



DALMIA VIDYA MANDIR

RAJGANGPUR

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Dalmia Vidya Mandir, Chirawa



2024-25
**SUMMER
FUN WORK**



**CLASS
XI SC**



DALMIA VIDYA MANDIR, RAJGANGPUR

(56 years of excellence)

(A CBSE English Medium Senior Secondary School, Affiliation No-1530001)

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Dear Parents,

Warm greetings from Dalmia Vidya Mandir!

We trust this letter finds you and your family in good health. As the summer break nears, we're delighted to share that our dedicated team, under the guidance of the Principal and Dr. Rosetta Williams (CEO, DVM group of schools), has curated summer assignments for your child.

These assignments, covering all subjects, aim to keep your child engaged in learning and prepare them for the upcoming academic year. They offer opportunities for exploration, skill development, and maintaining a learning routine during the break.

Your support in ensuring your child completes and submits these assignments to the respective class teacher on the first day of school reopening after the break is greatly appreciated. It will contribute to a positive start to the academic year and reinforce the knowledge acquired during the break.

For any queries or concerns, please reach out to the class teachers. Thank you for your ongoing support and involvement in your child's education. We eagerly anticipate a productive and successful academic year ahead.

Educationally yours,

Principal & Team

DVM, Rajgangpur

INDEX



| S.N. | SUBJECT | PAGE |
|----------|-------------------------|-----------|
| 1 | ENGLISH | 3 |
| 2 | PHYSICS | 9 |
| 3 | CHEMISTRY | 12 |
| 4 | BIOLOGY | 17 |
| 5 | MATHEMATICS | 22 |
| 6 | COMPUTER SCIENCE | 26 |



ENGLISH

Passage-1

1. Located in Eastern India along the Hoogly river, Kolkata (formerly known as Calcutta) is often referred to as the cultural capital of India. With the grand colonial architecture, rich traditions, beautiful music and art, this city has a unique character. As a home to esteemed artists like Rabindranath Tagore and Satyajit Ray, among others, the people of this city have a special appreciation for literature as well as cinema. The city also provides an unparalleled religious and cultural experience of Durga Puja each year.

2. 'Durga Durga' echo the united voices of all the ladies in the household as they move towards the pandals for Puja, wishing for a safe journey ahead in life. The sound of intense beats coming from the dhak mixed with the aroma of the dhunuchi lit in every house, park or corner fills the streets of Kolkata. Clad in the most beautiful attires, adorning the heaviest of jewels and thickest of bangles with sindoor and bindis on their temple, the women seem to walk a step ahead of the men today.

3. After all, Durga Puja is the day of the Devi. Nothing but colour and festivity flow through the lanes in the nine days that Maa Durga stays in her basha (house) with her four children, only to be united with her husband Shiva on the tenth day, (also known as Vijayadashami). But does it really end there? The massive grandeur and style of Durga Puja is not restricted to being just a nine-day festival. It houses itself in the hearts of the devotees who utter 'Maa Durga' at the smallest of hiccups in life. The resounding ullu (a high-pitched ululation sound created by striking both cheeks with the tongue, believed to be very auspicious and said to ward off any evil) echoes in the streets of the city long after the Puja is all wrapped up.

4. Celebrated in the month of Ashvin (September – October), Durga Puja (fondly referred to as Puja) is one of the most awaited festivals in India, especially in West Bengal. Even though the weather starts becoming cooler, the air is thick with the warmth radiated by the devotees.

5. The origins of the Devi as a deity are lost in the mists of time. Over time, we find mentions of the Goddess in various texts from the Vedic era and in the Ramayana and Mahabharata. Even much later, Krittivasi's rendition of Ramayana, composed in the 15th century, speaks of Durga being worshipped with 108 blue lotuses and 108 sacred lamps by Lord Rama before his battle with Ravana. The day that Lord Rama defeated Ravana is celebrated as Dussehra that falls on the tenth day (Dashami) of the Durga Puja.

Questions:

Based on your understanding of the passage, answer the following questions.

(i) Which month and festival is the writer discussing in these lines: "Even though the weather starts becoming cooler, the air is thick with the warmth radiated by the devotees."?

ANS –

(ii) Which word in Para-3 is a synonym of 'splendor or magnificence'?

