LOYOLA CONVENT SCHOOL

VIDYALAYA MARG, DUMARDAGA, BOOTY, RANCHI
SESSION-2020-21

Summer Vacation Holiday Homework of Class – XII (Science & Commerce)

MATHEMATICS

NCERT Book

1) Ex 1.1 – Question Number – 8, 9, 10, 11, 12
2) Ex 3.1 – Question Number – 6, 7, 8, 9
3) Ex 3.2 – Question Number – 15, 16, 17, 18
4) Ex 3.3 – Question Number – 8, 12
5) Ex 3.4 – Question Number – 16, 17
6) Ex 4.2 – Question Number – 11, 12, 13, 14
7) Ex 4.6 – Question Number – 11, 12, 15, 16
8) Ex 5.1 – Question Number – 18 to 30
9) Ex 5.2 – Question Number – 9, 10
10) Ex 5.3 – Question Number – 1, 7, 8, 9, 11, 12, 13, 14, 15
11) Ex 5.5 – Question Number – 1 to 17
12) Ex 5.6 – Question Number – 1 to 11
13) Ex 5.7 – Question Number – 12 to 17
14) Ex 5.8 – Question Number – 4, 5
15) Ex 6.1 – Question Number – 8, 9, 10, 11, 12, 13, 14
16) Ex 6.2 – Question Number – 4, 5, 6, 7, 9
17) Ex 6.3 – Question Number – 1 to 27

CHEMISTRY

1) Write the formula for

(a) w/w (b) v/v (c) w/v (d) mole fraction (e) Molality

(f) Molarity. Also solve 3-3 problems based on these formula.

2) Write (a) Henry's Law (b) Raoult's Law with mathematical interpretation and solve 3-3 problems based on it.

3) Discuss – (a) Relative Lowering in V.P (b) Elevation in B.P

(c) Depression in F.P (d) Osmosis and Osmotic Pressure.

4) Discuss – (a) Sandmeyer's Reaction (b) Reimer-Tiemann Reaction (c) Williamson synthesis

5) Discuss S_N1 and S_N2 Reaction Mechanism.

6) Write – (a) Kohlrausch law (b) Faraday's law of Electrolysis

7) Solve NCERT Book's Ex Q/A

Ch – 2 (Solution) – 2.4, 2.5, 2.6, 2.7, 2.8, 2.18, 2.19, 2.20, 2.21, 2.30, 2.31, 2.32 to 2.36

Ch – 3 (Electrochemistry) – 3.4 to 3.9, 3.11 to 3.16

Ch – 10 (Haloalkanes and Haloarenes) – 10.12, to 10.18 and 10.20 to 10.21

Ch – 11 (Alcohol, Phenol and Ethers) – 11.3 to 11.12, 11.14, 11.18 to 11.22, 11.29 to 11.31

PHYSICAL EDUCATION

1) Describe the objectives of Planning in details.
2) What is knockout tournament? Draw a fixture of 21 teams on knockout basis.
3) What is a league or round robin? Draw a fixture for 6 teams using round robin method.
4) Define balanced diet and mention the elements of diet.
5) Write briefly about minerals as an important nutritive component.
6) What do you understand by food myths? Discuss briefly about various food myths.
7) Discuss the impact of Asanas on health.
8) Explain the types of disorders.
9) Explain 'Flat Foot' & 'Knock Knees' and also suggest corrective measures for both postural deformities.
10) Define Motor development.
11) What are the advantages of maintaining correct posture?
12) What are the benefits of Physical activities for children with special needs?
13) Explain Vakrasana & Shalbhasana.
14) What do you understand by fracture? How can fractures be classified? Explain.
15) What is oxygen uptake?
16) What do you mean by Cardiac Output?
17) What are the effect of exercise on respiratory, cardiovascular and muscular system.

COMPUTER SCIENCE

1) What is Python? Why is Python interpreted?
2) What is the difference between interactive mode and script mode in Python?
3) Differentiate between Mutable and Immutable objects in python language with example.
4) Write a program of factorial using function and user defined input.
5) Write a python program to find product of two numbers using user input.
6) Write a program of file handling that read a text file and process every word in a file.
7) Write a program of file handling to replace string in the same file.
8) What is the difference between HUB and Switch?
9) What is Topology? Explain any two Topologies.
10) What is the difference between LAN, MAN and WAN?

Summer Break – Assignment Class 12 (English)

Assignment 1 – Complete all the question-answers of the chapters completed in the class.
Assignment 2 - Practice the questions given in daily assignments for writing skills.
Assignment 3 – Write the summaries of the poems taught along with the theme and poetic devices used in the poems.
Assignment 4 – Solve the given question paper honestly. It revises all the work done in the class.
Assignment 5 – Prepare a speech/debate on any one topic from the following. Practice it and record the same. Speaking time is 1 minute only. The podcast should be kept with you and sent as and when asked for. The last date for the same would be 31st May.

Topics

1. **Online studies Vs classroom Studies.**
2. **Virtual classroom….is this the future.**
3. **Responsible citizen….in view of the pandemic**
4. **In the present scenario….if I was the Prime-Minister of India**

- **Important.**
- **All the assignments should be submitted on 10th of June when the classes resume after the summer break.**
- **All the above 5 assignments carry 20 marks each.**

General Instructions:
This paper is divided into three 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.
Do not exceed the prescribed word limit while answering the questions.

