

SET NO – 301/1

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Candidates must write the set no. on the title page of the answer book.

DAV PUBLIC SCHOOLS, ODISHA ZONE – I
HALF – YEARLY EXAMINATION, 2016 – 17

- Check that this question paper contains 8 printed pages.
- Set number given on the right hand side of the question paper should be written on the title page of the answer book by the candidate.
- Check that this question paper contains 13 questions.
- Write down the Serial Number of the question before attempting it.
- 15 minutes cooling time has been allotted to read this question paper only and do not write any answer on the answer book during this period.

ENGLISH CORE

CLASS – XI

Time allowed: 3 hours

Maximum Marks: 80

General Instructions :

- This paper is divided into 3 Sections: A, B and C. All the sections are compulsory.
- Separate instructions are given with each section and question wherever necessary. Read these instructions very carefully and follow them faithfully.
- Do not exceed the prescribed word limit while answering the questions.

SECTION – A (READING – 20 MARKS)

1. Read the following passage and answer the questions that follow. [8]

Memory is what defines our lives, our personalities, our existence. The dictionary defines memory as the faculty by which things are recalled or kept in the mind; the recovery of one's knowledge by mental effort.

But for most of us memory is just the ability to recall facts and figures, the faces of people we know and the recollection of things in the past. But memory is far more complex than this. Without memory, as in the case of amnesia, the personality changes and is distorted without any point of reference. Memory is of vital importance in defining our personalities as it enriches our lives with complicated personal remembrances. Without this we turn into walking zombies. As people grow older they suffer memory loss in some form or other and diseases like Alzheimer can obliterate memory centres of the brain, making the sufferer into a different, less coherent and less rational personality.

Science has discovered that there are many different types of memory and we can lose one kind and still retain others.

Human beings have a long-term memory and a working memory. Working memory is the ability to recall telephone numbers, address and relevant information such as those needed in our daily lives. Many elderly people seem to lose this form of memory while still retaining their long-term memory. Even normal people may have only one part of the brain active under stress or illness. In addition to long-term memory and working memory, there is also recent memory, semantic memory (the memory of facts) and episodic memory (the memory of something which actually happened), explicit and implicit memory and source memory which enables us to recall from where we learnt certain facts. A loss of source memory seems to affect most people at one time or other.

Without memory we become different people. It is what most elderly people fear, but it need not be so. Unless illness is the cause for memory loss, participating fully in life can make a world of difference. Scientists, musicians, writers, doctors, architects, engineers and artists, all use their brains and memory centres to maximum effect. In fact anyone who is absorbed in some sort of work or project or hobby whereby the mind is stimulated and used, can keep the memory in good working condition. Reading and paying attention to what you are reading, learning poetry by heart and taking a deep interest in the world around you, stimulate memory. We must also learn to breathe deeply.

If the brain does not receive sufficient oxygen for the process of cerebration,

hallucination and negative psychic reaction occur. Yoga tells us that for good mental health and emotional stability we need to be good, deep breathers. Without memory we are nothing. Our closest family members are nothing to us; we are alone, drifting in a world of which we appear to know nothing. The preservation of dignity, empathy, love depends almost entirely on the preservation of memory.

(a) On the basis of your reading of the above passage, make notes on it using headings and sub-headings. Use recognizable abbreviations wherever necessary. **5**

(b) Write a summary of the above passage in 80 words using the notes made and also suggest a suitable title. **3**

2. Read the following passage and answer the questions that follow. **[12]**

1. The government appears to have woken up to the problem of acute agrarian distress. In a flurry of activities surrounding the prime minister's visit to Vidarbha, the government had declared its intent to seek remedies for the crisis affecting the peasantry, symbolized by the spate of farmers' suicides over the last few years. This is indeed welcome though the response should have come sooner. Reports and studies from various sources, including government commissions, on farmer's suicides and their proximate causes have analyzed the issue to the bone. What was missing was concerted action on the part of the Centre.
2. The package being put together now recognizes that the immediate problem is not one of access to credit or the level of the interest rate (though these are indeed medium-term issues but of a legacy of debt that cannot be borne. Low farm gate prices, rising input cost and inadequate increase in productivity have combined to make interest and debt repayment commitments too onerous to bear. This explains the government's decision to write off debt at least in the case of marginal and small farmers, and, if the Finance Ministry agrees to insure them against crop failure, it would prevent the legacy of debt from becoming an unbearable burden for many more. However the governments also adopt policies that militate against long term redressal of the agrarian crisis that underlies farmers' distress. The first of these is a fiscal policy stance that precludes the adoption of measures that are crucial to revitalize agriculture. Massive public investment in rural infrastructure, including irrigation, drainage and flood control; lowering of input cost through subsidies where necessary; and a hike in expenditure to restructure the provision of a host of extension and a support service to improve agricultural productivity.

3. The second is the decision to use free imports as a means to dampen inflation. The evidence on inflation is clear. While aggregate inflation on an annual point to point basis (as measured by the official Wholesale price index) stood at just 5.24 percent over the week ending June 10, 2006, the rate of inflation in the case of individual essential commodities was much higher.
4. A factor underlying these trends is long term deterioration in agricultural performances. In most cases lower demand resulting from limited purchasing power among some sections of the population has ensured that poor agricultural performance has yet to result in a shortfall in supply related to demand. Even so, speculative hoarding has indeed resulted in an artificial short fall. Speculation has been added by a number of decisions of the government such as removal of control on the movements of agricultural commodities and liberalization of rules relating to the operation of the private traders and agri-business firms.
5. The government have sorted to augment supply with imports. Besides deciding February to import wheat to replenish dwindling government stocks, it has now decided to permit private actual users of wheat like flour millers, biscuit manufacturers and bread makers to import wheat duty free till the next Rabi harvest. It has also allowed custom duty free import of sugar till the beginning of the next crushing season which starts in October. And it has put a ban on export of pulses, an effort to enhance domestic supply with import which may be successful in dampening inflationary expectations. But it could also adversely affect revenues garnered by the already – distressed peasantry with attended implications for private expenditure needed to sustain and improve agricultural production.
6. Reliance on imports to dampen price increases can, therefore, worsen the agrarian crisis and the distressed condition of farmers in the medium term. What is needed is to directly curb speculative activities, reverse policies with regard to free agricultural trade that have brought in large private players driven by opportunities for profit and combine this with an investment- led agricultural strategy, if not, the small relief being offered by the Prime Minister to farmers in the worst affected areas would amount to little other than temporary relief and a declaration of concern.

2.1. On the basis of your reading of the above passage answer the following questions by choosing the best of the given choices.

a) The passage is all concerned about

(1X6=6)

- (i) Agrarian distress
- (ii) Agrarian disorder
- (iii) Peasantry stress

- b) What policy has been thought of by the govt. to overcome agrarian crisis?
- Public investment in rural sector
 - Lowering input agricultural costs
 - Enhancing agricultural productivity
 - All the above
- c) What can dampen the inflation?
- Compensation for bad crop harvest
 - Free imports
 - Lowering demand
 - Abundant supply
- d) What has been decided by the govt. for the month of February?
- To import wheat
 - Manufactures to have duty free commodity
 - To have free access to goods
 - None of the above
- e) Ban on the export of pulses would
- increase domestic supply
 - dampen inflationary expectations
 - Both (i) and (ii)
 - decrease in demand
- f) What speculations have been made on govt. decisions?
- No control on agrarian movements
 - No liberalization rules
 - Private trading to be closed
 - Loss to govt. treasure

2.2. Answer the following questions briefly. (1X2=2)

- What is the actual problem of agrarians in Vidarbha?
- How the government can help for their redressal? Write one major step.

2.3. Find words from the above passage that is similar in meaning to the following. (1X4=4)

- Gradually become smaller or weaker (para-5)
- To shut off (para-2)
- Collection (para-5)
- Farming (para-1)

SECTION – B (WRITING SKILLS AND GRAMMAR – 30 Marks)

3. You are the Secretary of your School Environment Club. Your club is organizing a cleanliness drive in the slum close to your school. Write a notice for your school notice board informing and inviting participation from the senior secondary students. You will sign yourself as Rajat/Sharada of Holy Convent School, Berhampur, Odisha. **(50 words)** **(4 marks)**

OR

You are the Secretary of a Health Club Health Line promoting health and sanitation in your city. Recently, there were cases of dengue fever in your city causing casualties. Prepare a poster in about **50 words** to sensitize among the city dwellers.

4. Your school is planning to open a new Physics laboratory for the upcoming session and for that, it requires equipments like beakers, droppers, funnels, pipettes etc. As the Lab-in-charge of Ryan Public School, Kolkata, write a letter to the Manager of Esel International Suppliers, Kolkata for placing bulk order for these by mentioning the details. **(120-150 words)** **(6 marks)**

OR

A leading news channel recently gave a live coverage of some young slum dwellers being beaten up mercilessly by the police for crimes not committed by them. Such atrocities shake the very faith of people in the government. Write a letter to the Commissioner of Police urging him to adopt effective measures to curb such brutality against innocent people. You are Nita/Nitesh, a resident of Gobindpur. **(120-150 words)**

5. A recent survey showed that there are still many communities in India which do not welcome the birth of a girl child. Can a country which does not give equal rights to all its citizens ever dream of becoming great? Write an article in **150-200 words** giving your views on the above subject and the steps we should take to solve this problem. You are Simran/Yusuf, a citizen of Hyderabad. **(10 marks)**

OR

You are a member of your school Quiz Team which won the CBSE Quiz Contest at the National level organized at SKV Sr. Secondary School, Delhi. Draft a report in about **150-200 words** about this memorable event for publication in your school magazine. You are Manav/Manasi.

6. **Read the following dialogue and fill in the blanks reporting the dialogue.** **(1X3=3)**

Patient: Good morning, Sir. I have had a terrible stomach ache.

Doctor: Can you show me where do you feel the pain?

Patient: I feel the pain in my lower abdomen.

The patient wished the doctor good morning and told him that

(a) _____ . The doctor asked him (b) _____ .

The patient told that (c) _____ .

7. The following passage has not been edited. There is an error in each line. Write the error and the correct word in your answer sheet as given below. Remember to underline the word that you have supplied. (.5X6=3)

	<u>incorrect</u>	<u>correct</u>
Today a teacher's job is to focus with concepts rather than content. He must be able to teach more than what Google had to offer.	e.g. <u>with</u>	<u>on</u>
However, while one embrace technology, we have to be extra cautious as kids were highly vulnerable for cybercrime.	(a) _____	_____
While smart classes have its advantages, it doesn't make any sense to make seven year-olds carry a laptop to school.	(b) _____	_____
	(c) _____	_____
	(d) _____	_____
	(e) _____	_____
	(f) _____	_____

8. Given below are sentences in wrong sequence. Re-order the sentences in correct sequence: (1X4=4)

- (a) There are no rules as to how our home has to look.
- (b) Houses are personal statements about our lives.
- (c) A house becomes a home when it reflects the personality of its residents.
- (d) The important thing is that we should enjoy inhabiting them.

SECTION-C (LITERATURE AND EXTENDED READING TEXTS-30 MARKS)

9. Read the following extract and answer the questions that follow. (1X3=3)

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.

- (a) What is it that reminds the poet of her mother's face?
- (b) What does the sea in the poem represent?
- (c) Mention the poetic device used in the underlined expression.

OR

Eternal I rise impalpable out of the land and the bottomless sea,
Upwards to heaven, whence, vaguely form'd altogether changed, and yet the same,
I descend to lave the droughts, atomies, dust layers of the globe,
And all that in them without me were seeds only, latent unborn;

- (a) Why does the rain fall?
- (b) Explain "I rise impalpable".
- (c) What poetic device does the poet use here?

10. Answer any three of the following questions in **30 to 40 words** each.(3X3=9)

(a) "... I was absolutely not interested in all that stored stuff..." Why and in which things is the narrator Marga Minco not interested?

(b) What was the grandmother's opinion of the English school in the city?

(c) Do you find a change in Ranga's attitude towards marriage after meeting Ratna? How?

(d) Why did Ray Johnson describe Akhenaten as wacky?

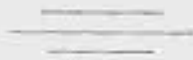
11. "But daddy, "he went on, "we aren't afraid of dying if we can all be together " What does it tell of the speaker? What should be our attitude in the face of adversities? Write an article about it giving a suitable title in about **120-150 words.** (6 marks)

OR

How does the story "The Summer of the Beautiful White Horse" convey the message of honesty and integrity? Do you think two young boys maintain the values? (120-150 words)

12. Though Booker was excited to be selected to set up a school at Tuskegee, he knew it was not going to be an easy task. Elaborate the obstacles Booker faced in this venture. (120-150 words) (6 marks)

13. What impression do you form of Washington's mother? (120-150 words) (6 marks)



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SET NO – 301/2

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HALF – YEARLY EXAMINATION, 2016 – 17

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ENGLISH CORE

CLASS – XI

Time allowed: 3 hours

Maximum Marks: 80

General Instructions :

- This paper is divided into 3 Sections: A, B and C. All the sections are compulsory.
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SECTION – A (READING – 20 MARKS)

1. Read the following passage and answer the questions that follow. [8]

Memory is what defines our lives, our personalities, our existence. The dictionary defines memory as the faculty by which things are recalled or kept in the mind; the recovery of one's knowledge by mental effort.

But for most of us memory is just the ability to recall facts and figures, the faces of people we know and the recollection of things in the past. But memory is far more complex than this. Without memory, as in the case of amnesia, the personality changes and is distorted without any point of reference. Memory is of vital importance in defining our personalities as it enriches our lives with complicated personal remembrances. Without this we turn into walking zombies. As people grow older they suffer memory loss in some form or other and diseases like Alzheimer can obliterate memory centres of the brain, making the sufferer into a different, less coherent and less rational personality.

Science has discovered that there are many different types of memory and we can lose one kind and still retain others.

Human beings have a long-term memory and a working memory. Working memory is the ability to recall telephone numbers, address and relevant information such as those needed in our daily lives. Many elderly people seem to lose this form of memory while still retaining their long-term memory. Even normal people may have only one part of the brain active under stress or illness. In addition to long-term memory and working memory, there is also recent memory, semantic memory (the memory of facts) and episodic memory (the memory of something which actually happened), explicit and implicit memory and source memory which enables us to recall from where we learnt certain facts. A loss of source memory seems to affect most people at one time or other.