111) Select the option that suitably completes the given dialogue as per the context in paragraph-II.

X: Maa Durga has arrived.

Y: It's our most awaited time of the year (1) _____

X: I would perform a dhunuchi dance today. Y: (2) It _____

- (a) (1) which unites us (2) would be so nice to watch you dancing
- (b) (1) when we should unite together (2) would be the memorable day of my life
- (c) (1) when we keep calm (2) is what I have practiced it the entire year
- (d) (1) when we eagerly wait to celebrate (2) spreads a nice aroma everywhere

(iv) Which option represents the kind of celebrations that are done during the Durga Puja in West Bengal as mentioned in the passage?

1. Lighting of dhunuchi and playing of dhak
2. Colorful sweets and bhog distribution
3. Burning of the Ravana effigies
4. Decoration of the idols

(v) Select the option that is correct with reference to the given passage.

- (a) Durga puja is a Ten-day festival celebrated across India in the month of Ashvin
- (b) Kolkata (formerly known as Calcutta) is often referred to as the cultural city of palaces in India
- (c) Krittivasi's rendition of Ramayana, was composed in the 13th century
- (d) Lord Rama worshipped Durga with 108 blue lotuses and 108 sacred lamps before his battle with Ravana

(vi) What is the relationship between (1) and (2)?

1. After all, Durga Puja is the day of the Devi.
2. The origins of the Devi as a deity are lost in the mists of time.
 - (a) (2) is the cause of (1)
 - (b) (1) and (2) are independent of each other
 - (c) (2) elaborates upon the premise of (1)
 - (d) (1) sets the stage of (2)

(vii) Why do women use ululation sound during Durga Puja?

Ans-

(viii) Which of the following options accurately describes the feelings of the people towards the Durga Puja festival?

1. Love and Mortification
2. Exuberance and Fervour
3. Dilemma and Passion
4. Gusto and Excitement
 - (a) 1 and 3
 - (b) 2 and 4
 - (c) 3 and 4
 - (d) 1 and 2

(ix) Select the option that lists what we can conclude from the text.

1. The women population in India is the largest in Kolkata.
2. Durga Puja is the most celebrated festival in Kolkata.
3. The people of Kolkata have a very strong faith and belief in Maa Durga.
4. The festival of Durga Puja coincides with the festival of Dusshera.
5. Maa Durga is the only deity the people of Kolkata believe in.

(a) 1, 2 and 4

(b) 2 and 3

(c) 1 and 5

(d) 3, 4 and 5

(x) Which idiom has been used in Para- 5 to say that something happened a very long time ago and is difficult to remember clearly?

ANS –

Passage-2

May, Bistritz

1. Count Dracula had directed me to go to the Golden Krone Hotel, which I found, to my great delight, to be thoroughly old-fashioned, for, of course, I wanted to see all I could of the ways of the country.
2. I was evidently expected, for when I got near the door I faced a cheery-looking elderly woman in the usual peasant dress... When I came close she bowed and said, ‘The Herr Englishman?’ ‘Yes,’ I said, ‘Jonathan Harker.’
3. She smiled and gave some message to an elderly man in white shirtsleeves, who had followed her to the door. He went, but immediately returned with a letter:
4. “My friend – Welcome to the Carpathians. I am anxiously expecting you. Sleep well tonight. At three tomorrow, the diligence will start for Bukovina; a place on it is kept for you. At the Borgo Pass, my carriage will await you and will bring you to me. I trust that your journey from London has been a happy one and that you will enjoy your stay in my beautiful land-Your friend, Dracula.” 4 May
5. I found that my landlord had got a letter from the Count, directing him to secure the best place on the coach for me; but on making inquiries as to details he seemed somewhat reticent and pretended that he could not understand my German.
6. This could not be true, because up to then he had understood it perfectly; at least, he answered my questions properly.
7. He and his wife, the old lady who had received me, looked at each other in a frightened sort of way. He mumbled out that the money had been sent in a letter, and that was all he knew. When I asked him if he knew Count Dracula, and could tell me anything of his castle, both he and his wife crossed themselves saying that they knew nothing at all and simply refused to speak further. It was all very mysterious and not by any means comforting. Just before I was leaving, the old lady came up to my room and said in a hysterical way: “Must you go? Oh! Young Herr, must you go?” She was in such an excited state that she seemed to have lost her grip of what German she knew, and mixed it all up with some other language which I did not know at all. I was just able to follow her by asking a number of questions. When I told her that I must go at once and that I was engaged on important business, she asked again:
8. “Do you know what day it is?” I answered that it was the fourth of May.