SECTION-A (READING)

(Marks: 30)

1. Read the passage given below:

1. A fisherman, enfeebled with age, could no longer go out to sea so he began fishing in the river. Every morning he would go down to the river and sit there fishing the whole day long. In the evening he would sell whatever he had caught, buy food for himself and go home. It was a hard life for an old man. One hot afternoon while he was trying to keep awake and bemoaning his fate, a large bird with silvery feathers alighted on a rock near him. It was Kaha, the heavenly bird. “Have you no one to care for you, grandpa?” asked the bird. “Not a soul.” “You should not be doing such work at your age,” said the bird. “From now on I will bring you a big fish every evening. You can sell it and live in comfort.” True to her word, the bird began to drop a large fish at his doorstep every evening. All that the fisherman had to do was take it to the market and sell it. As big fish were in great demand, he was soon rolling in money. He bought a cottage near the sea, with a garden around it and engaged a servant to cook for him. His wife

had died some years earlier. He had decided to marry again and began to look for a suitable woman.
2. One day he heard the royal courtier make an announcement. Our king has news of a great bird called Kaha," said the courtier. "Whoever can give information about this bird and help catch it, will be rewarded with half the gold in the royal treasury and half the kingdom!" The fisherman was sorely tempted by the reward. Half the kingdom would make him a prince!
3. "Why does the king want the bird?" he asked. "He has lost his sight," explained the Courtier. "A wise man has advised him to bathe his eyes with the blood of Kaha. Do you know where she can be found?" "No…I mean …no, no…" Torn between greed and his sense of gratitude to the bird, the fisherman could not give a coherent reply. The courtier, sensing that he knew something about the bird, informed the king. The king had him brought to the palace.
4. "If you have information about the bird, tell me," urged the king. "I will reward you handsomely and if you help catch her, I will personally crown you king of half my domain." "I will get the bird for you," cried the fisherman, suddenly making up his mind. "But Kaha is strong. I will need help." The king sent a dozen soldiers with him. That evening when the bird came with the fish, the fisherman called out to her to wait. "You drop the fish and go and I never get a chance to thank you for all that you've done for me," he said. "Today I have laid out a feast for you inside. Please alight and come in." Kaha was reluctant to accept the invitation but the fisherman pleaded so earnestly that she finally gave in, and alighted. The moment she was on the ground, the fisherman grabbed one of her legs and shouted to the soldiers hiding in his house to come out. They rushed to his aid but their combined effort could not keep Kaha down.
5. She rose into the air with the fisherman still clinging onto her leg. By the time he realised he was being carried away, the fisherman was too high in the air to let go. He hung on grimly, and neither he nor Kaha were ever seen again.

1.1 On the basis of your understanding of the above passage, answer each of the questions given below by choosing the most appropriate option: (4)

(a) Why was the king desperately looking for Kaha the bird?
i. The king wanted a pet bird.
ii. A wise man advised the king to capture the bird for good luck.
iii. Kaha was the only heavenly bird with silvery feathers.
iv. The king was blind and required Kaha's blood for his eyes.

(b) Why did the bird volunteer to bring fish for the old man?
i. The old man was inexperienced at fishing.
ii. The bird took pity on the old man and wanted to help him.
iii. The bird had caught more fish than required.
iv. The bird wanted to make the old man rich.

(c) What led the courtier to sense that the fisherman might know something about Kaha?
i. The courtier had observed Kaha alight at the fisherman's house every evening.
ii. The courtier had seen the fisherman talk to Kaha.
iii. The fisherman fumbled when asked about Kaha.
iv. Word went around that the fisherman was in contact with Kaha.

(d) Which of the following is not true about Kaha?
i. Kaha was a very considerate bird.
ii. The blood of Kaha was precious.
iii. Kaha was a strong bird.
iv. Kaha saved the fisherman from the King's wrath.

1.2 Answer the following questions briefly: (6)

a. Why did the fisherman stammer when asked if he knew about the bird?

b. How did the fisherman get Kaha to come down?
c. What does the phrase ‘rolling in money’ in the passage refer to?
d. Why was the fisherman doubtful about revealing information about Kaha to the courtier?
e. Mention two traits of farmer's character revealed through the story.
f. How did the bird manage to escape?

1.3 Pick out the words/phrases from the passage which are opposite in meaning to the following: (2)

i. Take off (Para 1)
ii. Released (Para 4)

2. Read the passage given below:

1. Colour Therapy is a complementary therapy for which there is evidence dating back thousands of years to the ancient cultures of Egypt, China and India. If we define it in simple terms, Colour is a light of varying wavelengths, thus each colour has its own particular wavelength and energy.
2. Colours contribute energy. This energy may be motivational and encouraging. Each of the seven colours of the spectrum are associated with energy. The energy relating to each of the seven spectrum colours of red, orange, yellow, green, blue, indigo and violet, resonates with the energy of each of the seven main chakras/energy centres of the body. Colour therapy can help to re-balance and/or stimulate these energies by applying the appropriate colour to the body.
3. Red relates to the base chakra, orange the sacral chakra, yellow the solar plexus chakra, green the heart chakra, blue the throat chakra, indigo the brow chakra (sometimes referred to as the third eye) and violet relates to the crown chakra.
4. Colour is absorbed by the eyes, skin, skull our ‘magnetic energy field’ or aura and the energy of colour affects us on all levels, that is to say, physical, spiritual and emotional. Every cell in the body needs light energy - thus colour energy has widespread effects on the whole body. There are many different ways of giving colour, including; Solarised Water, Light boxes/lamps with colour filters, colour silks and hands on healing using colour.
5. Colour therapy can be shown to help on a physical level, which is perhaps easier to quantify, however there are deeper issues around the colours on the psychological and spiritual levels. Our wellbeing is not, of course, purely a physical issue. Fortunately, many more practitioners, both orthodox and complementary are now treating patients in a holistic manner.
6. Colour Therapy is a totally holistic and non-invasive therapy and, really, colour should be a part of our everyday life, not just something we experience for an hour or two with a therapist. Colour is all around us everywhere. This wonderful planet does not contain all the beautiful colours of the rainbow for no reason. Nothing on this earth is here just by chance; everything in nature is here for a purpose. Colour is no exception. All we need to do is to heighten our awareness of the energy of colour, absorb it and see how it can transform our lives.