Without memory we become different people. It is what most elderly people fear, but it need not be so. Unless illness is the cause for memory loss, participating fully in life can make a world of difference. Scientists, musicians, writers, doctors, architects, engineers and artists, all use their brains and memory centres to maximum effect. In fact anyone who is absorbed in some sort of work or project or hobby whereby the mind is stimulated and used, can keep the memory in good working condition. Reading and paying attention to what you are reading, learning poetry by heart and taking a deep interest in the world around you, stimulate memory. We must also learn to breathe deeply.

If the brain does not receive sufficient oxygen for the process of cerebration,

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hallucination and negative psychic reaction occur. Yoga tells us that for good mental health and emotional stability we need to be good, deep breathers. Without memory we are nothing. Our closest family members are nothing to us; we are alone, drifting in a world of which we appear to know nothing. The preservation of dignity, empathy, love depends almost entirely on the preservation of memory.

(a) On the basis of your reading of the above passage, make notes on it using headings and sub-headings. Use recognizable abbreviations wherever necessary. 5

(b) Write a summary of the above passage in 80 words using the notes made and also suggest a suitable title. 3

2. Read the following passage and answer the questions that follow. [12]

1. Wedding invitations make the first impression on the guests about the marriage. There was a time when creating the invitations was limited to choosing the design and the rest was left to the printer's discretion. But those traditional invitations, which merely listed the venue, timing and some wishes, are passé now. Apart from using technology, the young breed of couples ensures that they get as creative as possible.
2. From websites to presentations and emails, the World Wide Web has given the newly weds the right platform to innovate on. Not only does it act as a perfect invitation platform for the guests but also gives them space to put up a whole profile of the groom and the bride. Talking about the benefits of email invitations, Niti Sharma who recently got married, shares, "My Fiance and I spent a lot of time thinking about the invitations. Coming from the creative field, we both wanted something different. Finally we settled for a presentation made by both of us. It included everything about us; how we met, how our relationship grew and how we finally convinced our parents for marriage. It earned us accolades from both family and friends."
3. Another innovation that is fast catching up is invitation through websites. Rubi Taj, Sr. Manager, HR and Operations, Wserve technologies Pvt. Ltd., who has created many such websites, feels that making a website ensures having your own personal space on the Internet just for that special day. She adds, "Wedding websites are getting popular day by day. It is considered quite fashionable but is usually for a short time. Usually wedding websites include the story behind the wedding, pictures (pre and post wedding), testimonials by close friends and family. Some even publish their wedding cards on their website. Even the map and location of the wedding are displayed on these

websites which makes it easier for the guests. The domain name itself is very interesting thing as the name of the bride and groom is usually selected as the domain name and the website's URL is printed on the wedding card at times so that friends and family can check their latest pictures directly on their website. Even though we have so many options of doing the same through social networking sites, having your own website as its own charm."

4. These relate to each phase of life and has a lot of pictures to update friends and family. Nitin Saini and Sweta Gehlot share their story, "we started our website a few months before our marriage. The idea was to have an online presence of ourselves and our marriage. Both of us have big and diverse friends groups and a number of them had never attended a North Indian wedding. So that was the start and we came up with this wedding site. We stepped into world of married life on February 2009 and the fun is still going on. Our website has grown big enough to be more than just a marriage website as now it has all the pictures of our baby too. This is a one stop place for family and friends to connect now."
5. While innovation is at its peak, there are some who prefer to stick to their privacy. Still they take the help of the net to invite their guests. "Emails have fast become one of the common modes of inviting friends. The lack of formalities involved and the option of getting an immediate reply makes it convenient to estimate the number of guests. It was very difficult for us to personally go and invite all our friends and colleagues so we opted for emails. We got our wedding card scanned and mailed it to all the guests. The acknowledgements received help to estimate the number of guests and make the arrangement accordingly", shares Ramya Kaushik, a marketing executive.
6. Indeed, creativity has limits and with Internet becoming an essential in everybody's life, marriage invitations have become a lot easy and innovative too.

2.1. On the basis of your understanding of this passage answer the following questions with the help of the given options: (1 X 6 = 6)

a) A traditional invitation highlights:

- (i) The venue
- (ii) The timings
- (iii) Some wishes
- (iv) All the above

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- b) What are the advantages of inviting friends to weddings through emails?
(i) Emails give the complete profile of the groom and bride.
(ii) Emails give a vivid description of the personal features of the couple.
(iii) Emails give the details of dowry.
(iv) Both (i) and (ii) are correct.
- c) How can one locate the wedding venue?
(i) By studying the map and location published in the invitation card
(ii) By asking their relatives
(iii) Both (i) and (ii) are correct
(iv) None of the above
- d) Usually wedding websites include
(i) Perfect invitation with an innovative approach.
(ii) Wedding details, pictures and testimonials.
(iii) Whole profile of the groom and the bride.
(iv) None of the above
- e) Apart from using technology, the young breed of couples ensures
(i) that they get as creative as possible.
(ii) that they are computer savvies.
(iii) that they have included everything.
(iv) that they have understood the situations.
- (f) The domain name is made interesting because
(i) of easy access.
(ii) the bride and groom are more inquisitive.
(iii) selection of domain name is directly from the name of bride and groom on website.
(iv) innovative choices are available.

2.2. Answer the following questions briefly:

(1X2=2)

- (a) Why have some people reservations about using wedding websites?
(b) What does Ramya Kaushik say about the acknowledgements?

2.3. Find words from the passage which mean the same as the following. (1X4=4)

- (a) Praise (para-2)
(b) Disparate (para-4)
(c) Area or field(para-3)
(d) Novelty (para-5)

SECTION – B (WRITING SKILLS AND GRAMMAR – 30 MARKS)

3. You are Rishi/Rishita the Cultural Secretary of Springfield School, Pune. You have decided to organize a cultural evening as a thanks giving ceremony to the teachers on the eve of Teachers' Day. Draft a notice in about **50 words** inviting participation of students in the cultural programme. **(4 marks)**

OR

You are Rita/Ravi of Jindal Public School, Narayanghar, U.P. Design a poster creating awareness in the people about the harmful effects of junk food in about **50 words**.

4. Your school is planning to open a new Physics laboratory for the upcoming session and for that, it requires equipments like beakers, droppers, funnels, pipettes etc. As the Lab-in-charge of Ryan Public School, Kolkata, write a letter to the Manager of Esel International Suppliers, Kolkata for placing bulk order for these by mentioning the details. **(120-150 words)**
(6 marks)

OR

A leading news channel recently gave a live coverage of some young slum dwellers being beaten up mercilessly by the police for crimes not committed by them. Such atrocities shake the very faith of people in the government. Write a letter to the Commissioner of Police urging him to adopt effective measures to curb such brutality against innocent people. You are Nita/Nitesh, a resident of Gobindpur. **(120-150 words)**

5. A recent survey showed that there are still many communities in India which do not welcome the birth of a girl child. Can a country which does not give equal rights to all its citizens ever dream of becoming great? Write an article in **150-200 words** giving your views on the above subject and the steps we should take to solve this problem. You are Simran/Yusuf, a citizen of Hyderabad. **(10 marks)**

OR

You are a member of your school Quiz Team which won the CBSE Quiz Contest at the National level organized at SKV Sr. Secondary School, Delhi. Draft a report in about **150-200 words** about this memorable event for publication in your school magazine. You are Manav/Manasi.

6. **Read the following dialogue and fill in the blanks reporting the dialogue.**

Mother : Are you ready? The wedding is at 10:30 p.m . **(1X3=3)**

Son : I am not interested. I am not going.

Mother : What do you mean?

Son : I don't have any friends there. I will get bored.

The mother asked her son (a) _____ and informed that the wedding was at 10:30 p.m. When the son said that he was not interested and he was not going, the mother asked (b) _____. The son replied that (c) _____ and he would get bored.

7. The following passage has not been edited. There is one error in each line. Write the incorrect word and the correction against the correct question number. (0.5X6=3)

	<u>Incorrect</u>	<u>Correct</u>
Children are fond to coconut. It is the	e.g. to	of
biggest of all the nuts, and are indeed a wonderful	(a) _____	_____
fruit. It grows on a tall palm tree and is find	(b) _____	_____
in tropical countries round a sea shore.	(c) _____	_____
Name was giving to it by the Portuguese because	(d) _____	_____
with the three marks and eye-spots at the end,	(e) _____	_____
it look something like a monkey's face and 'coco'	(f) _____	_____
is a Portuguese word for a bugbear or a distorted mask.		

8. Given below are sentences in wrong sequence. Re-order the sentences in correct sequence: (1X4=4)

- (a) There are no rules as to how our home has to look.
- (b) Houses are personal statements about our lives.
- (c) A house becomes a home when it reflects the personality of its residents.
- (d) The important thing is that we should enjoy inhabiting them.

SECTION-C (LITERATURE AND EXTENDED READING TEXTS-30 MARKS)

9. Read the stanza given below and answer the questions that follow: (1X3=3)

Some twenty-thirty years later
 She'd laugh at the snapshot. "See Betty
 And Dolly", she'd say, "and look how they
 Dressed us for the beach." The sea holiday
 Was her past, mine is her laughter. Both wry
 With the laboured ease of loss.

- (a) Who would laugh at the snapshot?
- (b) Comment on the laughter on seeing the photograph.
- (c) Identify the poetic device used in the last line of the above extract.

OR

And who art thou? said I to the soft-falling shower,
 Which strange to tell, gave me an answer, as here translated :
 I am the Poem of Earth, said the voice of the rain,

- (a) Who is referred to 'thou'?
- (b) What does the word 'strange' signify in the above extract?
- (c) What does the line-"I am the poem of Earth" imply? Write briefly.

10. Answer any three of the following questions in 30 to 40 words each.

(3X3=9)

- (a) "...I was absolutely not interested in all that stored stuff..." Why and in which things is the narrator Marga Minco not interested?
- (b) What was the grandmother's opinion of the English school in the city?
- (c) Do you find a change in Ranga's attitude towards marriage after meeting Ratna? How?
- (d) Why did Ray Johnson describe Akhenaten as wacky?

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11. "But Daddy, "he went on, "we aren't afraid of dying if we can all be together". What does it tell of the speaker? What should be our attitude in the face of adversities? Write an article about it giving a suitable title in about 120-150 words. (6 marks)

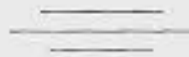
OR

How does the story "The Summer of the Beautiful White Horse" convey the message of honesty and integrity? Do you think two young boys maintain the values? (120-150 words)

12. Though Booker was excited to be selected to set up a school at Tuskegee, he knew it was not going to be an easy task. Elaborate the obstacles Booker faced in this venture. (120-150 words) (6 marks)

13. What impression do you form of Washington's mother? (120-150 words) (6 marks)

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Candidates must write the set no. on the title page of the answer book.

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ENGLISH CORE

CLASS – XI

Time allowed: 3 hours

Maximum Marks: 80

General Instructions :

- i. This paper is divided into 3 Sections: A, B and C. All the sections are compulsory.
- ii. Separate instructions are given with each section and question wherever necessary. Read these instructions very carefully and follow them faithfully.
- iii. Do not exceed the prescribed word limit while answering the questions.

SECTION – A (READING – 20 MARKS)

1. Read the following passage and answer the questions that follow. [8]

Memory is what defines our lives, our personalities, our existence. The dictionary defines memory as the faculty by which things are recalled or kept in the mind; the recovery of one's knowledge by mental effort.

But for most of us memory is just the ability to recall facts and figures, the faces of people we know and the recollection of things in the past. But memory is far more complex than this. Without memory, as in the case of amnesia, the personality changes and is distorted without any point of reference. Memory is of vital importance in defining our personalities as it enriches our lives with complicated personal remembrances. Without this we turn into walking zombies. As people grow older they suffer memory loss in some form or other and diseases like Alzheimer can obliterate memory centres of the brain, making the sufferer into a different, less coherent and less rational personality.

Science has discovered that there are many different types of memory and we can lose one kind and still retain others.

Human beings have a long-term memory and a working memory. Working memory is the ability to recall telephone numbers, address and relevant information such as those needed in our daily lives. Many elderly people seem to lose this form of memory while still retaining their long-term memory. Even normal people may have only one part of the brain active under stress or illness. In addition to long-term memory and working memory, there is also recent memory, semantic memory (the memory of facts) and episodic memory (the memory of something which actually happened), explicit and implicit memory and source memory which enables us to recall from where we learnt certain facts. A loss of source memory seems to affect most people at one time or other.

Without memory we become different people. It is what most elderly people fear, but it need not be so. Unless illness is the cause for memory loss, participating fully in life can make a world of difference. Scientists, musicians, writers, doctors, architects, engineers and artists, all use their brains and memory centres to maximum effect. In fact anyone who is absorbed in some sort of work or project or hobby whereby the mind is stimulated and used, can keep the memory in good working condition. Reading and paying attention to what you are reading, learning poetry by heart and taking a deep interest in the

world around you, stimulate memory. We must also learn to breathe deeply. If the brain does not receive sufficient oxygen for the process of cerebration, hallucination and negative psychic reaction occur. Yoga tells us that for good mental health and emotional stability we need to be good, deep breathers. Without memory we are nothing. Our closest family members are nothing to us; we are alone, drifting in a world of which we appear to know nothing. The preservation of dignity, empathy, love depends almost entirely on the preservation of memory.

(a) On the basis of your reading of the above passage, make notes on it using headings and sub-headings. Use recognizable abbreviations wherever necessary. 5

(b) Write a summary of the above passage in 80 words using the notes made and also suggest a suitable title. 3

2. Read the following passage and answer the questions that follow:

[12marks]

1. School teachers and full time housewives with children at home are among the highest risk groups likely to suffer from burnout, says Michael Lauderdale, director of the University of Texas' School of Social Work's research centre, who began studying burnout 10 years ago. He first noticed symptoms of condition among human service agency workers, but says the condition affects everyone to a degree. Burnout, he believes, comes when "we have expectations of our jobs, careers, marriages, or lives, and the reality we are experiencing is less than our expectations."
2. "We are in a time of high ambiguity about what life means in terms of social roles and in terms of what we are to do with our lives. I don't think that people have greater expectations now than in the past- I think its just harder to keep your experiences in place because the times keep changing on you. An example of the rapidly changing times would be a young college student who is advised to get a degree in business. "If you are a sophomore now, by the time you get the degree, people with business degrees could be a glut on the market. The idea that the private sector could solve most of the world's problems could vanish by then."
3. Lauderdale divides the symptoms of burnout into three stages. First is confusion. The worker may voice general complaints, such as "I don't feel very good" or "I just don't have any pep". Sometimes chronic backaches, headaches, or colds appear. A worker may seem to lose sense of humour. He may seem inattentive in a discussion because of the list of things to do running through his mind.