– An excerpt from Dracula by Bram Stoker

Questions Based on your reading of the passage, answer the following questions by choosing the correct option.

(i) When the writer reached the Hotel, how did he feel?

ANS-

(ii) Alliteration refers to the occurrence of the same letter or sound at the beginning of adjacent or closely connected words.

From the options given below, choose a phrase from the passage that can be example of alliteration.

- (a) She was in such an excited state
- (b) Got a letter from the count
- (c) Immediately returned with a letter
- (d) None of the above

(iii) Select the option that suitably completes the given dialogue as per the passage.

X: Why are you visiting such an archaic hotel?

Y:

- (a) Because new things are so corrupted
 - (b) Because I am also old
 - (c) Because I want to see the culture of the country
 - (d) Because you don't like it
- (iv) Why did the old lady address the writer as 'Englishman'?

Ans-

(v) Did the old couple, especially the woman, want the writer to leave?

- (a) Yes, she wanted him gone from her hotel
- (b) No, she was stopping him from leaving
- (c) yes, she didn't like him from the first day
- (d) No, she hated his friend, Dracula

(vi) What is the relationship between (1) and (2)?

- 1. He went, but immediately returned with a letter.
- 2. I found that my landlord had got a letter from the count.

- (a) (1) contradicts (2)
- (b) (2) elaborates upon the premise in (1)
- (c) (2) repeats the problem discussed in (1)
- (d) (1) is the result of (2)

(vii) What is the social title of the writer's friend, as mentioned in the passage?

ANS

(viii) Which language was the old woman speaking when she asked the writer if he was really going to leave?

ANS-

(ix) What did the old couple tell the writer when he asked them details about the count and his castle?

- (a) That he and the castle were both scary
- (b) That he was very wealthy and the castle was well kept
- (c) Both (a) and (b)
- (d) Nothing. They refused to speak about it

(x) Select the option that describes the ending of the passage.

- (a) climatic
- (b) happy
- (c) abrupt
- (d) infuriating

(iv) Why did the old lady address the writer as 'Englishman'?

ANS –

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Q.3 Read the following passage carefully and answer the questions that follow.

1. How does television affect our lives? It can be very helpful to people who carefully choose the shows that they watch. Television can increase our knowledge of the outside world; there are high quality programmes that help us to understand many fields of study, science, medicine, and the arts and so on. Moreover, television benefits very old people who can't often leave the house, as well as patients in hospital. It also offers non-native speakers the advantage of daily informal language practice. They can increase their vocabulary and practice listening.

2. On the other hand, there are several serious disadvantages to television. Of course, it provides us with a pleasant way to relax and spend our free time, but in some countries, people watch the 'boob-tube' for an average of six hours or more a day. Many children stare at a television screen for more hours each day than they do anything else, including studying and sleeping. It's clear that the tube has a powerful influence on their lives and that its influence is often negative.

3. Recent studies show that after only thirty seconds of watching television, a person's brain 'relaxes' the same way that it does just before the person falls asleep. Another effect of television on the human brain is that it seems to cause poor concentration. Children who view a lot of television can often concentrate on a subject for only fifteen to twenty minutes. They can pay attention only for the amount of time between commercials.

4. Another disadvantage is that television often causes people to become dissatisfied with their own lives. Real life does not seem as exciting to these people as the lives of actors on the screen. To many people television becomes more real than reality and their own lives ... boring.

Also many people get upset or depressed when they can't solve problems in real life as quickly as television actors seem to.

5. Before a child is fourteen years old, he or she views eleven thousand murders on the tube. He or she begins to believe that there is nothing strange about fights, killings and other kinds of violence. Many studies show that people become more violent after certain. Programmes. They may even do the things that they saw in a violent show.

1.1. Make notes on the above passage using proper abbreviations (04) and suggest a suitable title.

ANS -

1.2. Write a summary of the above passage in about 50 words

Q4-Read books and newspapers during the activity.