(a) On the basis of your understanding of the above passage, make notes on it using headings and sub-headings. Use recognizable abbreviations (wherever necessary-minimum four) and a format you consider suitable. Also supply an appropriate title to it. (4)

(b) Write a summary of the passage in about 80 words. (4)

SECTION: B (WRITING SKILLS)

(Marks:30)

3. You are Arnit/Arnika .You want to sell your car as you are planning to buy a new one. Draft a suitable advertisement to be published in the Vehicles column of a newspaper. (4)

OR

Your school is organising a 10 day trek to the famous Valley of Butterflies in Dehradun. As secretary of the organising committee you have been asked to put up a notice informing students of classes 11-12 about the trek details in not more than 50 words.

4. You are Nitin/ Natasha, staying at 20, S.F.S. Flats, Worli, Mumbai. You bought a mobile phone from "Mobile Villa", Mahim, Mumbai. The phone developed a problem within a few days of the purchase. Write a letter to the Sales Manager of the showroom complaining about the defect and seeking immediate replacement. (6)

OR

You are Mallika/Mayank, student of class XII, Modern School, Shimla. You are eager to enter the National Film Academy, Shimla, after your board results. Write a letter to the Director of the film academy seeking information regarding admission procedure, eligibility criteria, fee structure, placement opportunities, etc.

5. On the threshold of being a world super power, India does have a large young workforce but unfortunately not many in this force are employable for want of necessary skills. Write in about 150-200 words, an article for a newspaper on the topic' Skill Development is the need of the hour'. You are Anita/Arnav. (10)

OR

With a view to create awareness regarding health St. Anne's school organised 'Health Mela' in the school premises. Various charts, models, fitness equipment were displayed. Lectures, debates, discussions, plays were organised. A workshop on low calorie cooking was also organised. Write a report in 150-200 words on the 'Health Mela' for the school magazine. You are Neha/Nikhil, Secretary of the Health Club of school.

(10 marks)

6. Write a speech in 150-200 words on the topic, 'Discipline shapes the future of a student'. It is to be delivered in the morning assembly. You are Karuna/Karan. (10 marks)

OR

'The internet cannot replace a classroom teacher.' Write a debate in 150-200 words either for or against the motion.

SECTION: C (LITERATURE: TEXT BOOKS and LONG READING TEXT)

(Marks: 40)

7. Read the extract given below and answer the questions that follow: (4)

The stunted, unlucky heir
Of twisted bones, reciting a father's gnarled disease,
One unnoted, sweet and young. His eyes live in a dream,
Of squirrel's game, in tree room, other than this.

1. Who is the 'unlucky heir?'
2. What has he inherited?
3. Who is sitting at the back of the dim class?
4. Name the poem and the poet.

8. Read the extract given below and answer the questions that follow: (4)

I looked again at her, wan pale
as a late winter's moon and felt that old
familiar ache, my childhood's fear,
but all I said was, see you soon, Amma
and all I did was smile and smile and smile…….

1. Who looked pale and wan?
2. What was the poet's familiar ache?
3. Explain "as a late winter's moon?"
4. Name the poem and the poet.

9. Answer the following questions in about 30 -40 words each: (10)

a. Why did Hauser and the other villagers come to attend the last lesson?
b. Why does the poetess look at 'young trees 'and 'merry children'?
d. What does Stephen Spender want for the children of the slums?
e. Describe the upbringing of the Tiger King.
f. What was the mission of the programme 'Students on Ice?' Who started it?

10. Answer any one of the following questions in about 120-150 words: (6)

Our native language is part of our culture and we are proud of it. How does the presence of village elders in the classroom and M. Hamel's last lesson show their love for French?

OR

Justify the title 'Lost Spring' in reference to Saheb-E-Alam and Mukesh.

11. Answer any one of the following questions in about 120-150 words: (6)

When did the Tiger King stand in danger of losing his kingdom? How was he able to avert the danger?

OR

Had Charley really found the Third Level? Give reasons for your beliefs.

LOYOLA CONVENT SCHOOL, RANCHI

SUMMER VACATION HOLIDAYS HOME ASSIGNMENTS

FOR CLASS: XII-A SUBJECT: PHYSICS

NCERT BOOK-2

1. Complete all taught topics subject notes and online class assignments of chapter-9 and chapter-10 with the help of provided study materials.
2. Prepare a list of formulae learned in chapter-9 and chapter-10.
3. NCERT BOOK-1,

Chapter -1, Exercise questions 1.1 to 1.14

4.Solve the following questions 9.1 to 9.26

MCQ I

9.1 A ray of light incident at an angle θ on a refracting face of a prism emerges from the other face normally. If the angle of the prism is 5° and the prism is made of a material of refractive index 1.5, the angle of incidence is

(a) 7.5°.
(b) 5°.
(c) 15°.
(d) 2.5°.

9.2 A short pulse of white light is incident from air to a glass slab at normal incidence. After travelling through the slab, the first colour to emerge is

(a) blue.
(b) green.
(c) violet.
(d) red.

9.3 An object approaches a convergent lens from the left of the lens with a uniform speed 5 m/s and stops at the focus. The image

(a) moves away from the lens with an uniform speed 5 m/s.
(b) moves away from the lens with an uniform accleration.
(c) moves away from the lens with a non-uniform acceleration.
(d) moves towards the lens with a non-uniform acceleration.

9.4 A passenger in an aeroplane shall

(a) never see a rainbow.
(b) may see a primary and a secondary rainbow as concentric circles.
(c) may see a primary and a secondary rainbow as concentric arcs.
(d) shall never see a secondary rainbow.

9.5 You are given four sources of light each one providing a light of a single colour – red, blue, green and yellow. Suppose the angle of refraction for a beam of yellow light corresponding to a particular angle of incidence at the interface of two media is 90°. Which of the following statements is correct if the source of yellow light is replaced with that of other lights without changing the angle of incidence?