4. Moderate burnout is characterized by more illness and absenteeism, and a “cocoon phenomenon” begins. In that state, workers “seem to have gray faces at 3 p.m. in the office, but after five, its like a butterfly coming out of a cocoon. Their voices lilt and they are spontaneous when they walk out of the office.” The “cocoon phenomenon” is a result of people compartmentalizing their lives, Lauderdale feels. Accompanying that is “lots of clock-watching and counting the days until Friday.”
5. In the third stage of burnout which he terms despair, “the person pulls into a shell and minimizes work and social contacts as much as possible. There is depression and crying, an increase in drinking, risk-taking and drugs. I related a lot of my work with abusing parents as being the third stage of burnout. They are highly burned out as parents.”
6. Although the bulk of literature about burnout is work-related, the syndrome can occur in any of the multiple roles most people perform-spouse, friend, parent, employee, supervisor.

2.1. On the basis of your reading of the passage, answer the following questions briefly. (1 x 6 = 6)

a) Along with full-time homemakers, _____ are the most likely to suffer from burnout.

- (i) Doctors
- (ii) School teachers
- (iii) Social workers
- (iv) Politicians

b) Michael Lauderdale first noticed the symptoms of burnout in:

- (i) Teachers
- (ii) Young students
- (iii) Social workers
- (iv) MNC workers

c) Which of the following statement is true according to the passage?

- (i) There is always a gap between expectation and reality
- (ii) In the first stage, a worker tries to keep his sense of humour
- (iii) Burnout reduces ones’ risk-taking abilities
- (iv) This syndrome is only related to work

2.2. A

2.3. 1

3.

d) Which human characteristic is focused on when the author talks about expectations and reality?

- (i) Ambition
- (ii) Arrogance
- (iii) Desperation
- (iv) Ambiguity

e) The stage three of burnout is accompanied by

- (i) Increase in drinking
- (ii) Counting of days
- (iii) Chronic backaches
- (iv) Confusion

f) In the state of being in a “cocoon phenomenon”, the workers are

- (i) Rejuvenated
- (ii) Desperate to go back home
- (iii) Worried about their pay
- (iv) Tempted to join better jobs

2.2. Answer the following questions briefly:

(1x2=2)

- (a) Why is there a lot of ‘clock watching’ and ‘counting of days until Friday’?
- (b) Why does the narrator say that the condition affects everyone to a degree?

2.3. Find a word or phrase in the passage which means the same as: (1x4=4)

- (a) A college student (para-2)
- (b) Physically and mentally tired (para-1)
- (c) Energy or enthusiasm (para-3)
- (d) Too much of something (para-2)

SECTION – B (WRITING SKILLS AND GRAMMAR – 30 MARKS)

3. The Pics Club of your school, Sun Public School, Bhubaneswar is organizing a Course in Photography during the summer holidays for students of class IX to XII . Write a notice inventing all necessary details in not more than **50 words**.

(4 marks)

OR

You are the President of Rising Moon Sports Club of Baivab Nagar, Koraput. Your club is organizing an exhibition to promote a strong sense of sporting spirit among the youngsters. In connection with it, prepare a poster to bring home the importance of promoting sporting spirit in **50 words**.

4. Your school is planning to open a new Physics laboratory for the upcoming session and for that, it requires equipments like beakers, droppers, funnels, pipettes etc. As the Lab-in-charge of Ryan Public School, Kolkata, write a letter to the Manager of Esel International Suppliers, Kolkata for placing bulk order for these by mentioning the details. (120 words) (6 marks)

OR

A leading news channel recently gave a live coverage of some young slum dwellers being beaten up mercilessly by the police for crimes not committed by them. Such atrocities shake the very faith of people in the government. Write a letter to the Commissioner of Police urging him to adopt effective measures to curb such brutality against innocent people. You are Nita/Nitesh, a resident of Gobindpur. (120 words)

5. A recent survey showed that there are still many communities in India which do not welcome the birth of a girl child. Can a country which does not give equal rights to all its citizens ever dream of becoming great? Write an article in 150-200 words giving your views on the above subject and the steps we should take to solve this problem. You are Simran/Yusuf, a citizen of Hyderabad.

(10 marks)

OR

You are a member of your school Quiz Team which won the CBSE Quiz Contest at the National level organized at SKV Sr. Secondary School, Delhi. Draft a report in about **150-200 words** about this memorable event for publication in your school magazine. You are Manav/Manasi.

6. Read the following dialogue and fill in the blanks reporting the dialogue: (1X3=3)

Shyam : It gives me great pleasure to be here with you this evening.

John : But we are late. We have to go now.

Shyam : Just a minute. Please wait here till my father returns.

Shyam said that (a) _____ John said that they were late and added that (b) _____. Shyam requested to wait (c) _____.

7. The following passage has not been edited. There is an error in each line. Write the error and the correct word in your answer sheet as given below. Remember to underline the word that you have supplied. (.5X6=3)

	incorrect	correct
She lost her father when she is still a	e.g. <u>is</u>	<u>was</u>
child. Her uncle looked at all the property	(a) _____	_____
that passed away to her from her father.	(b) _____	_____
Since a few years her uncle worked very	(c) _____	_____
sincerely. Afterwards he thinks, "This	(d) _____	_____
property could make me rich. How long	(e) _____	_____
shall I keep for serving my niece? I	(f) _____	_____
will do something for getting it".		

8. Given below are sentences in wrong sequence. Re-order the sentences in correct sequence: (1X4=4)

- (a) There are no rules as to how our home has to look.
- (b) Houses are personal statements about our lives.
- (c) A house becomes a home when it reflects the personality of its residents.
- (d) The important thing is that we should enjoy inhabiting them.

**SECTION-C (LITERATURE AND EXTENDED READING
TEXTS-30 MARKS)**

9. Read the extract given below and answer the questions that follow:

(1X3=3)

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) How long do you think, has the poet's mother been dead?
- (b) Which circumstance is referred to here?
- (c) Explain 'Its silence silences'.

OR

And forever, by day and night, I give back life to my
own origin,
And make pure and beautify it;
(For song, issuing from its birth-place, after fulfillment,
Wandering Reck'd or unreck'd, duly with love returns)

- (a) How are the rain and the song compared?
- (b) How does the rain benefit the earth?
- (c) Identify the poetic device used in the above extract?

10. Answer any three of the following questions in 30 to 40 words each.

(3X3=9)

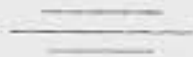
- (a) "... I was absolutely not interested in all that stored stuff..." Why and in which things is the narrator Marga Minco not interested?
- (b) What was the grandmother's opinion of the English school in the city?
- (c) Do you find a change in Ranga's attitude towards marriage after meeting Ratna? How?
- (d) Why did Ray Johnson describe Akhenaten as wacky?

11. "But Daddy, "he went on, "we aren't afraid of dying if we can all be together " What does it tell of the speaker? What should be our attitude in the face of adversities? Write an article about it giving a suitable title in about **120-150 words**. **(6 marks)**

OR

How does the story "The Summer of the Beautiful White Horse" convey the message of honesty and integrity? Do you think two young boys maintain the values? **(120-150 words)**

12. Though Booker was excited to be selected to set up a school at Tuskegee, he knew it was not going to be an easy task. Elaborate the obstacles Booker faced in this venture. **(120-150 words)** **(6 marks)**
13. What impression do you form of Washington's mother?
(120-150 words) **(6 marks)**





SET NO - 041/1

Roll No.

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Candidates must write the Code on the title page of the Answer Book.

D.A.V. PUBLIC SCHOOLS, ODISHA ZONE-I.
Half Yearly Examination, 2016-17

- Check that this question paper contains 4 printed pages only.
- Set number given on the right hand side of the question paper should be written on the title page of the Answer Book by the candidate.
- Check that this question paper contains 29 questions.
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CLASS – XI
MATHEMATICS

Time: 3 hours

Maximum Marks:100

General Instructions:

- All questions are compulsory.*
- The question paper consists of 29 questions divided into four sections A, B, C and D. Section-A comprises of 4 questions of one mark each, Section-B comprises of 8 questions of two marks each, Section-C comprises of 11 questions of four marks each and Section-D comprises of 6 questions of six marks each.*
- All questions in Section-A are to be answered in one word, one sentence or as per the exact requirement of the questions.*
- There is no overall choice. However, internal choice has been provided in 3 questions of four marks each and 3 questions of six marks each. You have to attempt only one of the alternatives in all such questions.*
- Use of calculator is not permitted.*

SECTION-A

- Find the multiplicative inverse of $5 - \sqrt{-8}$.
- If $n(A) = 2$, find the total no. of non empty relations on $P(A)$.
- Find the total number of terms in the expansion of $(4x^2 + 12xy + 9y^2)^{27}$.
- Which term of the sequence $17, 16\frac{1}{5}, 15\frac{2}{5}, 14\frac{3}{5}, \dots$ is the first negative term.

SECTION-B

5. Find the 5th term from the end of $\left(\frac{x^3}{2} - \frac{2}{x^2}\right)^9$.
6. How many 5 digit numbers can be formed using the digits 4, 5, 5, 2, 0.
7. Find the probability that in a random arrangement of letters of the word "UNIVERSITY" the two I's come together.
8. Prove that $\sin 7\frac{1^\circ}{2} = \frac{\sqrt{4-\sqrt{6}-\sqrt{2}}}{2\sqrt{2}}$.
9. If nth term of the sequence is $5n^2 + 3^n$ then find the sum to n terms of the series.
10. Find the real values of θ , such that $\frac{3+2i\sin\theta}{1-2i\sin\theta}$ is purely imaginary.
11. Three dice are thrown together. Find the probability of getting a total of at least 6.
12. A card is drawn from a pack of 52 cards, find the probability of getting a king or a heart or a red card.

SECTION-C

13. For two non empty sets A and B, Prove that
$$P(A \cap B) = P(A) \cap P(B)$$
14. Define the function $f(x) = |x-1| + |1+x|, -2 \leq x \leq 2$ and draw its graph.
- OR**
- Find the domain and range of the function $f(x) = \frac{3}{2-x^2}$.
15. Solve: $3 \tan x + \cot x = -5 \operatorname{cosec} x$
16. Let R be a relation from Q to Q defined by
$$R = \{(x, y) : x, y \in Q \text{ and } x \leq y^2\}$$
. Are the following true, Justify.
- (i) $(x, x) \in R$ for all $x \in Q$.
 - (ii) $(x, y) \in R \Rightarrow (y, x) \in R$ for $x, y \in Q$
 - (iii) $(x, y) \in R, (y, z) \in R \Rightarrow (x, z) \in R$ for $x, y, z \in Q$

17. Write the following complex number in polar form:

$$z = \frac{1-i}{\cos \frac{\pi}{3} + i \sin \frac{\pi}{3}}$$

18. Using Binomial Theorem, show that $2^{4n+4} - 15n - 16$ is divisible by 225 for all natural numbers.
19. If 3rd, 4th, 5th terms in the expansion of $(x+a)^n$ are 84, 280, 560 respectively. Find the value of n.

OR

If 2nd, 3rd, 4th terms in the expansion of $(1+x)^{2n}$ are in A.P then show that $2n^2 - 9n + 7 = 0$.

20. Solve for x : $x^2 - (5+i)x - 18 - i = 0$.
21. If the letters of the word 'PRAMITI' are arranged in all possible ways as listed in dictionary, then what is the rank of the word 'PRAMITI' ?
22. 'n' GM's are inserted between $\frac{16}{27}$ and $\frac{243}{16}$. If the ratio of $(n-1)^{th}$ mean to 4th mean is 9 : 4. Find n.

OR

The sum of n terms of two A.P's are in the ratio $7n+1:4n+27$. Find the ratio of their 11th terms.

23. A debate competition on the topic "FAILURE IS THE PILLAR OF SUCCESS" is to be organized. Out of 12 outstanding students including 7 boys and 5 girls. Find the probability of selecting 5 students including at most 2 girls. Give your views on the topic.

SECTION-D

24. Out of 100 students, 15 passed in English, 12 passed in Mathematics, 8 in Science, 6 in English and Mathematics, 7 in Mathematics and Science, 4 in English and Science, 4 in all the three. Find how many students passed in:
- Mathematics and Science but not English.
 - only one of the subjects.
 - none of the subjects.
 - at least 2 subjects.
25. Using principle of Mathematical Induction, prove that

$$3 \cdot 2^2 + 3^2 \cdot 2^3 + 3^3 \cdot 2^4 + \dots + 3^n \cdot 2^{n+1} = \frac{12}{5}(6^n - 1).$$

OR

Using principle of Mathematical Induction prove that $x^{2n-1} + y^{2n-1}$ is divisible by $x + y$.

26. Find the sum to n terms of the series:

$$5 + 11 + 19 + 29 + 41 + \dots$$

OR

Let S be the sum, P be the product and R be the sum of reciprocals of n terms in a G.P. Prove that $P^2 R^n = S^n$.

27. In a ΔABC , prove that

$$\left(\frac{b^2 - c^2}{a^2}\right)\sin 2A + \left(\frac{c^2 - a^2}{b^2}\right)\sin 2B + \left(\frac{a^2 - b^2}{c^2}\right)\sin 2C = 0$$

OR

Prove that, in a ΔABC

$$a\cos A + b\cos B + c\cos C = 2a\sin B\sin C.$$

28. Prove that

$$\sin^3 x + \sin^3\left(\frac{2\pi}{3} + x\right) + \sin^3\left(\frac{4\pi}{3} + x\right) = \frac{-3}{4}\sin 3x$$

29. In how many ways can the letters of the word 'INTERMEDIATE' be arranged so that:

- (i) the vowels occupy even places.
- (ii) all vowels never occur together.

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SET NO- 041/2

Roll No.