PHYSICS

QUESTIONS ON LOGARITHM

- Find Out the Incorrect Statement from Below -
 - $\log(1 + 2 + 3) = \log 1 + \log 2 + \log 3$
 - $\log(2 + 3) = \log(2 \times 3)$
 - $\log_{10} 10 = 1$
 - $\log_{10} 1 = 0$
- What is the Value of $\log_5 512$, when $\log 2 = 0.3010$ and $\log 3 = 0.4771$?
 - 3.912
 - 3.876
 - 2.967
 - 2.870
- Find the Value of $\log 9$, When $\log 27$ Amounts to 1.431.
 - 0.954
 - 0.945
 - 0.958
 - 0.934
- What is the Value of $\log_2 10$, When $\log_{10} 2 = 0.3010$?
 - 1000/301
 - 699/301
 - 0.6990
 - 0.3010
- What is the Value of $\log_{10} 80$, When $\log_{10} 2 = 0.3010$?
 - 3.9030
 - 1.9030
 - 1.6020
 - None of the above option
- How Many Digits are there in 2^{64} When $\log 2 = 0.30103$?
 - 21
 - 20
 - 18
 - 19
- Which of the Following is True, if $a^x = b^y$?
 - $\log a / \log b = x/y$
 - $\log a/b = x/y$
 - $\log a / \log b = y/x$
 - None of the above option
- What is the Value of $\log_2 16$?
 - 8
 - 4
 - 1/8
 - 16
- Find the Value of y , if $\log_x y = 100$ and $\log_2 x = 10$.
 - 2^{1000}
 - 2^{10}
 - 2^{100}
 - 2^{10000}
- Find the Value of $\log_{10} (0.0001)$.
 - 1/4
 - 1/4
 - 4
 - 4

11. What is the Value of x When $\log_2 [\log_3 (\log_2 x)] = 1$?

- (a) 512
- (b) 12
- (c) 0
- (d) 128

QUESTIONS ON DIFFERENTIATION

Find the derivative of the given functions:

1. $f(x) = 6x^3 - 9x + 4$

2. $y = 2t^4 - 10t^2 + 3t$

3. $f(y) = y^{-4} - 9y^{-3} + 5y^{-2} + 3$

4. $f(x) = 10\sqrt[5]{x^3} - \sqrt{x^7} + 6\sqrt[3]{x^8} - 3$

5. $f(t) = \frac{5}{t} - \frac{2}{t^2} + \frac{7}{t^3}$

6. $f(z) = (z + 3)(z^2 - 5)$

7. $f(x) = \frac{4x^3 + 2x^2 - 5x + 9}{3x}$

8. $f(x) = 2e^x + 5^x - x^5 + e^e$

9. $f(y) = \frac{3y}{1 - e^y}$

10. $f(x) = (3x^2 - 5x + 4)^5$

11. $f(x) = e^x \sin 2x$

12. $f(x) = \log(x^2 + 3x + 5)$

13. $f(x) = \tan(2x + 3)$

14. $f(x) = e^{\frac{1 - \cos x}{1 + \cos x}}$

15. $f(x) = \sqrt{5x + 4 \tan 2x}$

QUESTIONS ON INTEGRATION

Evaluate:

1. $\int (6x^5 + 5x^3 - 9x + 3) dx$

2. $\int (10t^2 - 3t + 1) dt$

3. $\int (x^4 - 3x^3 + 5x^2 - 4) dx$

4. $\int (x^{-4} - 3x^{-3} + 5x^{-2} - 4) dx$

5. $\int (\sin x + e^x + 2^x) dx$

6. $\int (8x - 12)(2x^2 + 5)^2 dx$

7. $\int (\sec^2 x + e^{-2x} + 5^{3x}) dx$

$$8. \int (2x^{3/2} + 4x^{2/5} - 9x + 3) dx$$

$$9. \int (t^{-5/3} - 3t^{-1/3} + 1) dt$$

$$10. \int (\sin t + \cos 2t + \tan 3t) dt$$

QUESTIONS ON UNITS & MEASUREMENT

1. The frequency ' ν ' of vibration of a stretched string depends upon

- (i) Its length ' l '
- (ii) Its mass per unit length ' m ' and
- (iii) The tension ' T ' in the string.