(a) The beam of red light would undergo total internal reflection.
(b) The beam of red light would bend towards normal while it gets refracted through the second medium.
(c) The beam of blue light would undergo total internal reflection.
(d) The beam of green light would bend away from the normal as it gets refracted through the second medium.

9.6 The radius of curvature of the curved surface of a plano-convex lens is 20 cm. If the refractive index of the material of the lens be 1.5, it will

(a) act as a convex lens only for the objects that lie on its curved side.
(b) act as a concave lens for the objects that lie on its curved side.
(c) act as a convex lens irrespective of the side on which the object lies.
(d) act as a concave lens irrespective of side on which the object lies.

9.7 The phenomena involved in the reflection of radiowaves by ionosphere is similar to

(a) reflection of light by a plane mirror.
(b) total internal reflection of light in air during a mirage.
(c) dispersion of light by water molecules during the formation of a rainbow.
(d) scattering of light by the particles of air.

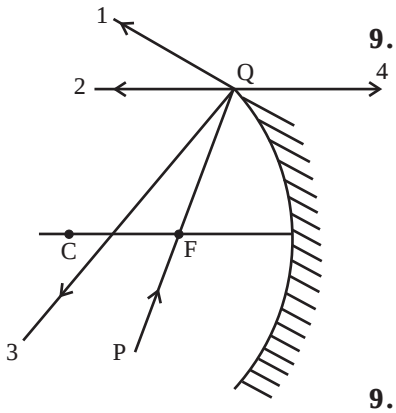

Fig. 9.1

9.8 The direction of ray of light incident on a concave mirror is shown by PQ while directions in which the ray would travel after reflection is shown by four rays marked 1, 2, 3 and 4 (Fig 9.1). Which of the four rays correctly shows the direction of reflected ray?

(a) 1
(b) 2
(c) 3
(d) 4

9.9 The optical density of turpentine is higher than that of water while its mass density is lower. Fig 9.2. shows a layer of turpentine floating over water in a container. For which one of the four rays incident on turpentine in Fig 9.2, the path shown is correct?

(a) 1
(b) 2
(c) 3
(d) 4

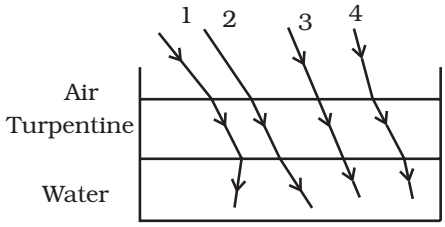

Fig. 9.2

9.10 A car is moving with at a constant speed of 60 km h^{-1} on a straight road. Looking at the rear view mirror, the driver finds that the car following him is at a distance of 100 m and is approaching with a speed of 5 km h^{-1}. In order to keep track of the car in the rear, the driver begins to glance alternatively at the rear and side mirror of his car after every 2 s till the other car overtakes. If the two cars were maintaining their speeds, which of the following statement (s) is/are correct?

(a) The speed of the car in the rear is 65 km h^{-1}.
(b) In the side mirror the car in the rear would appear to approach with a speed of 5 km h^{-1} to the driver of the leading car.
(c) In the rear view mirror the speed of the approaching car would appear to decrease as the distance between the cars decreases.
(d) In the side mirror, the speed of the approaching car would appear to increase as the distance between the cars decreases.

9.11 There are certain material developed in laboratories which have a negative refractive index (Fig. 9.3). A ray incident from air (medium 1) into such a medium (medium 2) shall follow a path given by

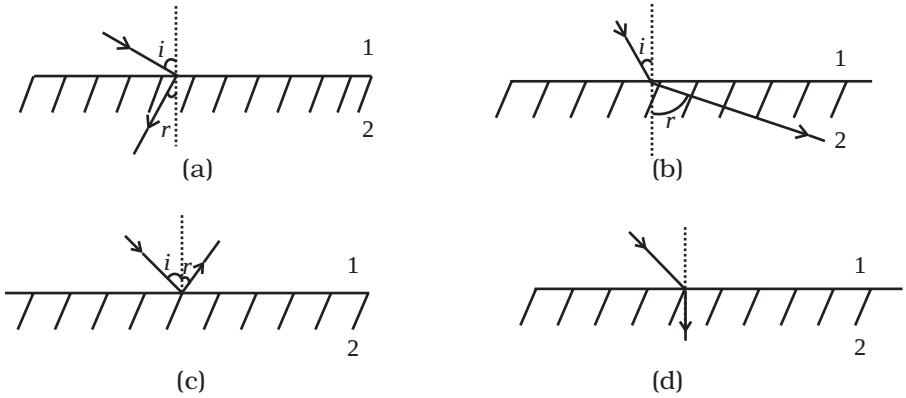

Fig. 9.3

MCQ II

9.12 Consider an extended object immersed in water contained in a plane trough. When seen from close to the edge of the trough the object looks distorted because

(a) the apparent depth of the points close to the edge are nearer the surface of the water compared to the points away from the edge.
(b) the angle subtended by the image of the object at the eye is smaller than the actual angle subtended by the object in air.
(c) some of the points of the object far away from the edge may not be visible because of total internal reflection.
(d) water in a trough acts as a lens and magnifies the object.

9.13 A rectangular block of glass ABCD has a refractive index 1.6. A pin is placed midway on the face AB (Fig. 9.4). When observed from the face AD, the pin shall

(a) appear to be near A.
(b) appear to be near D.
(c) appear to be at the centre of AD.
(d) not be seen at all.

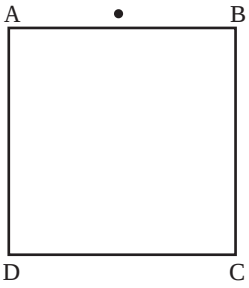

Fig. 9.4

9.14 Between the primary and secondary rainbows, there is a dark band known as Alexandar's dark band. This is because

(a) light scattered into this region interfere destructively.
(b) there is no light scattered into this region.

