KENDRIYA VIDYALAYA INS CHILKA

SUMMER VACATION HOMEWORK

CLASS-XII SUB-CHEMISTRY

ASSERTION REASONING QUESTIONS-

(A) Both Assertion and reason are true and reason is correct explanation of assertion.

(B) Both Assertion and reason both are true but reason is not the correct explanation of assertion.

(C) Assertion is true, reason is false.

(D) Assertion is false, reason is true.

Q 1- Assertion: Molarity of a solution in liquid state changes with temperature.

Reason:The volume of a solution changes with change in temperature.

Q 2- Assertion: Van't hoff factor for benzoicacid isless than1in benzene.

Reason: Benzoic acid associates in benzene.

Q 3- Assertion: When NaCl is added to water a depression in freezing point is observed.

Reason: The lowering of vapour pressure of a solution causes depression in the freezing point.

Q 4- Assertion: When methyl alcohol is added to water, boiling point of water decreases.

Reason: When a volatile solute is added to a volatile solvent, elevation in boiling point is observed

Q 5- Assertion: Elevation in boiling point is a colligative property.

Reason: Elevation in boiling point depends upon nature of solute particles.

Q 6- Assertion: Copper sulphate cannot be stored in zinc vessel.

Reason: Zinc is less reactive than copper.

Q 7- Assertion:In a galvanic cell chemical energy is converted into electrical energy.

Reason:Redox reactions provide the chemical energy to the cell.

Q 8- Assertion:.Conductivity of a solution decreases with increase in concentration.

Reason: Conductivity depends upon no of ions per unit volume of solution.

CASE BASED QUESTIONS—

Q 9. Most of the gases are soluble in water to some extent. Solubility of gases in liquids is greatly affected by pressure and temperature. The dissolution of gas in water is exothermic process. Hence the solubility of gas decreases with rise in temperature. The effect of pressure on the solubility of a gas is given by Henry's law.

(i) The dissolution of gas in water is :
(a) Endothermic process
(b) Exothermic process

© Both (a) and (b)

(d) None of these

(ii) The quantitative relation between pressure and solubility of a gas in a solvent is by

(a) Henry's Law (b) Raoult"s Law

© Bolle's law (d) None of these

(iii) The solubility of gas ------ with rise in temperature.

(a) Increases (b) decreases (c) Remains same (d) first increases and then decreases

(iv) value of Henry's constant K_H

(a) Increases with increase in temperature
(b) Decreases with increase in temperature

© Remains constant

(c) First increases, then decreases

(v) Thr value of Henry's constant $K_{H\ is}$

(a) Greater for gases with higher solubility

(b) Greater for gases with lower solubility

© Constant for all gases

(d) Not related to the solubility of gases

(vi) Which of the binary mixtures will have same composition in liquid and vapour phase

(a) Benzene-tolune
(b) Water-Nitric acid

© Water-Ethanol

(d) n-Hexane- n-Heptane

Q10. The vapour pressure of solution decreases when a non-volatile solute is added to a volatile solvent .There are many properties of solutions which are connected with this decrease of vapour pressure. All these properties depend on the number of solute particles irrespective of their nature relative to the total number of particles present in the solution. Such properties are called *colligative properties*

(i) Colligative properties depends on
(a) Nature of the solute particles dissolved in solution
(b) No. of solute particles in solution

© Nature of solvent particles

(d) Physical properties of the solute particles dissolved in solution

(ii) Which of the following solutions in water has hightest boiling point?

(a) 1 M NaCl (b) 1 M MgCl2 (c) ! M urea (d) ! M glucose

(iii) Which of the following 0.1 m aqueous solution will have the lowest freezing point?

(a) $Al_2(SO4)_3$ (b) 1 M NaCl (b) 1 M $MgCl_2$ (c) ! M urea (d) ! M glucose

(iv) The value of Van't Hoff factors for KCl, NaCl and K2SO4respectively are

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

(v) Which of the following is a not a colligative property

(a)Relative lowering of vapour pressure

(b) Elevation in boiling point

© Depression in freezing point

(d)osmosis

11. Explain why

(i) Aquatic animals are more comfortable in cold water than in warm water.