Obtain dimensionally an expression for frequency ' ν '.

2. A planet moves around the sun in nearly circular orbit. Its period of revolution ' T ' depends upon

- (i) Radius ' r ' of the orbit
- (ii) Mass ' M ' of the sun and
- (iii) The gravitational constant ' G '.

Show dimensionally that $T^2 \propto r^3$.

3. Class XI students were given an experiment to find diameter of a wire using screw gauge. The teacher asked the students to take number of readings. Rahul took only three readings and finished his practical. Seeing this, his friend Rohit asked him to take more readings as it would give more accuracy to his result and also, they should follow the instruction of his teacher.

- (i) If the diameter of the wire as measured by screw gauge was found to be 1.328, 1.330, 1.325, 1.326, 1.334 and 1.336 cm. Calculate
 - (a) Mean value of diameter.
 - (b) Absolute error in each measurement.
 - (c) What is the need to take large number of readings in the experiment?

4. The ideal gas equation of a sample of n moles is given by $PV = nRT$ where P is the pressure exerted by the gas, V is the volume of the gas, n is the number of moles and T is the absolute temperature of the gas. Find the dimensional formula for R .

5. If two resistors of resistances $R_1 = (4 \pm 0.5)\Omega$ and $R_2 = (16 \pm 0.5)\Omega$ are connected (i) in series and (ii) in parallel, find the equivalent resistance in each case with limits of percentage error.

6. Convert 1 N into dyne by using dimensional analysis.

7. The Vander Wall's equation for a gas is $(P + \frac{a}{V^2})(V - b) = RT$. Determine the dimensions of a and b and R . Hence write the S.I. units of a and b .

8. Write down the limitations of dimensional analysis.

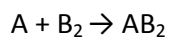
9. Derive the expression for time period of a simple pendulum by dimensional analysis.

10. What are the different types of errors.

3) calculate the molarity of NaOH in the solution prepared by dissolving its 4 g in enough water to form 250 ml of the solution.

4) The density of **3M** solution of NaCl is 1.25 g ml^{-1} . Calculate the molality of the solution.

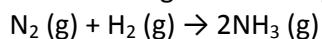
5) In a reaction



Identify the limiting reagent, if any, in the following reaction mixtures.

- (i) 300 atoms of A + 200 molecules of B
- (ii) 2 mol A + 3 mol B
- (iii) 100 atoms of A + 100 molecules of B
- (iv) 5 mol A + 2.5 mol B
- (v) 2.5 mol A + 5 mol B

6) Dinitrogen and dihydrogen react with each other to produce ammonia according to
The following chemical equation:



- (i) calculate the mass of ammonia produced if 2.00×10^3 g dinitrogen reacts
With 1.00×10^3 g of dihydrogen.
- (ii) will any of the two reactants remain unreacted?
- (iii) if yes, which one and what would be its mass?

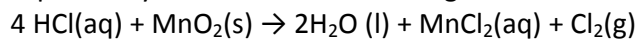
7) which one of the following will have the largest number of atoms?

- (i) 1 g Au (s)
- (ii) 1 g Na (s)
- (iii) 1 g Li (s)
- (iv) 1 g of Cl₂(g)

8) Calcium carbonate reacts with aqueous HCl to give CaCl₂ and CO₂ according to the Reaction, $\text{CaCO}_3 (\text{s}) + 2 \text{HCl}(\text{aq}) \rightarrow \text{CaCl}_2(\text{aq}) + \text{CO}_2(\text{g}) + \text{H}_2\text{O}(\text{l})$

What mass of CaCO₃ is required to react completely with 25 ml of 0.75 M HCl?

9) Chlorine is prepared in the laboratory by treating manganese dioxide (MnO_2) with Aqueous hydrochloric acid according to the reaction



How many grams of HCl react with 5.0 g of manganese dioxide?

10) In three moles of ethane (C_2H_6), calculate the following:

- (i) Number of moles of carbon atoms.
- (ii) Number of moles of hydrogen atoms.
- (iii) Number of molecules of ethane.

BIOLOGY

1 MARK QUESTIONS

Q.1. Name three botanists who contributed to the field of plant taxonomy.