(c) light is absorbed in this region.

(d) angle made at the eye by the scattered rays with respect to the incident light of the sun lies between approximately 42° and 50°.

9.15 A magnifying glass is used, as the object to be viewed can be brought closer to the eye than the normal near point. This results in

(a) a larger angle to be subtended by the object at the eye and hence viewed in greater detail.

(b) the formation of a virtual erect image.

(c) increase in the field of view.

(d) infinite magnification at the near point.

9.16 An astronomical refractive telescope has an objective of focal length 20m and an eyepiece of focal length 2cm.

(a) The length of the telescope tube is 20.02m.

(b) The magnification is 1000.

(c) The image formed is inverted.

(d) An objective of a larger aperture will increase the brightness and reduce chromatic aberration of the image.

VSA

9.17 Will the focal length of a lens for red light be more, same or less than that for blue light?

9.18 The near vision of an average person is 25cm. To view an object with an angular magnification of 10, what should be the power of the microscope?

9.19 An unsymmetrical double convex thin lens forms the image of a point object on its axis. Will the position of the image change if the lens is reversed?

9.20 Three immiscible liquids of densities $d_1 > d_2 > d_3$ and refractive indices $\mu_1 > \mu_2 > \mu_3$ are put in a beaker. The height of each liquid column is $\frac{h}{3}$. A dot is made at the bottom of the beaker. For near normal vision, find the apparent depth of the dot.

9.21 For a glass prism ($\mu = \sqrt{3}$) the angle of minimum deviation is equal to the angle of the prism. Find the angle of the prism.

SA

9.22 A short object of length L is placed along the principal axis of a concave mirror away from focus. The object distance is u. If the mirror has a focal length f, what will be the length of the image? You may take $L << |v - f|$.

9.23 A circular disc of radius 'R' is placed co-axially and horizontally inside an opaque hemispherical bowl of radius 'a' (Fig. 9.5). The far edge of the disc is just visible when viewed from the edge of the bowl. The bowl is filled with transparent liquid of refractive index μ and the near edge of the disc becomes just visible. How far below the top of the bowl is the disc placed?

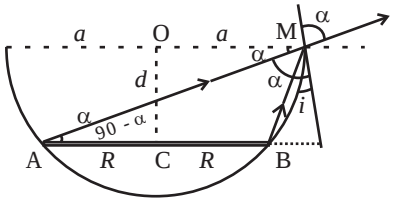

Fig. 9.5

9.24 A thin convex lens of focal length 25 cm is cut into two pieces 0.5 cm above the principal axis. The top part is placed at (0,0) and an object placed at (–50 cm, 0). Find the coordinates of the image.

9.25 In many experimental set-ups the source and screen are fixed at a distance say D and the lens is movable. Show that there are two positions for the lens for which an image is formed on the screen. Find the distance between these points and the ratio of the image sizes for these two points.

9.26 A jar of height h is filled with a transparent liquid of refractive index μ (Fig. 9.6). At the centre of the jar on the bottom surface is a dot. Find the minimum diameter of a disc, such that when placed on the top surface symmetrically about the centre, the dot is invisible.

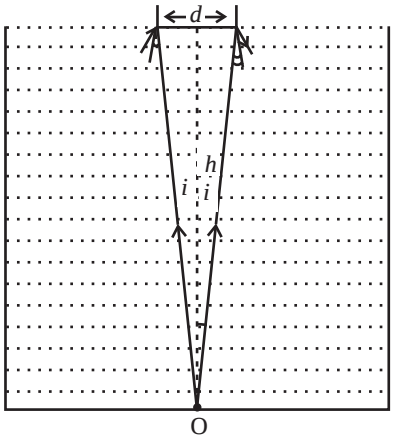

Fig. 9.6

LOYOLA CONVENT SCHOOL, RANCHI

SUMMER VACATION HOLIDAYS HOME ASSIGNMENTS

FOR CLASS: XII-B & XII- D SUBJECT: PHYSICS

NCERT BOOK-1

1. Complete all taught topics subject notes and online class assignments of chapter-1 and chapter-2 with the help of provided study materials.

2. Prepare a list of formulae learned in chapter-1 and chapter-2.

NCERT BOOK-2

3.Chapter -9, Exercise questions 9.1 to 9.6

4. Solve the following questions 1.1 to 1.25

MCQ I

1.1 In Fig.1.1, two positive charges q_2 and q_3 fixed along the y axis, exert a net electric force in the + x direction on a charge q_1 fixed along the x axis. If a positive charge Q is added at $(x, 0)$, the force on q_1

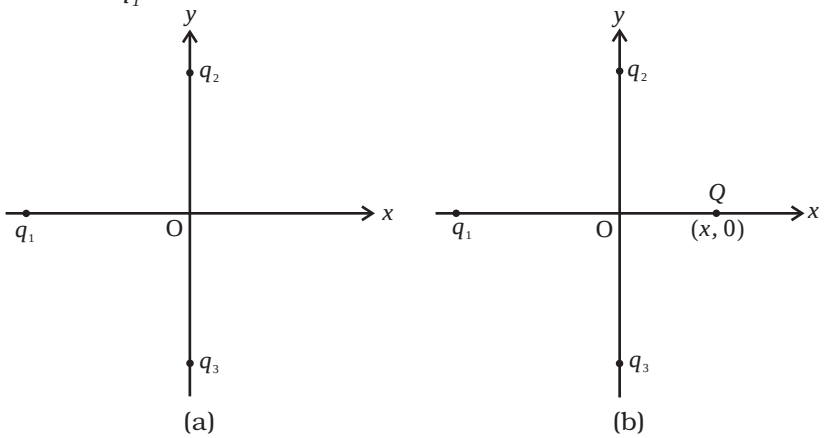

Fig. 1.1

(a) shall increase along the positive x-axis.
(b) shall decrease along the positive x-axis.
(c) shall point along the negative x-axis.
(d) shall increase but the direction changes because of the intersection of Q with q_2 and q_3.