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Half Yearly Examination, 2016-17

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CLASS – XI
MATHEMATICS

*Time: 3 hours**Maximum Marks:100***General Instructions:**

- (i) *All questions are compulsory.*
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- (iii) *All questions in Section-A are to be answered in one word, one sentence or as per the exact requirement of the questions.*
- (iv) *There is no overall choice. However, internal choice has been provided in 3 questions of four marks each and 3 questions of six marks each. You have to attempt only one of the alternatives in all such questions.*
- (v) *Use of calculator is not permitted.*

SECTION-A

1. Determine the domain and range of the relation.

$$R = \{(x, y) : y = |x - 1|, x \in Z, |x| \leq 3\}$$

2. Find the total no. of terms in the expansion of

$$(x + y)^{51} - (x - y)^{51}$$

3. If $\left(\frac{1-i}{1+i}\right)^{100} = a + ib$ then find a and b.

4. If sum of n terms of an A.P is given by $S_n = 3n + 5n^2$ find the common difference.

SECTION-B

5. Find the term independent of x in the expansion of $\left(3x^2 - \frac{1}{x^3}\right)^{10}$
6. If $\tan x = \frac{-12}{5}$, x lies in 4th quadrant, find the value of $\cos \frac{x}{2}$.
7. How many 4 digit natural numbers not exceeding 4321 can be formed with the digits 1, 2, 3, 4 if digits can repeat ?
8. If $P(A) = 0.75$, $P(A \text{ and } B) = 0.5$ and $P(\text{neither } A \text{ nor } B) = 0.1$ then find $P(B)$.
9. Find real values of θ , such that $\frac{3 + 2i \sin \theta}{1 - 2i \sin \theta}$ is purely imaginary.
10. The AM of a and b is 5. Find the sum of 20 AM's in between a and b .
11. The probability that A speaks truth is $\frac{4}{5}$ while the probability for B is $\frac{3}{4}$. Find the probability that they contradict each other when asked to speak on a fact.
12. 6 boys and 6 girls are to be seated in a row. Find the probability that all the girls sit together.

SECTION-C

13. Using properties of sets, prove that
$$A \cap (B - C) = (A \cap B) - (A \cap C)$$
14. Solve for x : $2\sin^2 x + \sin^2 2x = 2$.
15. Solve for x : $x^2 - (2+i)x = 1 - 7i$
16. Define the function $f(x) = |x-1| + |1+x|$, $-2 \leq x \leq 2$ and draw its graph.

OR

Find the domain and range of the function $f(x) = \frac{3}{2-x^2}$.

17. A debate competition on the topic "FAILURE IS THE PILLAR OF SUCCESS" is to be organized. Out of 12 outstanding students including 7 boys and 5 girls. Find the probability of selecting 5 students including at most 2 girls. Give your views on the topic.
18. If the letters of the word 'PRAMITI' are arranged in all possible ways as listed in dictionary, then what is the rank of the word 'PRAMITI' ?
19. 'n' GM's are inserted between $\frac{16}{27}$ and $\frac{243}{16}$. If the ratio of $(n-1)^{th}$ mean to 4^{th} mean is 9 : 4. Find n.

OR

The sum of n terms of two A.P's are in the ratio $7n+1:4n+27$. Find the ratio of their 11^{th} terms.

20. Write the following complex number in polar form:

$$z = \frac{1-i}{\cos \frac{\pi}{3} + i \sin \frac{\pi}{3}}$$

21. If 3^{rd} , 4^{th} , 5^{th} terms in the expansion of $(x+a)^n$ are 84, 280, 560 respectively. Find the value of n.

OR

If 2^{nd} , 3^{rd} , 4^{th} terms in the expansion of $(1+x)^{2n}$ are in A.P then show that $2n^2 - 9n + 7 = 0$.

22. Let R be a relation from Q to Q defined by

$$R = \{(x, y) : x, y \in Q \text{ and } x \leq y^2\}. \text{ Are the following true, Justify.}$$

- (i) $(x, x) \in R$ for all $x \in Q$.
- (ii) $(x, y) \in R \Rightarrow (y, x) \in R$ for $x, y \in Q$
- (iii) $(x, y) \in R, (y, z) \in R \Rightarrow (x, z) \in R$ for $x, y, z \in Q$
23. Using Binomial Theorem, show that $2^{4n+4} - 15n - 16$ is divisible by 225 for all natural numbers.

SECTION-D

24. In a ΔABC , prove that

$$\left(\frac{b^2 - c^2}{a^2}\right) \sin 2A + \left(\frac{c^2 - a^2}{b^2}\right) \sin 2B + \left(\frac{a^2 - b^2}{c^2}\right) \sin 2C = 0$$

OR

Prove that, in a ΔABC

$$a \cos A + b \cos B + c \cos C = 2a \sin B \sin C.$$

25. In how many ways can the letters of the word 'INTERMEDIATE' be arranged so that:
- the vowels occupy even places.
 - all vowels never occur together.
26. Out of 100 students, 15 passed in English, 12 passed in Mathematics, 8 in Science, 6 in English and Mathematics, 7 in Mathematics and Science, 4 in English and Science, 4 in all the three. Find how many students passed in:
- Mathematics and Science but not English.
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27. Prove that

$$\sin^3 x + \sin^3\left(\frac{2\pi}{3} + x\right) + \sin^3\left(\frac{4\pi}{3} + x\right) = \frac{-3}{4} \sin 3x$$

28. Using principle of Mathematical Induction, prove that

$$3 \cdot 2^2 + 3^2 \cdot 2^3 + 3^3 \cdot 2^4 + \dots + 3^n \cdot 2^{n+1} = \frac{12}{5}(6^n - 1).$$

OR

Using principle of Mathematical Induction prove that $x^{2n-1} + y^{2n-1}$ is divisible by $x + y$.

29. Find the sum to n terms of the series:

$$5 + 11 + 19 + 29 + 41 + \dots$$

OR

Let S be the sum, P be the product and R be the sum of reciprocals of n terms in a G.P. Prove that $P^2 R^n = S^n$.

* * *



SET NO - 041/3

Roll No.

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Half Yearly Examination, 2016-17

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CLASS – XI
MATHEMATICS

*Time: 3 hours**Maximum Marks:100*

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- All questions are compulsory.*
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- There is no overall choice. However, internal choice has been provided in 3 questions of four marks each and 3 questions of six marks each. You have to attempt only one of the alternatives in all such questions.*
- Use of calculator is not permitted.*

SECTION-A

- Find the sum to infinity of the series
 $1 + (1+a)b + (1+a^2)b^2 + \dots \infty$.
- Find the middle term in the expansion of $\left(\sqrt{x} - \frac{1}{\sqrt{x}}\right)^{10}$.
- Find the least positive integral value of n for which $(1+i)^{2n} = (1-i)^{2n}$.

4. If $R = \{(x, y) : y = 2x + 7 \text{ where } x \in [-5, 5]\}$ is a relation, then find range of R.

SECTION-B

5. If the coefficient of r^{th} and $(2r+5)^{\text{th}}$ terms in the expansion $(1+x)^{15}$ are equal, then find r.
6. Prove that: $\tan 7x \tan 4x \tan 3x = \tan 7x - \tan 4x - \tan 3x$.
7. Find the number of parallelograms that can be formed from a set of four parallel lines intersecting another set of three parallel lines.
8. Two dice are rolled. Find the probability that neither a total of 8 nor a doublet occur.
9. A, B and C are three mutually exclusive and exhaustive events associated with a random experiment. If $P(A) = 2P(B) = 3P(C)$ find $P(B)$.
10. A two digit number is formed with the digits 2, 5, 9 (repetition is allowed). Find the probability that no is divisible by 2 or 5. 2
11. Find the real values of θ , such that $\frac{3+2i\sin\theta}{1-2i\sin\theta}$ is purely imaginary. 2
12. If $a\left(\frac{1}{b} + \frac{1}{c}\right)$, $b\left(\frac{1}{c} + \frac{1}{a}\right)$, $c\left(\frac{1}{a} + \frac{1}{b}\right)$ are in A.P, then a, b, c are in A.P.

SECTION-C

13. Using properties of sets, prove that
$$A - (B - C) = (A - B) \cup (A \cap C)$$
14. Solve $\tan x + \tan 2x + \tan 3x = \tan x \tan 2x \tan 3x$. 23
15. Solve for x: $x^2 - (7-i)x + 18-i = 0$
16. 'n' GM's are inserted between $\frac{16}{27}$ and $\frac{243}{16}$. If the ratio of $(n-1)^{\text{th}}$ mean to 4^{th} mean is 9 : 4. Find n. 24

OR

The sum of n terms of two A.P's are in the ratio $7n+1 : 4n+27$. Find the ratio of their 11^{th} terms. 25

17. If 3rd, 4th, 5th terms in the expansion of $(x+a)^n$ are 84, 280, 560 respectively. Find the value of n.

OR

If 2nd, 3rd, 4th terms in the expansion of $(1+x)^{2n}$ are in A.P then show that $2n^2 - 9n + 7 = 0$.

18. A debate competition on the topic "FAILURE IS THE PILLAR OF SUCCESS" is to be organized. Out of 12 outstanding students including 7 boys and 5 girls. Find the probability of selecting 5 students including at most 2 girls. Give your views on the topic.

19. Let R be a relation from Q to Q defined by

$R = \{(x, y) : x, y \in Q \text{ and } x \leq y^2\}$. Are the following true, Justify.

- (i) $(x, x) \in R$ for all $x \in Q$.
(ii) $(x, y) \in R \Rightarrow (y, x) \in R$ for $x, y \in Q$
(iii) $(x, y) \in R, (y, z) \in R \Rightarrow (x, z) \in R$ for $x, y, z \in Q$

20. Using Binomial Theorem, show that $2^{4n+4} - 15n - 16$ is divisible by 225 for all natural numbers.

21. Write the following complex number in polar form:

$$z = \frac{1-i}{\cos \frac{\pi}{3} + i \sin \frac{\pi}{3}}$$

22. Define the function $f(x) = |x-1| + |1+x|$, $-2 \leq x \leq 2$ and draw its graph.

OR

Find the domain and range of the function $f(x) = \frac{3}{2-x^2}$.

23. If the letters of the word 'PRAMITI' are arranged in all possible ways as listed in dictionary, then what is the rank of the word 'PRAMITI' ?

SECTION-D

24. In how many ways can the letters of the word 'INTERMEDIATE' be arranged so that:

- (i) the vowels occupy even places.
(ii) all vowels never occur together.

25. Prove that

$$\sin^3 x + \sin^3 \left(\frac{2\pi}{3} + x \right) + \sin^3 \left(\frac{4\pi}{3} + x \right) = \frac{-3}{4} \sin 3x.$$

26. Using principle of Mathematical Induction, prove that

$$3 \cdot 2^2 + 3^2 \cdot 2^3 + 3^3 \cdot 2^4 + \dots + 3^n \cdot 2^{n+1} = \frac{12}{5}(6^n - 1).$$

OR

Using principle of Mathematical Induction prove that $x^{2n-1} + y^{2n-1}$ is divisible by $x + y$.

27. Out of 100 students, 15 passed in English, 12 passed in Mathematics, 8 in Science, 6 in English and Mathematics, 7 in Mathematics and Science, 4 in English and Science, 4 in all the three. Find how many students passed in:

- Mathematics and Science but not English.
- only one of the subjects.
- none of the subjects.
- at least 2 subjects.

28. Find the sum to n terms of the series:

$$5 + 11 + 19 + 29 + 41 + \dots$$

OR

Let S be the sum, P be the product and R be the sum of reciprocals of n terms in a G.P. Prove that $P^2 R^n = S^n$.

29. In a ΔABC , prove that

$$\left(\frac{b^2 - c^2}{a^2}\right)\sin 2A + \left(\frac{c^2 - a^2}{b^2}\right)\sin 2B + \left(\frac{a^2 - b^2}{c^2}\right)\sin 2C = 0$$

OR

Prove that, in a ΔABC

$$a\cos A + b\cos B + c\cos C = 2a\sin B\sin C.$$

* * *

Exam Copy



Roll No.

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SET NO -042/1

Candidates must write the set on the title page of the answer book

DAV PUBLIC SCHOOLS, ODISHA, ZONE-I
HALF-YEARLY EXAMINATION, 2016-17

- Check that this question paper contains 6 printed pages.
- Set number given on the right hand side of the question paper should be written on the title page of the answer book by the candidate.
- Check that this question paper contains 26 questions.
- Write down the Serial Number of the question before attempting it.
- 15 minutes cooling time has been allotted to read this question paper only and do not write any answer on the answer book during this period.

CLASS-XI
PHYSICS

Time Allowed : 3 Hours

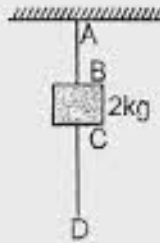
Maximum Marks : 70

General Instructions :

- All questions are compulsory . There are 26 questions in all .
- This questions paper has five sections : Section A , Section B, Section C, Section D and Section E
- Section A contains five questions of one mark each , Section B contains five questions of two marks each , Section C contains twelve questions of three marks each , Section D contains one value based questions of four marks and Section D contains one value based questions of four marks and Section E contains three questions of five marks each .
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- Use log tables , if necessary . Use of calculators is not allowed.

SECTION-A

1. Draw the position-time graph for two objects having zero relative velocity.
2. Find the value of $\vec{A}(\vec{A} \times \vec{B})$.
3. In the given figure, the threads AB and CD are of same type. When the lower thread is pulled gradually, which one of the threads will break ?



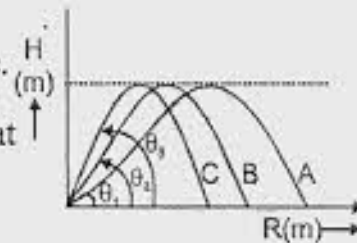
4. Is there any gain or loss of kinetic energy in perfectly inelastic collision ?
5. Write the formula for coordinates of centre of mass of two particles of masses m_2 and m_1 located at the points (y_1, z_1) and (y_2, z_2) respectively.

SECTION-B

6. (i) State the principle of homogeneity ?
 (ii) In the given correct physical equation $P + \frac{1}{2}\rho v^2 + \rho gh = K$, what is the dimensional formula of $\frac{K}{\rho}$?

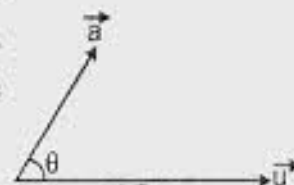
7. A ball is released from the top of a tower of height 'h' metres. It takes T seconds to reach the ground. What is the position of the ball in $\frac{T}{3}$ seconds from the ground.

8. Three point objects A, B and C projected at an angle of projection θ_1, θ_2 and θ_3 respectively as shown in the figure. If all of them attain the same maximum height, show that their time of flight are also identical.