Q.2. Expand ICZN? (Clue: The organization that dictates the correct use of the scientific names of animals)

Q.3. What is a couplet in the taxonomic key?

Q.4. Define a monograph.

Q.5. Define metabolism.

Q.6. The mitotic cell division in amoeba represents growth or reproduction?

Q.7. Name a few botanical gardens in India. Also, name the largest botanical garden in the world.

Q.8. If a habitat contains 20 animal species and 20 plant species, is it “diversity” or “biodiversity”?

Q.9. Identify the correctly written scientific name for mango species- *Mangifera indica*/Mangifera Indica.

Q.10. Match the correct pairs.

| Column I | Column II |
|-----------------|------------------|
| Family | Tuberosum |
| Kingdom | Polymoniales |
| Order | Solanum |
| Species | Plantae |
| Genus | Solanaceae |

Q.11. What is the lowest category of classification?

Q.12. What are the Taxonomic keys?

Q.13. Who is known as the Father of Taxonomy?

Q.14. What are the 8 levels of taxonomy?

Q.15. What is Taxonomy?

Q.16. What is Reproduction?

Q.17. List out the building blocks of life?

Q.18. What is Biology?

Q.19. What is Biodiversity?

Q.20. What is DNA?

Q.21.What are Carbohydrates?

Q.22.What is Cellular organization?

2 MARKS QUESTIONS

1. What do you mean by endemic and exotic species? Give examples for each.
2. Brinjal and potato belong to the same genus but different species. What separates the two species?
3. What are the different defining properties of a living organism?
4. What is binomial nomenclature?
5. State the differences between flora, fauna, and vegetation.

5 MARKS QUESTION

1. With reference to *Brassica compestris linn.*

1. Give the common name of the plant
2. What do the first two words of the name indicate?
3. Why is the scientific name written in italics?
4. What does “linn.” mean?

2. Differentiate between “whole moong daal” and “broken moong daal” in terms of respiration and growth?

3. What do you mean by Taxonomic aids? Explain various types of taxonomic aids used for Identification?

CASE STUDY BASED QUESTION

Life is a unique process that is made from the aggregation of molecules. These molecules undergo various chemical reactions to perform their specific functions which are called metabolism. This results in the production and utilization of energy. The metabolism will result in the growth, development, reproduction, adaptations, etc of the living organisms through the production of various biomolecules.

Living organisms contain certain important characteristics that include growth and development, body organization, homeostasis, reproduction, adaptation, and energy utilization.

The characteristic of living organisms is given below –

Growth – All living organisms can undergo the process of growth and development that results in an increase in the mass and number of cells. Multicellular organisms grow by cell division. The growth of plants and animals takes place with the help of cell division. In the case of plants, the cell division occurs throughout their life while in the case of animals the cell division occurs up to a certain age, and then the cells lose their capability to divide. It results in an increase in body mass and increases in the number of cells.

Metabolism– As the body and organs are the constituents of different chemicals, they perform various metabolic functions that result in the conversion of chemicals into other biomolecules. All plants, animals, and microbes exhibit metabolism. It is absent in the case of non-living organisms but may be introduced through the in-vitro method.

Sensitivity – The living organisms whether prokaryotes or eukaryotes respond according to their surroundings and the stimuli present around them, it may be physical, chemical, or biological. The living organisms are sensitive about their surroundings and are responsive in accordance with their stimuli. The stimuli can either be biological, physical, or chemical.

Reproduction – The ability to produce young ones is the process of reproduction which is observed only in the case of living organisms. In the case of fungi, reproduction occurs through asexual spores, while in the case of hydra budding occurs and in planaria regeneration occurs which are all the asexual methods of reproduction. Reproduction is the increase in the number of cells while in the case of mules, infertile human couples, etc reproduction is absent. So, reproduction is simply synonymous with growth which is not appropriate to distinguish the living organisms.

Cellular Organization: It is the defining characteristic of living organisms since all living organisms are made up of cells that help in performing various cellular functions resulting in the growth and development, reproduction, metabolism, etc in the body. Since non-living organisms are not made up of cells so they do not have cellular organization.

Movement: The living organisms show movement and locomotion and more specifically plants move according to the movement of the sun.

(1) Which among the following best describes the word “Growth” in living organisms?