1.2 A point positive charge is brought near an isolated conducting sphere (Fig. 1.2). The electric field is best given by

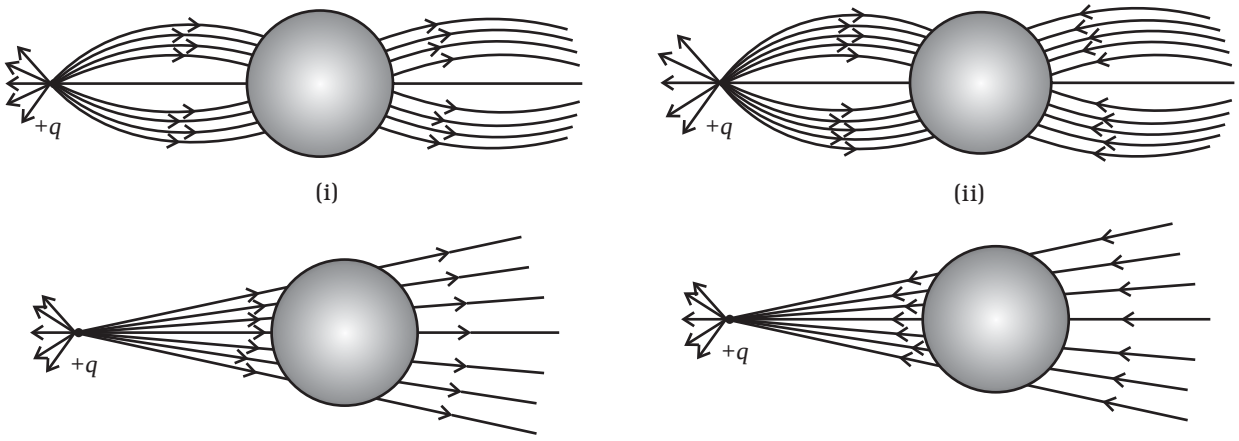

Fig. 1.2

(a) Fig (i) (c) Fig (iii)
(b) Fig (ii) (d) Fig (iv)

1.3 The Electric flux through the surface

(a) in Fig.1.3 (iv) is the largest.
(b) in Fig. 1.3 (iii) is the least.
(c) in Fig. 1.3 (ii) is same as Fig. 1.3 (iii) but is smaller than Fig. 1.3 (iv)
(d) is the same for all the figures.

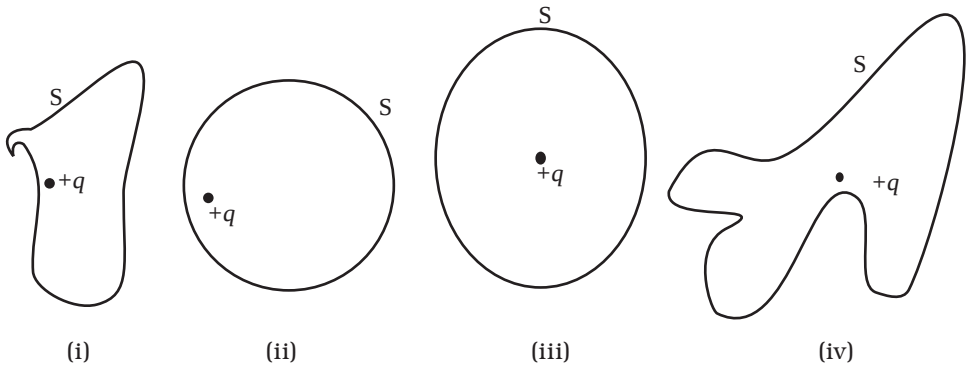

Fig. 1.3

1.4 Five charges q_1, q_2, q_3, q_4, and q_5 are fixed at their positions as shown in Fig. 1.4. S is a Gaussian surface. The Gauss's law is given by

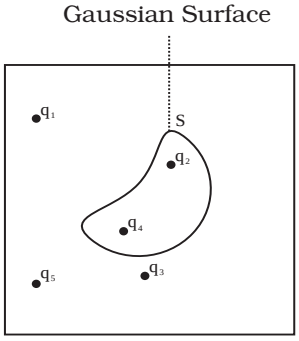

Fig. 1.4

$$\oint_S \mathbf{E}.d\mathbf{s} = \frac{q}{\varepsilon_0}$$

Which of the following statements is correct?

(a) **E** on the LHS of the above equation will have a contribution from q_1, q_5 and q_3 while q on the RHS will have a contribution from q_2 and q_4 only.

(b) **E** on the LHS of the above equation will have a contribution from all charges while q on the RHS will have a contribution from q_2 and q_4 only.

(c) **E** on the LHS of the above equation will have a contribution from all charges while q on the RHS will have a contribution from q_1, q_3 and q_5 only.

(d) Both **E** on the LHS and q on the RHS will have contributions from q_2 and q_4 only.

1.5 Figure 1.5 shows electric field lines in which an electric dipole **p** is placed as shown. Which of the following statements is correct?

(a) The dipole will not experience any force.

(b) The dipole will experience a force towards right.

(c) The dipole will experience a force towards left.

(d) The dipole will experience a force upwards.

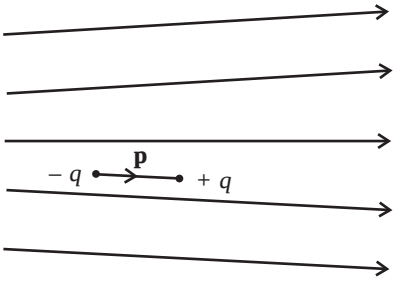

Fig. 1.5

1.6 A point charge $+q$, is placed at a distance d from an isolated conducting plane. The field at a point P on the other side of the plane is

(a) directed perpendicular to the plane and away from the plane.