OR

A particle, initially moving with a velocity \vec{u} , along the x-axis, experiences uniform acceleration \vec{a} , in a direction inclined at an angle θ to the x-axis for time 't'. Obtain an expression for the magnitude 'v' of the final velocity (\vec{v}) of the particle



9. The power developed, when a force of $\vec{F} = (\hat{i} + 2\hat{j} - \hat{k})\text{N}$ acting on a body, producing a velocity of $\vec{v} = (-\hat{i} + \hat{j} - a\hat{k})\text{m/s}$ in it, is found to be 3 watt. Find the value of 'a'.
10. (i) Define radius of gyration. Give its S.I. Unit.
 (ii) A solid sphere and a hollow sphere have same mass and radius. Which of them have greater radius of gyration.

SECTION-C

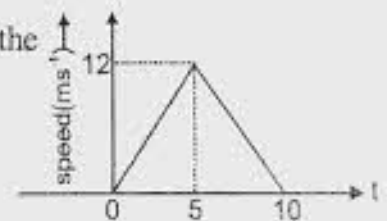
11. In an experiment, refractive index of glass was observed to be 1.45, 1.56, 1.54, 1.44, 1.54 and 1.53. Calculate
 (i) Mean absolute error
 (ii) Fractional error
 (iii) Percentage error
 Express the result in terms of absolute error.

OR

- The period of oscillation of a simple pendulum is $T = 2\pi\sqrt{\frac{L}{g}}$. Measured value of L is 20.0 cm known to 1 mm accuracy and time for 100 oscillations of the pendulum is found to be 90s using a wrist watch of 1s resolution. What is the accuracy in the determination of g?
12. A bird is flying to and fro between two cars moving towards each other on a straight road. One car has a speed of 18 km/h, while the other has the speed of 27 km/h. The bird starts moving from first car towards the other car and is moving with the speed of 36 km/h and when the two cars were separated by 36km. Find the total distance covered by the bird?

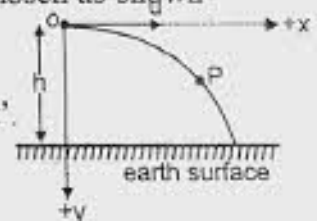
13. The speed-time graph of a particle moving along a fixed direction is shown in figure. Obtain the average speed of the particle over the intervals

- (i) $t=0\text{s}$ to 10s (ii) $t=2\text{s}$ to 5s



14. A particle is fixed horizontally with speed 'u' at a height 'h' from the surface of earth. Considering the point of projection as origin and the axes chosen as shown

- (i) Obtain the expression for velocity (\vec{v}) at P at any instant 't'.
 (ii) Find the angle made by \vec{v} with +x-axis.



15. (i) State Newton's second law of motion. Obtain its usual mathematical form $\vec{F} = m\vec{a}$
 (ii) Why the proportionality constant is taken as 1 ?
 (iii) Do we include any internal force in the system while writing F in the equation.

23.

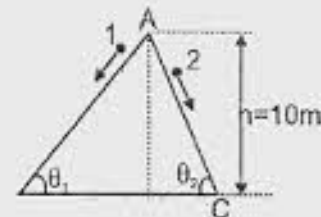
16. With relevant free body diagram obtain the expression for the maximum speed with which a car or vehicle can safely negotiate a flat curved road. Take coefficient of friction between tyres of the vehicle and road is μ .

17. Weight of a moving car over a concave bridge is more than the weight of the same car resting on the same bridge. Explain with mathematical support



18. (a) Define conservative force.
 (b) Write the expression relating conservative force and potential energy.
 (c) Give examples of conservative & non-conservative force (One example each).

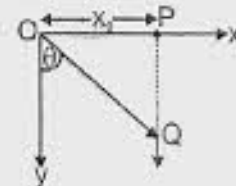
19. Two inclined frictionless tracks, one gradual and other steep meet at A from where two stones are allowed to slide down from rest, one on each track as shown.



- (a) Will the stones reach the bottom at same time ? Explain.
 (b) Find the speed of the stones with which they will reach at the bottom (Take $g=10\text{m/s}^2$)

24

20. A particle of mass 'm' is released from point 'P' at $x=x_0$ on the x-axis from origin 'O' and falls vertically along the y-axis as shown.



- (i) Find the magnitude and direction of torque acting on the particle at a time 't' when it is at point 'Q' with respect to 'O'
 (ii) Find the angular momentum of the particle about 'O' at this time
21. (a) State the principle of conservation of angular momentum.
 (b) If earth were to shrink suddenly to one third of its radius, what would be the duration of day.

22. The moment of inertia of a uniform circular disc about a tangent in its own plane is $\frac{5}{4}MR^2$, where M is mass and R is the radius of the disc. Find its moment of inertia about an axis through its centre and perpendicular to its plane.

SECTION-D

23. Raghav's uncle and aunt living in a village, had come to Bangalore for visiting the hospital for a check up of some medical problem, his uncle was suffering from . Raghav and his wife, not only went to the station to receive them but took great care to make them feel comfortable and at ease. They listen patiently to their problem and ensured them that they would go along with them for a complete and thorough medical check up of the uncle.

While going with them to the hospital next day, Raghav explained to his uncle and aunt, the precaution and care they need to take while travelling of their 'falling forward' or 'backward' in the event of the driver suddenly 'applying brakes', or 'starting the bus all of a sudden'. He emphasised the need for their being alert all the time so that they can minimize of the chance of such a fall. His explanation was of great help to his visitors. They, as a result of this understanding, had a trouble free bus journey. Raghav's helpful and considerate, nature also helped them to get a proper check up and prescription for the uncle's medical problem. They were profusely thankful to him and his wife and blessed them from the core of their hearts.

- (a) State the values displayed by Raghav and his wife
- (b) Did the uncle and aunt also display some value through their behaviour ?
- (c) Name & state the law on which Raghav's explanation (with regard to the bus journey) were based.
- (d) Give another example based on this law.

SECTION-E

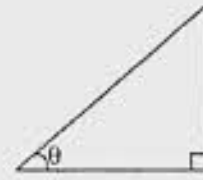
24. (i) Stating the relevant law, outline the sequence of steps followed in substrating a vector \vec{b} from vector \vec{a} .
- (ii) Write the expression for the magnitude of the difference of above two vectors given ?
- (iii) The rain is falling vertically with the speed of 35 m/s. Wind starts blowing after some time with 12 m/s in east to west direction. In which direction should a boy waiting at a bus stop hold his umbrella ?

OR

- (i) Derive an expression for the centripetal acceleration of a particle moving with uniform speed 'v' along a circular path of radius 'r'.
- (ii) An insect trapped in a circular groove of radius 12cm moves along the groove steadily and completes 7 revolution in 100sec. Is the acceleration vector a constant vector ? (b) Find its magnitude.

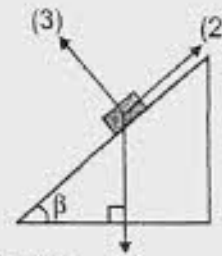
25. (a) Define the term "angle of repose".

(b) A body of mass 'm' is lying on an inclined plane inclined at an angle ' θ ' to the horizontal. A horizontal force (directed to right) F is made to act on the body. Draw the free body diagram for the forces acting on the body and use of the force ' F ' needed to just move the body up the plane. The coefficient of friction between the body and the inclined plane is μ .



OR

(i) A block of wood of mass 'm' kg is resting on the surface of a rough inclined surface, inclined at an angle ' β ' as shown.



(a) If the coefficient of static friction is μ , calculate the value of the forces (1)

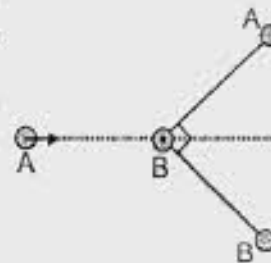
(1) and (3)

(b) Find the force required to apply along (2) to keep the block rest.

(ii) What type of fundamental force friction comes under ? How is coefficient of static friction is related with angle of friction.

26. (i) Show that the two equal masses undergoing elastic collision with one of them initially at rest move at right angle to each other after collision.

(ii) A marble ball moving with a certain velocity collides elastically with another marble ball of same mass which is initially at rest. If the 1st ball make an angle of 30° with its initial direction of motion, then find the angle made by the second ball with the initial direction of motion of the 1st ball.



(iii) What is the coefficient of restitution for elastic and perfectly inelastic collision ?

OR

(i) State work-energy theorem. Hence prove it for variable force

(ii) A body of mass 2kg is projected with speed 5 m/s making an angle 30° with the vertical. Find the kinetic energy at the highest point.



SET NO -042/2

Roll No.

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Candidates must write the set on the title page of the answer book

DAV PUBLIC SCHOOLS, ODISHA, ZONE-I

HALF-YEARLY EXAMINATION, 2016-17

- Check that this question paper contains 6 printed pages.
- Set number given on the right hand side of the question paper should be written on the title page of the answer book by the candidate.
- Check that this question paper contains 26 questions.
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CLASS-XI
PHYSICS

Time Allowed : 3 Hours

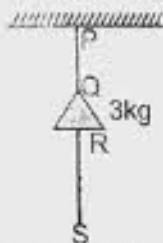
Maximum Marks : 70

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SECTION-A

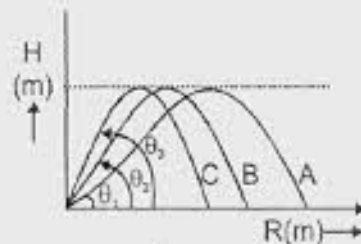
- Initially body 'A' is at $-x_0$ and body 'B' is at $+x_0$ position on x-axis. They are moving towards each other with constant speed. Plot position-time graph for them.
- Find the value of $(\vec{A} + \vec{B}) \cdot (\vec{A} \times \vec{B})$.
- In the given figure, the threads PQ and RS are of same type. If the lower thread is pulled with a jerk, which one will break?



- Give the sign of change in kinetic energy in inelastic collision
- Write the formula for coordinates of centre of mass of two particles m_1 and m_2 located at the points (x_2, y_2) and (x_1, y_1) respectively.

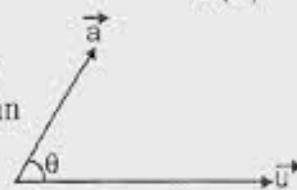
SECTION-B

- Three point objects A, B and C projected at an angle of projection θ_1, θ_2 and θ_3 respectively as shown in the figure. If all of them attain the same maximum height, show that their time of flight are also identical.



OR

A particle, initially moving with a velocity \vec{u} , along the x-axis, experiences uniform acceleration \vec{a} , in a direction inclined at an angle θ to the x-axis for time 't'.



Obtain an expression for the magnitude ' v ' of the final velocity (\vec{v}) of the particle

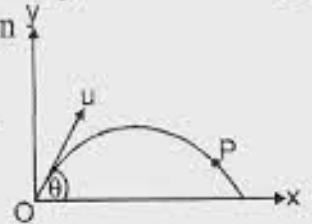
- Water drops are falling from a tap at a height 'h' in regular interval of time. When the 1st drop reaches the ground 3rd drop starts falling. Find the position of 2nd drop from the ground at that instant.
- The power developed, when a force of $\vec{F} = (2\hat{i} - \hat{j} + \hat{k})\text{N}$ acting on a body, producing a velocity of $\vec{v} = (\hat{i} + 2\hat{j} - \hat{k})\text{m/s}$ in it, is found to be 3 watt. Find the value of a.
- (i) Define centre of gravity. What is the gravitational torque about centre of gravity of a rigid body. Give an example where centre of gravity and centre of mass do not coincide.
- (i) State the principle of homogeneity?

(ii) In the given correct physical equation $P + \frac{1}{2}\rho v^2 + \rho gh = K$, what is the dimensional

formula of $\frac{K}{P}$?

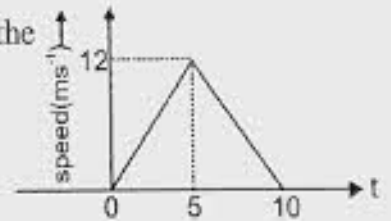
SECTION-C

11. A particle is fired with speed 'u' at an angle θ with horizontal from the ground considering the point of projection as origin and the axes chosen as shown



- (i) Obtain the expression for velocity (\vec{v}) at P at any instant 't'.
 (ii) Find the angle made by \vec{v} with +x-axis.

12. The speed-time graph of a particle moving along a fixed direction is shown in figure. Obtain the average speed of the particle over the intervals



- (i) $t=0\text{s}$ to 10s (ii) $t=2\text{s}$ to 5s

13. The moment of inertia of a uniform circular ring about a tangent perpendicular to its plane is $2MR^2$ where M is mass and R is radius of the ring. Find its moment of inertia about an axis

- (i) through its centre and perpendicular to its plane
 (ii) along the diameter of the ring

14. In an experiment, refractive index of glass was observed to be 1.45, 1.56, 1.54, 1.44, 1.54 and 1.53. Calculate

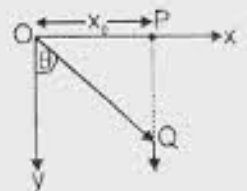
- (i) Mean absolute error
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Express the result in terms of absolute error.

OR

The period of oscillation of a simple pendulum is $T = 2\pi\sqrt{\frac{L}{g}}$. Measured value of L is 20.0 cm known to 1 mm accuracy and time for 100 oscillations of the pendulum is found to be 90s using a wrist watch of 1s resolution. What is the accuracy in the determination of g?

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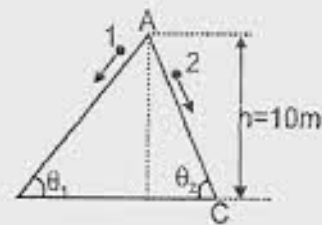
- (i) Find the magnitude and direction of torque acting on the particle at a time 't' when it is at point 'Q' with respect to 'O'.
 (ii) Find the angular momentum of the particle about 'O' at this time

17. In a circus, the radius of the globe of death is 'r'. From what minimum height must a motorcyclist start in order to roll down an inclined so that he may go round the globe successfully without falling at the top of the globe



18. (i) State Newton's second law of motion. Obtain its usual mathematical form $\vec{F} = m\vec{a}$
 (ii) Why the proportionality constant is taken as 1?
 (iii) Do we include any internal force in the system while writing F in the equation.
19. (a) State the principle of conservation of angular momentum.
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- (a) Will the stones reach the bottom at same time? Explain.
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21. With relevant free body diagram obtain the expression for the maximum speed with which a car or vehicle can safely negotiate a flat curved road. Take coefficient of friction between tyres of the vehicle and road is μ .
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SECTION-D

23. Raghav's uncle and aunt living in a village, had come to Bangalore for visiting the hospital for a check up of some medical problem, his uncle was suffering from . Raghav and his wife, not only went to the station to receive them but took great care to make them feel comfortable and at ease. They listen patiently to their problem and ensured them that they would go along with them for a complete and thorough medical check up of the uncle.