- (a) Increase in mass either due to accumulation or due to changes that body undergoes internally
- (b) Increase in mass due to internally cell division and increase in number due to replication are twin characteristic of growth
- (c) All living organisms grow throughout their life
- (d) Growth is a sufficient characteristic to determine whether an organism is living or non-living

(2) Reproduction in hydra takes place through _____

- (a) Budding
- (b) Binary Fission
- (c) Asexual spores
- (d) Fragmentation

(3) Consciousness and cellular organization of the body are the defining features of living organisms.

- (a) True
- (b) False

(5) Write short notes on growth?

MATHEMATICS

- Let $A = \{x: x \in Z \text{ and } x^2 \leq 4\}$ and $B = \{x: x \in R, x^2 - 3x + 2 = 0\}$. Then
(a) $A = B$ (b) $A \neq B$ (c) $A \in B$ (d) $B \in A$
- In a class of 60 students, 25 students play cricket, 20 students play tennis and 10 students play both the game, the number of students who play neither games are
(a) 30 (b) 20 (c) 25 (d) 5
- If A and B are two disjoint sets, then
(a) $A \cap B = A$ (b) $A \cap B = \emptyset$ (c) $A \cap B = B$ (d) $A \cap B = U$
- Let $A = \{3,6,12,15,18,21\}$ and $B = \{4,8,12,16,20\}$, then $A - B$
(a) $\{3,6,15,18,21\}$ (b) $\{4,8,16,20\}$ (c) $\{12\}$ (d) $\{3,6,15,18,21,4,8,16\}$
- If $A = \emptyset$, then the number of elements in $P(A)$ is
(a) 0 (b) 1 (c) 2 (d) None of these
- Let A and B are two non empty sets having n elements in common, then the number of elements common to $A \times B$ and $B \times A$ is
(a) n (b) n^2 (c) n^3 (d) no common element
- The set $(A \cap B)' \cup (B \cap C)$ equals to
(a) $A' \cap B \cap C$ (b) $A' \cup C'$ (c) $A' \cup B$ (d) $A' \cap B$
- On real axis if $A=[1,5]$ and $B=[3,9]$, then $A-B$ is
(a) (5,9) (b) (1,3) (c) [5,9) (d) [1,3)
- Number of proper subsets of a set containing 5 elements is
(a) 5^2 (b) 5^2-1 (c) 2^5-1 (d) 2^5
- Two finite sets have m and n elements respectively. The total number of subsets of the first set is 192 more than the total number of subsets of the second set. The value of m and n are
(a) 7,6 (b) 8,6 (c) 8,5 (d) 9,7
- If A and B are two sets such that $n(A-B)=5$, $n(B-A)=3$ and $n(A \cap B)=10$, then $n(A \cup B)$ is
(a) 15 (b) 18 (c) 30 (d) 20
- In a group of people, 50 people read newspaper A, 20 people read newspaper B and 10 people both newspapers. Then the number of people read at least one of the two newspaper is
(a) 60 (b) 50 (c) 40 (d) 30
- For a finite set A, $(A')'$ is equal to
(a) $U - A$ (b) A'
(c) U (d) A

14. Two finite sets have n and m elements. The number of elements in the power set of first set is 48 more than the total number of elements in power set of the second test. Then the value of m and n are
- (a) 7, 6 (b) 6, 4
(c) 7, 4 (d) 6, 3
15. Empty set is a
- (a) Finite Set (b) Invalid Set
(c) Infinite Set (d) None of the above
16. Which of the following two sets are equal?
- (a) $A = \{1, 2\}$ and $B = \{1\}$ (b) $A = \{1, 2\}$ and $B = \{1, 2, 3\}$
(c) $A = \{1, 2, 3\}$ and $B = \{2, 1, 3\}$ (d) $A = \{1, 2, 4\}$ and $B = \{1, 2, 3\}$
17. In a class of 50 students, 10 did not opt for Mathematics, 15 did not opt for Biology and 2 did not opt for either. How many students of the class opted for both Mathematics and Biology?
- (a) 24 (b) 25
(c) 26 (d) 27
18. If A be a finite set of size n , then number of elements in the power set of $A \times A$
- (a) 2^{2n} (b) 2^{n^2}
(c) $(2n)^2$ (d) None of these
19. Which of the following sets are null sets?
- (a) $\{0\}$ (b) φ
(c) $\{\}$ (d) Both (b) & (c)
20. Let $n(A)$ denotes the number of elements in set A . If $n(A) = p$ and $n(B) = q$, then how many ordered pairs (a, b) are there with $a \in A$ and $b \in B$?
- (a) $p \times q$ (b) $p + q$
(c) $2 p q$ (d) p^2
21. In a class 40% of the students enrolled for Math and 70% enrolled for Economics. If 15% of the students enrolled for both Math and Economics, what % of the students of the class did not enroll for either of the two subjects?
- (a) 15% (b) 5%
(c) 10% (d) 20%
22. Let $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$, $A = \{1, 2, 5\}$, $B = \{6, 7\}$. Then $A \cap B'$ is
- (a) A (b) B
(c) B' (d) None