(b) directed perpendicular to the plane but towards the plane.

(c) directed radially away from the point charge.

(d) directed radially towards the point charge.

1.7 A hemisphere is uniformely charged positively. The electric field at a point on a diameter away from the centre is directed

(a) perpendicular to the diameter

(b) parallel to the diameter

(c) at an angle tilted towards the diameter

(d) at an angle tilted away from the diameter.

MCQ II

1.8 If $\oint_S \mathbf{E}.d\mathbf{S} = 0$ over a surface, then

(a) the electric field inside the surface and on it is zero.
(b) the electric field inside the surface is necessarily uniform.
(c) the number of flux lines entering the surface must be equal to the number of flux lines leaving it.
(d) all charges must necessarily be outside the surface.

1.9 The Electric field at a point is

(a) always continuous.
(b) continuous if there is no charge at that point.
(c) discontinuous only if there is a negative charge at that point.
(d) discontinuous if there is a charge at that point..

1.10 If there were only one type of charge in the universe, then

(a) $\oint_S \mathbf{E}.d\mathbf{S} \neq 0$ on any surface.

(b) $\oint_S \mathbf{E}.d\mathbf{S} = 0$ if the charge is outside the surface.

(c) $\oint_S \mathbf{E}.d\mathbf{S}$ could not be defined.

(d) $\oint_S \mathbf{E}.d\mathbf{S} = \frac{q}{\varepsilon_0}$ if charges of magnitude q were inside the surface.

1.11 Consider a region inside which there are various types of charges but the total charge is zero. At points outside the region
(a) the electric field is necessarily zero.
(b) the electric field is due to the dipole moment of the charge distribution only.
(c) the dominant electric field is $\propto \frac{1}{r^3}$, for large r, where r is the distance from a origin in this region.
(d) the work done to move a charged particle along a closed path, away from the region, will be zero.

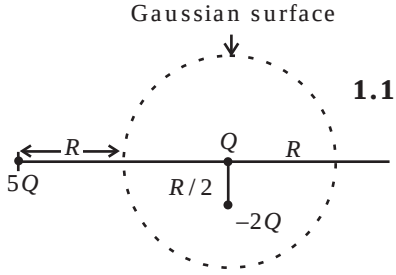

Fig. 1.6

1.12 Refer to the arrangement of charges in Fig. 1.6 and a Gaussian surface of radius R with Q at the centre. Then

(a) total flux through the surface of the sphere is $\frac{-Q}{\varepsilon_0}$.

(b) field on the surface of the sphere is $\frac{-Q}{4\pi\varepsilon_0 R^2}$.

(c) flux through the surface of sphere due to $5Q$ is zero.

(d) field on the surface of sphere due to $-2Q$ is same everywhere.

1.13 A positive charge Q is uniformly distributed along a circular ring of radius R. A small test charge q is placed at the centre of the ring (Fig. 1.7). Then

(a) If $q > 0$ and is displaced away from the centre in the plane of the ring, it will be pushed back towards the centre.

(b) If $q < 0$ and is displaced away from the centre in the plane of the ring, it will never return to the centre and will continue moving till it hits the ring.

(c) If $q < 0$, it will perform SHM for small displacement along the axis.

(d) q at the centre of the ring is in an unstable equilibrium within the plane of the ring for $q > 0$.

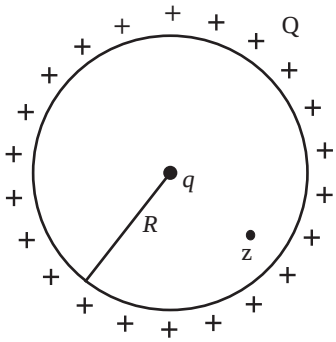

Fig. 1.7

VSA

1.14 An arbitrary surface encloses a dipole. What is the electric flux through this surface?

1.15 A metallic spherical shell has an inner radius R_1 and outer radius R_2. A charge Q is placed at the centre of the spherical cavity. What will be surface charge density on (i) the inner surface, and (ii) the outer surface?

1.16 The dimensions of an atom are of the order of an Angstrom. Thus there must be large electric fields between the protons and electrons. Why, then is the electrostatic field inside a conductor zero?

1.17 If the total charge enclosed by a surface is zero, does it imply that the elecric field everywhere on the surface is zero? Conversely, if the electric field everywhere on a surface is zero, does it imply that net charge inside is zero.

1.18 Sketch the electric field lines for a uniformly charged hollow cylinder shown in Fig 1.8.

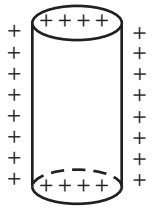
Fig. 1.8

1.19 What will be the total flux through the faces of the cube (Fig. 1.9) with side of length a if a charge q is placed at

(a) A: a corner of the cube.
(b) B: mid-point of an edge of the cube.
(c) C: centre of a face of the cube.
(d) D: mid-point of B and C.

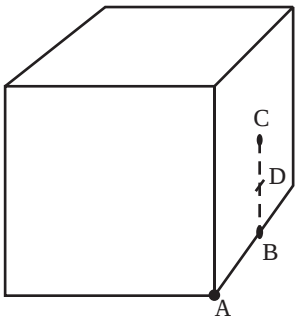

Fig. 1.9

S.A

1.20 A paisa coin is made up of Al-Mg alloy and weighs 0.75g. It has a square shape and its diagonal measures 17 mm. It is electrically neutral and contains equal amounts of positive and negative charges.

Treating the paisa coins made up of only Al, find the magnitude of equal number of positive and negative charges. What conclusion do you draw from this magnitude?

1.21 Consider a coin of Example 1.20. It is electrically neutral and contains equal amounts of positive and negative charge of magnitude 34.8 kC. Suppose that these equal charges were concentrated in two point charges seperated by (i) 1 cm $\left(\sim \frac{1}{2} \times \text{diagonal of the one paisa coin}\right)$, (ii) 100 m (~ length of a long building), and (iii) 10^6 m (radius of the earth). Find the force on each such point charge in each of the three cases. What do you conclude from these results?