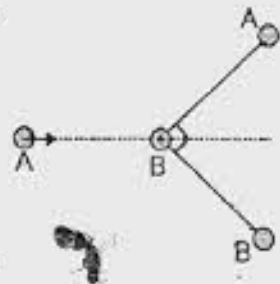
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- Did the uncle and aunt also display some value through their behaviour?
- Name & state the law on which Raghav's explanation (with regard to the bus journey) were based.
- Give another example based on this law.

SECTION-E

24. (i) Show that the two equal masses undergoing elastic collision with one of them initially at rest move at right angle to each other after collision.

(ii) A marble ball moving with a certain velocity collides elastically with another marble ball of same mass which is initially at rest. If the 1st ball make an angle of 30° with its initial direction of motion, then find the angle made by the second ball with the initial direction of motion of the 1st ball.



(iii) What is the coefficient of restitution for elastic and perfectly inelastic collision?

- State work-energy theorem. Hence prove it for variable force
 - A body of mass 2kg is projected with speed 5 m/s making an angle 30° with the vertical. Find the kinetic energy at the highest point.
25. (i) Stating the relevant law, outline the sequence of steps followed in substrating a vector \vec{b} from vector \vec{a} .
- Write the expression for the magnitude of the difference of above two vectors given?
 - The rain is falling vertically with the speed of 35 m/s. Wind starts blowing after some time with 12 m/s in east to west direction. In which direction should a boy waiting at a bus stop hold his umbrella?

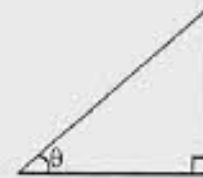
OR

(i) Derive an expression for the centripetal acceleration of a particle moving with uniform speed ' v ' along a circular path of radius ' r '.

(ii) An insect trapped in a circular groove of radius 12cm moves along the groove steadily and completes 7 revolution in 100sec. Is the acceleration vector a constant vector? (b) Find its magnitude.

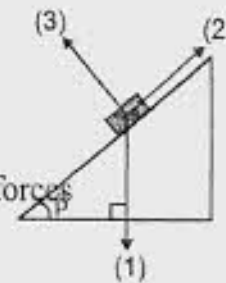
26. (a) Define the term "angle of repose".

(b) A body of mass ' m ' is lying on an inclined plane inclined at an angle ' θ ' to the horizontal. A horizontal force (directed to right) F is made to act on the body. Draw the free body diagram for the forces acting on the body and use of the force ' F ' needed to just move the body up the plane. The coefficient of friction between the body and the inclined plane is μ .



OR

(i) A block of wood of mass ' m ' kg is resting on the surface of a rough inclined surface, inclined at an angle ' β ' as shown.



(a) If the coefficient of static friction is μ , calculate the value of the forces (1) and (3).

(b) Find the force required to apply along (2) to keep the block rest.

(ii) What type of fundamental force friction comes under? How is coefficient of static friction is related with angle of friction.



Roll No.

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SET NO -042/3

Candidates must write the set on the title page of the answer book

DAV PUBLIC SCHOOLS, ODISHA, ZONE-I

HALF-YEARLY EXAMINATION, 2016-17

- Check that this question paper contains 6 printed pages.
- Set number given on the right hand side of the question paper should be written on the title page of the answer book by the candidate.
- Check that this question paper contains 26 questions.
- Write down the Serial Number of the question before attempting it.
- 15 minutes cooling time has been allotted to read this question paper only and do not write any answer on the answer book during this period.

CLASS-XI
PHYSICS

Time Allowed : 3 Hours

Maximum Marks : 70

General Instructions :

- (i) All questions are compulsory . There are 26 questions in all .
- (ii) This questions paper has five sections : Section A, Section B, Section C, Section D and Section E

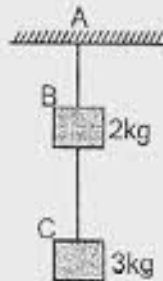
- (iii) Section A contains five questions of one mark each , Section B contains five questions of two marks each , Section C contains twelve questions of three marks each , Section D contains one value based questions of four marks and Section D contains one value based questions of four marks and Section E contains three questions of five marks each .

- (iv) There is no overall choice . However, an internal choice has been provided in one question of two marks, one question of three marks and all the three questions of five marks weightage . You have to attempt only one of the choices in such questions .

- (v) Use log tables , if necessary . Use of calculators is not allowed .

SECTION-A

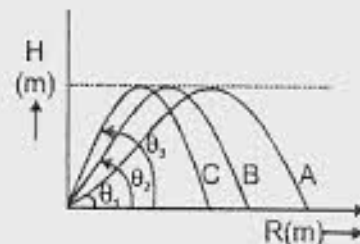
- Two bodies A and B are at $+y_0$ and $-y_0$ positions on y-axis. They are moving away from each other with constant speed. Plot position-time graph for them.
- Find the value of $(\vec{B} - \vec{A}) \cdot (\vec{A} \times \vec{B})$
- In the given figure, what is the tension in the string AB.



- What can say about the conservation of kinetic energy during the time the two bodies collide in elastic collision.
- Write the formula for coordinates of centre of mass of two particles m_1 and m_2 located at the points (y_1, z_1) and (y_2, z_2) respectively.

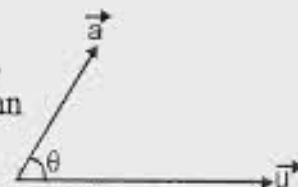
SECTION-B

- An object is dropped at a height from the ground. Find the ratio of the distance travelled in 1st second and 3rd second of its motion.
- Three point objects A, B and C projected at an angle of projection θ_1, θ_2 and θ_3 respectively as shown in the figure. If all of them attain the same maximum height, show that their time of flight are also identical.



OR

A particle, initially moving with a velocity \vec{u} , along the x-axis, experiences uniform acceleration \vec{a} , in a direction inclined at an angle θ to the x-axis for time 't'.

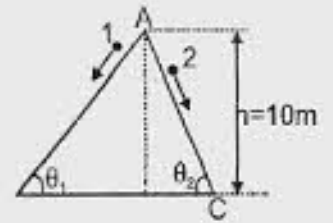


Obtain an expression for the magnitude 'v' of the final velocity (\vec{v}) of the particle

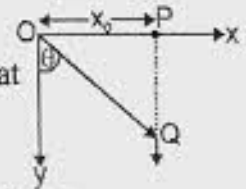
- When a force of $\vec{F} = (-\hat{i} + b\hat{j} - \hat{k})$ N acting on a body, producing a velocity of $\vec{v} = (\hat{i} + 2\hat{j} - \hat{k})$ m/s in it, the power developed is found to be 6 watt. Find the value of b.
- (i) State the principle of homogeneity ?
(ii) In the given correct physical equation $P + 1/2 \rho v^2 + \rho gh = K$, what is the dimensional formula of K/P ?
- (i) Write the expression of rotational kinetic energy.
(ii) Express it in terms of radius of gyration.
(iii) Whether the rotational kinetic energy be affected if the axis of rotation changes?

SECTION-C

11. Two inclined frictionless tracks, one gradual and other steep meet at A from where two stones are allowed to slide down from rest, one on each track as shown.



- (a) Will the stones reach the bottom at same time ? Explain.
 (b) Find the speed of the stones with which they will reach at the bottom (Take $g=10\text{m/s}^2$)
12. A particle of mass 'm' is released from point 'P' at $x=x_0$ on the x-axis from origin 'O' and falls vertically along the y-axis as shown.

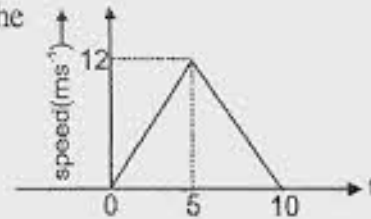


- (i) Find the magnitude and direction of torque acting on the particle at a time 't' when it is at point 'Q' with respect to 'O'
 (ii) Find the angular momentum of the particle about 'O' at this time
13. A projectile is fired with speed 'u' at an angle α with horizontal from the ground. Obtain the equation of trajectory in terms of horizontal range(R).
14. (a) Define conservative force.
 (b) Write the expression relating conservative force and potential energy.
 (c) Give examples of conservative & non-conservative force (One example each).
15. The moment of inertia of a uniform circular ring about a tangent in its own plane is $\frac{3}{2}MR^2$, where M is mass and R is the radius of the disc. Find its moment of inertia about an axis through its centre and perpendicular to its plane.
16. (a) State the principle of conservation of angular momentum.
 (b) If earth were to shrink suddenly to one third of its radius, what would be the duration of day.
17. (i) State Newton's second law of motion. Obtain its usual mathematical form $\vec{F} = m\vec{a}$
 (ii) Why the proportionality constant is taken as 1 ?
 (iii) Do we include any internal force in the system while writing F in the equation.
18. In an experiment, refractive index of glass was observed to be 1.45,1.56,1.54,1.44,1.54 and 1.53.Calculate
 (i) Mean absolute error (ii) Fractional error (iii) Percentage error
 Express the result in terms of absolute error.

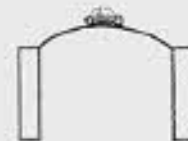
OR

The period of oscillation of a simple pendulum is $T = 2\pi\sqrt{\frac{L}{g}}$. Measured value of L is 20.0 cm known to 1 mm accuracy and time for 100 oscillations of the pendulum is found to be 90s using a wrist watch of 1s resolution. What is the accuracy in the determination of g ?

19. The speed~time graph of a particle moving along a fixed direction is shown in figure. Obtain the average speed of the particle over the intervals



20. Weight of a moving car over a convex bridge is less than the weight of the same car resting on the same bridge. Explain with mathematical support.



21. A bird is flying to and fro between two cars moving towards each other on a straight road. One car has a speed of 18 km/h, while the other has the speed of 27 km/h. The bird starts moving from first car towards the other car and is moving with the speed of 36 km/h and when the two cars were separated by 36km. Find the total distance covered by the bird ?
22. With relevant free body diagram obtain the expression for the maximum speed with which a car or vehicle can safely negotiate a flat curved road. Take coefficient of friction between tyres of the vehicle and road is μ .

SECTION-D

23. Raghav's uncle and aunt living in a village, had come to Bangalore for visiting the hospital for a check up of some medical problem, his uncle was suffering from . Raghav and his wife, not only went to the station to receive them but took great care to make them feel comfortable and at ease. They listen patiently to their problem and ensured them that they would go along with them for a complete and thorough medical check up of the uncle.

While going with them to the hospital next day, Raghav explained to his uncle and aunt, the precaution and care they need to take while travelling of their 'falling forward' or 'backward' in the event of the driver suddenly 'applying brakes', or 'starting the bus all of a sudden'. He emphasised the need for their being alert all the time so that

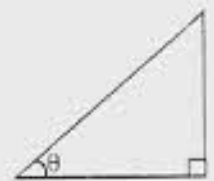
they can minimize of the chance of such a fall. His explanation was of great help to his visitors. They , as a result of this understanding, had a trouble free bus journey. Raghav's helpful and considerate, nature also helped them to get a proper check up and prescription for the uncle's medical problem. They were profusely thankful to him and his wife and blessed them from the core of their hearts.

- State the values displayed by Raghav and his wife.
- Did the uncle and aunt also display some value through their behaviour ?
- Name & state the law on which Raghav's explanation (with regard to the bus journey) were based.
- Give another example based on this law.

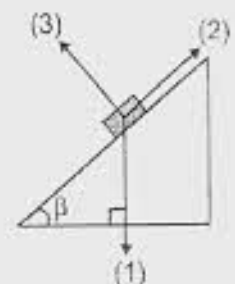
SECTION-E

24. (a) Define the term "angle of repose".

(b) A body of mass 'm' is lying on an inclined plane inclined at an angle ' θ ' to the horizontal. A horizontal force (directed to right) F is made to act on the body. Draw the free body diagram for the forces acting on the body and use of the force 'F' needed to just move the body up the plane. The coefficient of friction between the body and the inclined plane is μ .



(i) A block of wood of mass 'm' kg is resting on the surface of a rough inclined surface, inclined at an angle ' β ' as shown.



(a) If the coefficient of static friction is μ , calculate the value of the forces (1) and (3).

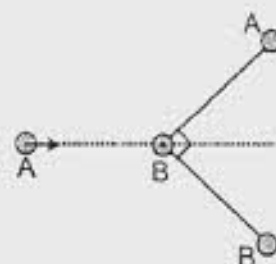
(b) Find the force required to apply along (2) to keep the block rest.

(ii) What type of fundamental force friction comes under ? How is coefficient of static friction is related with angle of friction.

25. (i) Show that the two equal masses undergoing elastic collision with one of them

initially at rest move at right angle to each other after collision.

- (ii) A marble ball moving with a certain velocity collides elastically with another marble ball of same mass which is initially at rest. If the 1st ball make an angle of 30° with its initial direction of motion, then find the angle made by the second ball with the initial direction of motion of the 1st ball.



- (iii) What is the coefficient of restitution for elastic and perfectly inelastic collision ?

OR

- (i) State work-energy theorem. Hence prove it for variable force
- (ii) A body of mass 2kg is projected with speed 5 m/s making an angle 30° with the vertical. Find the kinetic energy at the highest point.
26. (i) Stating the relevant law, outline the sequence of steps followed in substrating a vector \vec{b} from vector \vec{A} .
- (ii) Write the expression for the magnitude of the difference of above two vectors given ?
- (iii) The rain is falling vertically with the speed of 35 m/s. Wind starts blowing after some time with 12 m/s in east to west direction. In which direction should a boy waiting at a bus stop hold his umbrella ?

OR

- (i) Derive an expression for the centripetal acceleration of a particle moving with uniform speed ' v ' along a circular path of radius ' r '.
- (ii) An insect trapped in a circular groove of radius 12cm moves along the groove steadily and completes 7 revolution in 100sec. Is the acceleration vector a constant vector ? (b) Find its magnitude.

