14.The third term of a G.P is 4. Find the product of its first five terms?

15.The 4th term of a G.P is square of its second term, and the first term is -3. Determine its 7th term?

16.Find the 12th term of a G.P. whose 8th term is 192 and the common ratio is 2?

17.Given a G.P. with a=729 and 7th term=64, determine 𝑆7 ?

18.Find the G.P whose 4th and 7th terms are 1/18 and -1/486 respectively?

19.If the 4th ,10th ,and 16th terms of G.P are x, y, z respectively. Prove that x, y, z are in G.P?

 22.Insert 3 numbers between 3 and 243 so that the resulting sequence is G.P?

23.If A.M and G.M of two positive numbers a and b are 10 and 8 respectively. Find the numbers?

24.The common ratio of a G.P is -4/5 and the sum to infinity is 80/9. Find the first term?

25.If a, b and c be positive numbers, then prove that 𝑎2 + 𝑏2 + 𝑐2 is greater than ab+bc+ca ?

26.Find the sum to n terms of the series whose nth term is n(n+3)?

27. If 𝑆𝑛 = 5𝑛2 + 2𝑛, 𝑡ℎ𝑒𝑛𝑓𝑖𝑛𝑑𝑇 ?

28. Find the sum of 52 + 62 + 72 + 82 + 92 + 102

29.A person has 2 parents, 4 grandparents and so on. Find the number of his ancestors during the ten generations preceding his own?

30.The gate receipts at the show of ‘comedy nights’ amounted Rs.9500 on the first night and showed a drop of Rs.250 every succeeding night. If the operational expenses of the show are Rs.2000 a day, then find on which night, the show ceases to be profitable?