1.22 Fig. 1.10 represents a crystal unit of cesium chloride, CsCl. The cesium atoms, represented by open circles are situated at the corners of a cube of side 0.40nm, whereas a Cl atom is situated at the centre of the cube. The Cs atoms are deficient in one electron while the Cl atom carries an excess electron.

(i) What is the net electric field on the Cl atom due to eight Cs atoms?

(ii) Suppose that the Cs atom at the corner A is missing. What is the net force now on the Cl atom due to seven remaining Cs atoms?

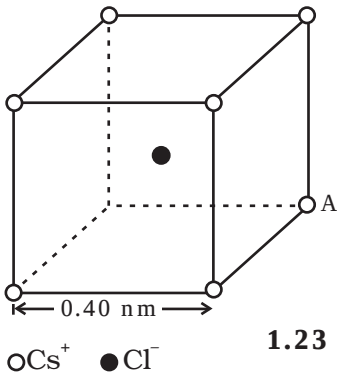

Fig. 1.10

1.23 Two charges q and $-3q$ are placed fixed on x-axis separated by distance 'd'. Where should a third charge $2q$ be placed such that it will not experience any force?

1.24 Fig. 1.11 shows the electric field lines around three point charges A, B and C.

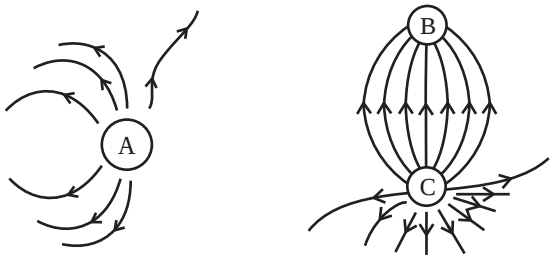

Fig. 1.11

(a) Which charges are positive?

(b) Which charge has the largest magnitude? Why?

(c) In which region or regions of the picture could the electric field be zero? Justify your answer.

(i) near A, (ii) near B, (iii) near C, (iv) nowhere.

1.25 Five charges, q each are placed at the corners of a regular pentagon of side 'a' (Fig. 1.12).

(a) (i) What will be the electric field at O, the centre of the pentagon?

(ii) What will be the electric field at O if the charge from one of the corners (say A) is removed?

(iii) What will be the electric field at O if the charge q at A is replaced by $-q$?

(b) How would your answer to (a) be affected if pentagon is replaced by n-sided regular polygon with charge q at each of its corners?

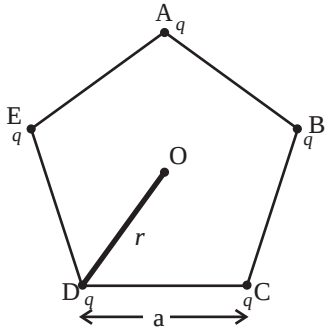

Fig. 1.12

BIOLOGY

1) Distinguish between asexual and sexual reproduction. Why is vegetative reproduction also considered as a type of sexual reproduction?

2) Why are offspring of oviparous animals at a greater risk as compared to offspring of viviparous animals?

3) With a neat, labelled diagram, describe the parts of a typical angiosperm ovule.

4) What is meant by monosporic development of female gametophyte?

5) With a neat diagram explain the 7-nucleate, 8-nucleate nature of the female gametophyte.

6) Differentiate between :

A) Hypocotyl and Epicotyl B) Coleoptile and Coleorrhiza

C) Entegument and Testa D) Perisperm and Pericarp

7) Fill in the Blanks:

A) Human reproduce _____ .

B) Human are _____ .

C) Fertilization is _____ in human.

D) Male and female gamets are _____.

E) Zygote is _____.

F) The process of release of ovum from a mature follicle is called ___.

G) Ovulation is induced by a hormone called _____.

H) The fusion of male and female gametes is called _____.

I) Fertilization takes place in _____.

J) Zygote divides to form _____ which is implanted in uterus.

K) The structure which provides vascular connection between fetus and uterus is called _____.

8) What is menstrual cycle? Which hormones regulate menstrual cycle?

9) Is Sex education necessary in schools? Why?

10) Suggest some methods to assist infertile couples to have children.

11) Mention the advantages of selecting pea plant for experiment by Mendel

12) Define and design a test cross.

13) Explain DNA replication.

14) Briefly explain transcription.

Holiday Homework of Economics for Class XIIC

1. *Explain all the forms of money with its Example.*
2. *Explain the types of Goods with its Example.*
3. *What is Double coincidence of wants and how money has overcome with this problem?*
4. *Explain the drawbacks of barter system and how introduction of money has overcome from this problem.*
5. *Explain with diagram the concept of equilibrium output and also explain the diagram.*
6. *What are the components of money supply? Explain.*
7. *What are the functions of Central banks?*
8. *What is the adjustment mechanism of following? Explain with diagram.*
   - I. *AD > AS*
   - II. *AS > AD*
   - III. *S < I*
   - IV. *S > I*
9. *How Bank rate and CRR helps in controlling money supply?*
10. *Explain the relationship between K and MPC.*

BUSINESS STUDIES

1) Taylor's Principle of scientific management and Taylor's principles of management are mutually complementary. Do you agree with this view? Four reasons in support of your answer.
2) What do you know about SEBI? Explain the functions.
3) What is a mutual fund? Explain its functions.
4) Define marketing. What are the features of marketing and functions of marketing?
5) What is Marketing Management?
6) If you will be choosing business as a profession. Which product will you prefer and why? Give reasons in context of –
   (a) Raw materials (b) Investment (c) Risk (d) Profit (e) Rate of Return (f) Transportation

ACCOUNTANCY

Arya Publication (D.K Goel)

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