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SET NO – 043/1

Roll No.:

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Candidates must write the Set No. on the title page of the answer-book.

DAV PUBLIC SCHOOLS, ODISHA ZONE-I
HALF YEARLY EXAMINATION, 2016-17

- Check that this question paper contains 4 printed pages.
- Set number given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
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CLASS – XI

SUB : CHEMISTRY (Theory)

Time : 3 hours

Maximum Marks : 70

General Instructions :

- (i) All questions are compulsory.
- (ii) Question nos. 1 to 5 are very short questions and carry 1 mark each.
- (iii) Question nos. 6 to 10 are short questions and carry 2 marks each.
- (iv) Question nos. 11 to 22 are short questions and carry 3 marks each.
- (v) Question nos. 24 to 26 are long questions and carry 5 marks each.
- (vi) Question no. 23 is value based question and carry 4 marks.
- (vii) Use log tables if necessary, use of calculator is not allowed.

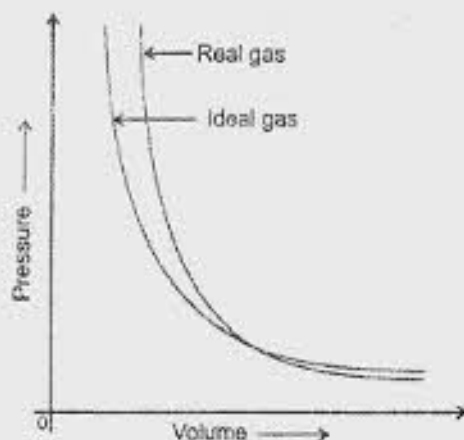
1. State law of definite proportions. 1
2. What is the angular momentum of an electron present in 2s orbital? 1
3. Arrange the following ions in the order of increasing size: Be^{2+} , Na^+ , Mg^{2+} . 1
4. Explain why CO_2 molecule is non-polar although C-O bonds are polar. 1
5. Identify the type of redox reaction : $2\text{H}_2\text{O} + 2\text{F}_2 \rightarrow 4\text{HF} + \text{O}_2$ 1
6. Consider the ionization enthalpies and the electron gain enthalpies of following elements and answer the questions. 2

ELEMENT	ΔH_1	ΔH_2	$\Delta_{\text{eg}} H$
A	419	3051	- 48
B	1681	3374	- 328
C	738	1451	- 40

(i) Identify the most reactive metal and non metal.		18.	On
(ii) Which metal forms binary halide?			Oxy
7. Balance the redox reaction by ion electron method.	2		mas
$MnO_4^- + Fe^{2+} \rightarrow Mn^{2+} + Fe^{3+} + H_2O$ (acidic medium)			O =
8. Write the general electronic configuration of s-block elements. Mention any two features of s-block elements.	2	19.	Dep
			Zn
9. i. What is the unit of Co-efficient of viscosity in SI System?	2		...
ii. How does viscosity vary with intermolecular forces of a liquid?			ii
10. Define	2	20.	i.
i. Enthalpy of atomization.			ii
ii. Specific heat capacity.			
OR			
Derive the relationship $C_p - C_v = R$, for 1mole of an ideal gas.	2	21.	i.
11. i. What is molality?	1+2		
ii. A solution is prepared by adding 2g of urea to 18g of water. Calculate the mass percentage and mole fraction of urea in the solution. (Molar mass of urea =60g/mol)			ii
12. Deduce the structure of the following on the basis of VSEPR theory.	3		
NH_3 , ClF_3 , SF_6		22.	i.
OR			
i. Calculate the formal charge on three Oxygen atoms in Ozone molecule?	2+1		ii
ii. How many sigma and pi bonds are present in CH_3COOH ?			
13. i. State Hund's Rule of maximum multiplicity.	1+2		
ii. If the position of the electron is measured with accuracy of $\pm 0.002nm$, calculate the uncertainty in momentum of the electron.		23.	Spe
14. i. Write the IUPAC name and symbol of an element with atomic no 104.	1+2		inc
ii. Show by a chemical reaction with water that Na_2O is a basic oxide and Cl_2O_7 is an acidic oxide.			ord
15. Draw the Molecular orbital diagram for N_2 Molecule. Find out its bond order and predict the magnetic character.	3		inc
16. Calcium carbonate reacts with aq HCl to give $CaCl_2$ and CO_2 according to the reaction: $CaCO_3(s) + 2HCl(aq) \rightarrow CaCl_2(g) + CO_2(g) + H_2O(l)$	3		ava
What mass of $CaCO_3$ is required to react completely with 25 mL of 0.75 M HCl ?			act
17. i. State the Hess's law of constant heat summation.	1+2		the
ii. Calculate the standard enthalpy of formation of $CH_3OH(l)$ from the following data.			this
(a) $CH_3OH(l) + \frac{3}{2} O_2(g) \rightarrow CO_2(g) + 2H_2O(l)$, $\Delta_r H^0 = -726kJmol^{-1}$.			An
(b) $C(\text{graphite}) + O_2(g) \rightarrow CO_2(g)$, $\Delta_c H^0 = -393kJmol^{-1}$			i.
(c) $H_2(g) + \frac{1}{2} O_2(g) \rightarrow H_2O(l)$, $\Delta_f H^0 = -286kJmol^{-1}$.			ii.
			iii.
		24.	i.
			ii.

- 2 18. On analysis of an organic compound the percentage of Carbon, Hydrogen & Oxygen are found to be 40, 6.67 and 53.33 respectively. If the molecular mass is 180u, find the molecular formula. (atomic masses of H = 1, C = 12, O = 16) 3
- 2 19. Depict the galvanic cell in which the reaction $Zn(s) + 2Ag^+(aq) \rightarrow Zn^{2+}(aq) + 2Ag(s)$ takes place. Further show
2 i. Which of the electrode is negatively charged?
2 ii. Individual reaction at each electrode. 3
- 2 20. i. What is Boyle temperature? 1+2
2 ii. A sealed tube can withstand a pressure of 3atm is filled with air at 27°C and 760mm of Hg pressure. Find the temperature above which it will burst.
- 2 21. i. Identify the intensive properties from the following: 1+2
1+2 Heat capacity, density, internal energy, temperature.
3 ii. For the reaction at 298K ,
 $2A+B \rightarrow C$, $\Delta H = 400kJmol^{-1}$ and $\Delta S = 0.2kJ K^{-1} mol^{-1}$.
At what temperature will the reaction become spontaneous considering ΔH and ΔS to be constant over the temperature range?
- 2+1 22. i. What are the limitations of Bohr's theory? (Mention any four) 2+1
1+2 ii. Show that the circumference of the Bohr's orbit for H-atom is an integral multiple of the de Broglie wavelength associated with the electron revolving around the orbit.
- 1+2 23. Spontaneous processes occurring in nature are irreversible and involve an increase in entropy. The increase in entropy results in a decreases in the ordered energy available for useful work. Since the entropy of the universe is increasing day by day, a stage may come when there will be no energy available for useful work. This state of affairs will totally paralyse our activities and life will come to a standstill. This situation will correspond to the thermal death of the inhabitants of the universe. The only way to combat this dreadful situation is to exploit and use alternative sources of energy. 1+2+1
- 3
3
Answer the following.
1+2 i. What values are expressed in this paragraph?
ii. What are spontaneous processes? Is burning of coal a spontaneous process?
iii. Why is entropy considered as state function?
24. i. State Dalton's law of partial pressure. 1+2+2
ii. 2.9 g of a gas at 95°C occupied the same volume as 0.184 of hydrogen at 17°C at the same pressure. What is the molar mass of the gas?

figure.



Explain the behaviour of real gas with respect to ideal gas at low pressure and high pressure on the basis of the graph.

OR

- Define critical temperature.
- Write the van der Waals equation of state for n mole of real gas. Write the significances of van der Waals constants.
- Calculate the total pressure in a mixture of 8 g of oxygen and 4g of hydrogen confined in a vessel of 1 dm³ at 27° C.

1+2+2

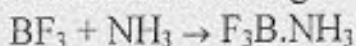
25. i. A molecule of O₂ and SO₂ travel with same velocity. Which one will be associated with higher wavelength?
- ii. Why electronic energy is negative?
- iii. Calculate the energy and frequency of the radiation emitted when an electron jumps from n = 3 to n = 2 in a hydrogen atom.

1+1+3

OR

- i. What is Bohr's radius?
- ii. What is the lowest value of n for the g orbital to exist?
- iii. A photon of wavelength 4×10^{-7} m strikes on metal surface, the wave function of the metal being 2.13 eV. Calculate the energy of photon in (eV) and K.E of emission. (1 eV = 1.6020 x 10⁻¹⁹ J)
26. i. Write two conditions of hybridisation.
- ii. Is there any change in hybridization of B and N atoms as a result of the following reaction? If yes mention the change.

1+1+3



- iii. Which one is more ionic and why: CuCl or NaCl .

2+2+1

OR

- i. Write two limitations of octet rule with suitable examples.
- ii. Which out of NH₃ and NF₃ has higher dipole-moment and why?
- iii. H₂O is a liquid but H₂S is a gas. Why?

2+2+1

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SET NO – 043/2

Roll No.:

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Candidates must write the Set No. on the title page of the answer-book.

DAV PUBLIC SCHOOLS, ODISHA ZONE-I
HALF YEARLY EXAMINATION, 2016-17

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CLASS – XI

SUB : CHEMISTRY (Theory)

Time : 3 hours

Maximum Marks : 70

General Instructions :

General Instruction:

- (i) All questions are compulsory.
- (ii) Question nos. 1 to 5 are very short questions and carry 1 mark each.
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- (v) Question nos. 24 to 26 are long questions and carry 5 marks each.
- (vi) Question no. 23 is value based question and carry 4 marks.
- (vii) Use log tables if necessary, use of calculator is not allowed.

- | | | |
|------|--|---|
| | 1. Define Gay-Lussac's law of gaseous volumes. | 1 |
| +2+1 | 2. How many electrons in an atom may have following quantum numbers?
$n = 3, l = 2, m = 0$ | 1 |
| | 3. Arrange the given elements Be, B, C, N, and O in the increasing order of first ionization energy. | 1 |
| | 4. All the bonds are not equivalent in PCl_5 . Why? | 1 |
| | 5. What is a oxidation number of nitrogen in NaNO_3 ? | 1 |
| | 6. Define | 2 |
| | i. Enthalpy of atomization. | |
| | ii. Specific heat capacity. | |

+2+2

+1+3

+1+3

+2+1

7. Consider the ionization enthalpies and the electron gain enthalpies of following elements and answer the questions.

ELEMENT	ΔH_1	ΔH_2	$\Delta_{eg} H$
A	419	3051	- 48
B	1681	3374	- 328
C	738	1451	- 40
D	2372	5251	+ 48

- (i) Identify the most reactive metal and non metal.
(ii) Which metal forms binary halide?
8. Balance the redox reaction by oxidation number method
 $Cr_2O_7^{2-} + H^+ + C_2O_4^{2-} \rightarrow Cr^{3+} + CO_2 + H_2O$
9. Which one of the following pairs of element would have a more negative electron gain enthalpy?
i. O or F, ii. F or Cl
10. i. What is the unit of Co-efficient of viscosity in SI System?
ii. How does viscosity vary with intermolecular forces of a liquid?
11. The density of 3 molal solution of NaOH is 1.110 gm mL^{-1} . Calculate its molarity?
12. i. What are the limitations of Bohr's theory? (Mention any four)
ii. Show that the circumference of the Bohr's orbit for H-atom is an integral multiple of the de Broglie wavelength associated with the electron revolving around the orbit.
13. i. State Heisenberg's uncertainty principle.
ii. An ion with mass number 37 possesses one unit of negative charge. If the ion contains 11.1% more neutrons, find the symbol of this ion.
14. i. Identify the intensive properties from the following:
Heat capacity, density, internal energy, temperature.
ii. For the reaction at 298K,
 $2A+B \rightarrow C$, $\Delta H = 400 \text{ kJ mol}^{-1}$ and $\Delta S = 0.2 \text{ kJ K}^{-1} \text{ mol}^{-1}$.
At what temperature will the reaction become spontaneous considering ΔH and ΔS to be constant over the temperature range?
15. Draw the Molecular orbital diagram for C_2 Molecule. Find out its bond order and predict the magnetic character.
16. i. What is Boyle temperature?
ii. A sealed tube can withstand a pressure of 3atm is filled with air at 27°C and 760mm of Hg pressure. Find the temperature above which it will burst.
17. i. State third law of thermodynamics.
ii. The reaction of cyanamide, NH_2CN (s) with dioxygen was carried out in a bomb calorimeter, and ΔU was found to be $-742.7 \text{ kJ mol}^{-1}$ at 298 K. Calculate enthalpy change for the reaction at 298 K.

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- 2 18. Depict the galvanic cell in which the reaction 3
 $Zn(s) + 2Ag^+(aq) \rightarrow Zn^{2+}(aq) + 2Ag(s)$ takes place. Further show
 i. Which of the electrode is negatively charged?
 ii. Individual reaction at each electrode.
19. On analysis of an organic compound the percentage of Carbon, Hydrogen & 3
 Oxygen are found to be 40, 6.67 and 53.33 respectively. If the molecular
 mass is 180u, find the molecular formula. (atomic masses of H = 1, C = 12,
 O = 16)
20. i. Write the IUPAC name and symbol of an element with atomic no 104? 1+2
 ii. Show by a chemical reaction with water that Na_2O is a basic oxide and
 Cl_2O_7 is an acidic oxide.
21. Calcium carbonate reacts with aq HCl to give $CaCl_2$ and CO_2 according to the 3
 reaction: $CaCO_3(s) + 2HCl(aq) \rightarrow CaCl_2(g) + CO_2(g) + H_2O(l)$
 What mass of $CaCO_3$ is required to react completely with 25 mL of 0.75 M
 HCl?
22. Deduce the structure of the following on the basis of VSEPR theory. 3
 NH_3 , ClF_3 , SF_6

OR

- i. Calculate the formal charge on three Oxygen atoms in Ozone molecule? 2+1
 ii. How many sigma and pi bonds are present in CH_3COOH ?
23. Spontaneous processes occurring in nature are irreversible and involve an 1+2+1
 increase in entropy. The increase in entropy results in a decreases in the
 ordered energy available for useful work. Since the entropy of the universe is
 increasing day by day, a stage may come when there will be no energy
 available for useful work. This state of affairs will totally paralyse our
 activities and life will come to a standstill. This situation will correspond to
 the thermal death of the inhabitants of the universe. The only way to combat
 this dreadful situation is to exploit and use alternative sources of energy.