23. Let A and B be two sets then $(A \cup B)' \cup (A' \cap B)$ is equal to
- (a) A' (b) A
(c) B' (d) None of these
24. The cardinality of the power set of $\{0, 1, 2, \dots, 10\}$ is
- (a) 1024 (b) 1023
(c) 2048 (d) 2043
25. If $A = \{0, 1, 5, 4, 7\}$. Then the total number proper subsets of A are
- (a) 32 (b) 31
(c) 64 (d) None of these
26. If A and B be two sets such that $n(A) = 70$, $n(B) = 60$, and $n(A \cup B) = 110$. Then $n(A \cap B)$ is equal to
- (a) 100 (b) 80
(c) 240 (d) 20
27. Given $n(U) = 20$, $n(A) = 12$, $n(B) = 9$, $n(A \cap B) = 4$, where U is the universal set, A and B are subsets of U, then $n(A \cup B)^c$ is equal to
- (a) 17 (b) 9
(c) 3 (d) 11
28. Let $A = \{x : x \in \mathbb{R}, |x| < 1\}$; $B = \{x : x \in \mathbb{R}, |x - 1| \geq 1\}$ and $A \cup B = \mathbb{R} - D$, then the set D is (R is the set of real numbers)
- (a) $\{x : 1 < x \leq 2\}$ (b) $\{x : 1 \leq x \leq 2\}$
(c) $\{x : 1 \leq x < 2\}$ (d) None of these
29. If the sets A and B are defined as $A = \{(x, y) : y = e^x, x \in \mathbb{R}\}$; $B = \{(x, y) : y = x, x \in \mathbb{R}\}$, (R is the set of real numbers), then
- (a) $B \subseteq A$ (b) $A \subseteq B$
(c) $A \cup B = A$ (d) $A \cap B = \phi$
30. If A and B be any two sets, then $(A \cup B)'$ is equal to
- (a) $A' \cap B'$ (b) $A' \cup B'$
(c) $A \cup B$ (d) $A \cap B$
31. Which of the following statements is true?
- (a) $\{3\} \in \{1, 3, 5\}$ (b) $\{1\} \in \{1, 3, 5\}$
(c) $\{3, 5\} \in \{1, 3, 5\}$ (d) $3 \in \{1, 3, 5\}$

5. $(5B7D)_{16}$ to binary

6. $(5A9)_{16}$ to decimal

7. $(510)_{10}$ to hexadecimal

8. $(11001101110)_2$ to octal

9. $(5371)_8$ to binary

10. $(5737)_8$ to decimal

11. $(257)_{10}$ to octal

12. Convert $61_{(10)}$ to binary.

13. Convert $65_{(10)}$ to octal.

14. Convert $345_{(10)}$ to hexadecimal.

15. Convert $101101_{(2)}$ to decimal.

16. Convert $FACE_{(16)}$ to binary, octal, decimal

17. Convert $BEAD_{(16)}$ to binary, octal and decimal.

18. Convert $2567_{(10)}$ to binary, octal and hexadecimal.

19. Add $110011_{(2)}$ to $111000_{(2)}$.

20. Add 10102 and 11112

21. Add 100112 and 1100012

22. Add 101011 + 110101

23. Add the following binary numbers:

(i) 11110000 + 1000011001

(ii) 10101000 + 010001001

24. Add the following binary numbers:

(i) 100001111 + 111001101

(ii) 101011111 + 110011010



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