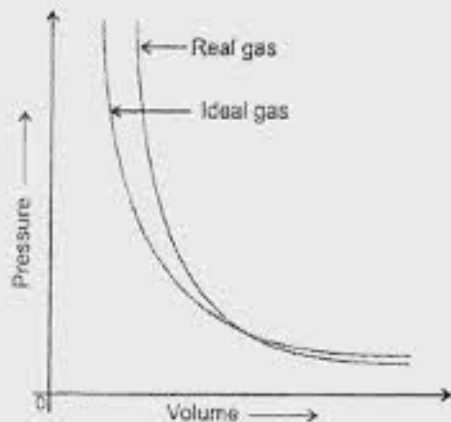
Answer the following.

- i. What values are expressed in this paragraph?
 ii. What are spontaneous processes? Is burning of coal a spontaneous 3
 process?
 iii. Why is entropy considered as state function? +2
24. i. Write two conditions of hybridisation. 2+2+1
 ii. Is there any change in hybridization of B and N atoms as a result of the
 following reaction? If yes mention the change.
 $BF_3 + NH_3 \rightarrow F_3B.NH_3$
 iii. Which one is more ionic and why: $CuCl$ or $NaCl$.

OR

- i. Write two limitations of octet rule with suitable examples. 2+2+1
 ii. Which out of NH_3 and NF_3 has higher dipole-moment and why?

25. i. State Dalton's law of partial pressure. 1+2+2
 ii. 2.9 g of a gas at 95°C occupied the same volume as 0.184 of hydrogen at 17°C at the same pressure. What is the molar mass of the gas?
 iii. Pressure versus volume graph for a real gas and an ideal gas are shown in figure.



Explain the behaviour of real gas with respect to ideal gas at low pressure and high pressure on the basis of the graph.

OR

- i. Define critical temperature.
 ii. Write the van der Waals equation of state for n mole of real gas. Write the significances of van der Waals constants. 1+2+2
 iii. Calculate the total pressure in a mixture of 8 g of oxygen and 4g of hydrogen confined in a vessel of 1 dm^3 at 27°C .
26. i. A molecule of O_2 and SO_2 travel with same velocity. Which one will be associated with higher wavelength? 1+1+3
 ii. Why electronic energy is negative?
 iii. Calculate the energy and frequency of the radiation emitted when an electron jumps from $n = 3$ to $n = 2$ in a hydrogen atom.

OR

- i. What is Bohr's radius? 1+1+3
 ii. What is the lowest value of n for the g orbitals to exist?
 iii. A photon of wavelength $4 \times 10^{-7}\text{m}$ strikes on metal surface, the wave function of the metal being 2.13eV. Calculate the energy of photon in (eV) and K.E of emission. ($1\text{eV} = 1.6020 \times 10^{-19}\text{J}$)

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SET NO – 043/3

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Candidates must write the Set No. on the title page of the answer-book.

DAV PUBLIC SCHOOLS, ODISHA ZONE-I
HALF YEARLY EXAMINATION, 2016-17

- Check that this question paper contains 4 printed pages.
- Set number given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- Check that this question paper contains 26 questions.
- Write down the Serial Number of the question before attempting it.
- 15 minutes cooling time has been allotted to read this question paper only and do not write any answer on the answer-book during this period.

+2+2

CLASS – XI

SUB : CHEMISTRY (Theory)

Time : 3 hours

Maximum Marks : 70

General Instructions :

+1+3

- (i) All questions are compulsory.
- (ii) Question nos. 1 to 5 are very short questions and carry 1 mark each.
- (iii) Question nos. 6 to 10 are short questions and carry 2 marks each.
- (iv) Question nos. 11 to 22 are short questions and carry 3 marks each.
- (v) Question nos. 24 to 26 are long questions and carry 5 marks each.
- (vi) Question no. 23 is value based question and carry 4 marks.
- (vii) Use log tables if necessary, use of calculator is not allowed.

+1+3

1. State law of multiple proportions. 1
2. How many angular nodes are present in 3p orbital? 1
3. Considering the elements B, Al, Mg and K, write the correct order of their metallic character. 1
4. All C and O bonds in CO_3^{2-} are equivalent. Explain. 1
5. Why ClO_4^- does not show disproportionation reaction? 1
6. i. What is the unit of Co-efficient of viscosity in SI System? 2
ii. How does viscosity vary with intermolecular forces of a liquid?
7. Define 2
i. Enthalpy of atomization
ii. Specific heat capacity

8. Consider the ionization enthalpies and the electron gain enthalpies of following elements and answer the questions.

ELEMENT	ΔH_1	ΔH_2	$\Delta_{eg} H$
A	419	3051	- 48
B	1681	3374	- 328
C	738	1451	- 40
D	2372	5251	+ 48

- i. Identify the most reactive metal and non metal.
 ii. Which metal forms binary halide?
9. Balance the redox reaction by Ion electron method.
 $MnO_4^- + Br^- \rightarrow MnO_2 + BrO_3^-$ (Basic medium)
10. What do you understand by iso- electronic species? Name two species which are iso-electronic with F^- ?
11. The density of 3 M solution of NaCl is 1.25 g mL^{-1} . Calculate molality of the solution.
12. i. What is Boyle temperature?
 ii. A sealed tube can withstand a pressure of 3atm is filled with air at 27°C and 760mm of Hg pressure. Find the temperature above which it will burst.
13. i. State Pauli's exclusion principle.
 ii. A 25 watt bulb emits monochromatic yellow light of wavelength of $0.57\mu\text{m}$. Calculate the rate of emission quanta per sec.
14. Draw the Molecular orbital diagram for F_2 Molecule. Find out its bond order and predict the magnetic character.
15. i. Write the IUPAC name and symbol of an element with atomic no 104?
 ii. Show by a chemical reaction with water that Na_2O is a basic oxide and Cl_2O_7 is an acidic oxide.
16. i. Define standard enthalpy of formation.
 ii. For oxidation of iron : $4Fe(s) + 3O_2(g) \rightarrow 2Fe_2O_3(s)$
 entropy change is $-549.4 \text{ JK}^{-1} \text{ mol}^{-1}$ at 298 K. In spite of negative entropy change of this reaction, why is the reaction spontaneous? ($\Delta_r H^\circ$ for this reaction is $-1648 \times 10^3 \text{ J mol}^{-1}$)
17. Depict the galvanic cell in which the reaction
 $Zn(s) + 2Ag^+(aq) \rightarrow Zn^{2+}(aq) + 2Ag(s)$ takes place. Further show
 i. Which of the electrode is negatively charged?
 ii. Individual reaction at each electrode.
18. Calcium carbonate reacts with aq HCl to give $CaCl_2$ and CO_2 according to the reaction: $CaCO_3(s) + 2HCl(aq) \rightarrow CaCl_2(g) + CO_2(g) + H_2O(l)$
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19. i. What are the limitations of Bohr's theory?(Mention any four) 2+1
 ii. Show that the circumference of the Bohr's orbit for H-atom is an integral multiple of the de Broglie wavelength associated with the electron revolving around the orbit. 2
20. On analysis of an organic compound the percentage of Carbon, Hydrogen & Oxygen are found to be 40, 6.67 and 53.33 respectively. If the molecular mass is 180u, find the molecular formula. (atomic masses of H = 1, C = 12, O = 16) 3
21. Deduce the structure of the following on the basis of VSEPR theory. 3
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- OR**
- i. Calculate the formal charge on three Oxygen atoms in Ozone molecule? 2+1
 ii. How many sigma and pi bonds are present in CH_3COOH ? 2
22. i. Identify the intensive properties from the following: 1+2
 Heat capacity, density, internal energy, temperature. 3
 ii. For the reaction at 298K ,
 $2\text{A} + \text{B} \rightarrow \text{C}$, $\Delta\text{H} = 400\text{kJmol}^{-1}$ and $\Delta\text{S} = 0.2\text{kJ K}^{-1}\text{mol}^{-1}$.
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 Answer the following.
 i. What values are expressed in this paragraph? 1+2
 ii. What are spontaneous processes? Is burning of coal a spontaneous process? 3
 iii. Why is entropy considered as state function? 1+2
24. i. A molecule of O_2 and SO_2 travel with same velocity. Which one will be associated with higher wavelength? 1+1+3
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- OR**
- i. What is Bohr's radius? 1+1+3
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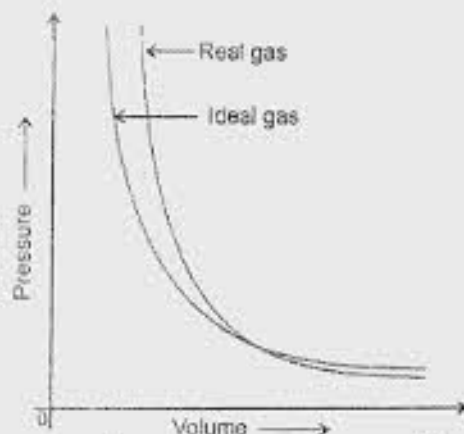
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- iii. Which one is more ionic and why: CuCl or NaCl.

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OR

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 ii. Write the van der Waals equation of state for n mole of real gas. Write the significances of van der Waals constants.
 iii. Calculate the total pressure in a mixture of 8 g of oxygen and 4g of hydrogen confined in a vessel of 1 dm^3 at 27°C .

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DAV PUBLIC SCHOOLS, ODISHA ZONE -I
HALF YEARLY EXAMINATION, 2016-17

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- Check that this question paper contains 4 questions with sub bits.
- Write down the Serial Number of the question before attempting it.
- 15 minutes cooling time has been allotted to read this question paper only and do not write any answer on the answer book during this period.

CLASS-XI
SUB:COMPUTER SCIENCE(C++)

TIME: 3 Hours

Full Marks: 70

General Instructions:

1. All questions are compulsory.
2. Marks for questions are indicated against each question.
3. Language to be followed C++.
4. For questions related to output assume that required header files are included.

SECTION - A

1. a) Differentiate between Digital & Analog Computers? (1)
b) Match the following. (1)

Column A	Column B
1 PB	1024 Bronto Bytes
1YB	1024 Exa Byte
1ZB	1024 Terra Byte
1GEOP	1024 Zetta Byte
- c) What is a process? What are the status of a process during execution. (2)

- d) Write the diff. between proprietary s/w and open source s/w. Give one e.g. of each (2)
- e) Represent the following in: (4)
 - i) -56 to its 2's compliment
 - ii) -60 in sign and magnitude form
 - iii) $(25.25)_{10} = (?)_2$
 - iv) $(4.5)_{10}$ to 10bit binary
- f) What type of connector is used in modem? (1)
- g) Differentiate between RISC and CISC. (2)

2. a) Writing a good program is a quality habit. So the teacher in computer science gave the students to write a program reversing a number. Ronit copied the program from his friend & submitted the same in his name to the teacher. What do you think he is right or not & why? (2)
- b) Developing good program is a skill. This skill can be developed by consciously following the guidelines. Write four types of stylistic guidelines with explanation. (4)
- c) Find the type of error (if any) in the following statement. (1)
- i) if (x = x*y)
 - ii) x*y=z;
- d) Write a C++ program to print first 10 multiples of 9 using while loop. (2)
- e) Write a program to accept monthly salary from the user, find and display income tax with the help of following rules. (3)

MONTHLY SALARY (MS) INCOME TAX

9000 or more	40% of MS
7500 to 8999	30% of MS
7499 or less	20% of MS

- f) What do you understand by the following. (3)
 - (i) self documenting code (ii) source code (iii) User's manual
 - g) A set of N number is given. Write a flowchart to print total number of negatives (-ve), positives (+ve) and zeros (0). (3)
 - h) What are the elements that control a repetitive statement? (2)
- 3.a) Rewrite the code after removing all syntactical and logical error (if any). Underline the correction. (2)

```
void main ( )
{ int value, sum, int;
for (inct = 0; inct <=10; inct++)
cin >> value ;
sum += value;
cout << "the average is " << sum/inct<< endl; }
```

- b) What is the difference between static initialization and Dynamic initialization of a variable. Give example. (2)
- c) Write main features of OPPs. (any four) (2)
- d) Write a program to print ASCII equivalent of all capital alphabets for example. (3)

The required output should be in the following format

```
A 65
B 66
...
Z 90
```

- e) Convert the following if-else statement to single conditional statement using condition operator. (?) (2)

i) if (qty > 20)
order = max + 5;
else
order = max;

ii) if (a < b)
if (b > c) n = a;
else n = b;
else n = a + b;

- f) Write the output of the following code (2)
- ```
int x=2;
cout << x++;
cout << setprecision(5) << 12.345623;
```

- g) Do as per instruction (3)
- i) state T/F
- \* float qty, amt; qty/amt is a real expression
  - \* x -= 10; is equivalent to x = x - 10;

ii) Write corresponding expression for  $\left(\frac{\sin x^2}{\tan^{-1} x}\right) - \sqrt{y}$

- h) What is the value of x in the following expression. (1)
- $$x = ((y = 2, y + 3), (y - 1, y * 3))$$

4. a) Convert the following code segment into switch-case construct. (2)

```
int ch;
cin >> ch;
if (ch == 1)
cout << "Laptop";
else if (ch == 2)
cout << "desktop";
else if (ch == 3)
cout << "Notebook";
else cout << "invalid choice";
```

- b) Rewrite the given below program using for () loop (2)

```
void main ()
{int i=1, sum=0;
while (i<=10)
{ sum = sum+i,
i++; }
cout<<sum; }
```

- c) Write a program to accept 3 numbers and print the biggest of the three. (3)  
d) Write a program to find the sum of geometric series  $s=a+ar+ar^2+ar^3+\dots+ar^n$  where a, r, and n are entered by the user. (3)  
e) Write a program to print the following output. (4)

```
1
22
333
4444
55555
```

- f) Write a program to find out the sum of all odd numbers and sum of all even numbers from a list of numbers entered through keyboard. The list terminates when either 0 or a negative number is entered. (4)  
g) What is a null statement? What is a compound statement and write the alternate name for compound statement with example. (2)

Roll No

Time /

(i) ✓  
(ii) ✓  
(iii) ✓  
(iv) ✓