(ii) Calcium chloride is used to clear snow in cold countries.

(iii)A person suffering from high blood pressure is advised to take less quantity of salt.

12. Define the following Abnormal molar mass

(i) Van't Hoff factor (ii) osmotic pressure

(iii) Ebullioscopic constant (iv) Cryoscopic constant

13. The freezing point of a solution containing 5g of benzoic acid in 35g of Benzene is depressed by 2.94 K. what is the percentage of association of Benzoic acid if it forms a dimer in solution ? Given Molar mass of Benzoic acid = 122 g , K_f for Benzene = 4.9 K kg mol-1)

14. Calculate the freezing point of solution when 1.9 g of $MgCl_2$ was dissolved in 50 g of water, assuming MgCl2 undergoes complete ionization.

Given K_f for water = 1.86 K kg mol-1, Molar masas of $MgCl_2$ = 95 g)

15. Out of ! M glucose and 2M glucose, which one has a higher boiling point and why ?

16. What happens when the external pressure applied becomes more than the osmotic pressure?

17. Blood cells are isonic with 0.9% sodium chloride solution.

What happens if we place blood cells in a solution containing

(i)1.2% sodium chloride solution

(ii) 0.4% sodium chloride solution

18. (a) Solutions of two electrolytes A and B are diluted. The limiting molar conductivity of B increases 1.5 times while that of A increases 25 times. Which of the two is a strong electrolyte? Justify your answer.

(b) Why on dilution the ^m of CH_3COOH increases drastically, while that of CH_3COONa increases gradually.

19. Write the Nernst equation and find emf of the following cells at 298 K:

(i) $Mg(s) | Mg^{2+}$ (0·001 M) $|| Cu^{2+}$ (0·0001 M) $| Cu(s)$

Given $E^O_{Mg2+/Mg}$= -2.36 V, $E^O_{Cu2+/Cu}$= 0.34 V

20. Write the Nernst equation and find emf of the following cell at 298 K:

$Sn(s) | Sn^{2+}$ (0·04 M) $|| H^+$ (0·02 M) $| H2(g)) | Pt(s)$ (1 bar)

(Given $E^O_{Sn2+/Sn}$= -0.14 V)

21. State Kohlrausch's law of independent migration of ions. Why does the conductivity of a solution decreases with dilution?Explain with diagram.

22. How much electricity in terms of Faraday is required to produce?

(i) 20·0 g of Ca from molten $CaCl_2$ (ii) 40·0 g of Al from molten Al_2O_3

23. Resistance of a conductivity cell filled with 0·1 mol L^{-1} KCI solution is 100Ω. If the resistance of the same cell when filled with 0·02 mol L^{-1} KCI solution is 520Ω, Calculate the conductivity and molar conductivity of 0·02 mol L^{-1} KCI solution. The conductivity of 0·1 mol L^{-1} KCI solution is 1·29 S m^{-1}.

24. The electrical resistance of a column of 0·05 M NaOH solution of diameter 1 cm and length 50 cm is $5·55 \times 10^3$ ohm. Calculate its resistivity, conductivity and molar conductivity.

25. Calculate the potential of hydrogen electrode in contact with a solution whose pH is 10.

26. If a current of 0.5 ampere flows through a metallic wire for 2 hours, then how many electrons would flow through the wire?

27. Conductivity of 0.00241 M acetic acid is 7.896 × 10–5 S cm^{-1}· Calculate its

Molar conductivity. If Λ^0_m for acetic acid is 390.5 S cm^2 mol^{-1}, what is its dissociation constant?

Kendriya Vidyalaya INS Chilka
Summer Vacation Holidays HW
XII Computer Science
2023-2024

Very Short Answer Type Questions(1 mark)

1	Eliminate in-valid identifier			
	(a) Data-rec	(b) data_rec	(C)DATA_REC$	(D) data.rec
2	Keyword used to define function in python			
	(A) definition	(B) Function	(C) def	(D) DEF
3	Output of the python statement print(10^10)			
	(A) 1111	(B) 0000	(C) 0	(D) 1
4	Select identity operator			
	(A) is	(B) not is	(C) not in	(D) in
5	If a,b=10,11 then id of a and b will be			
	(A) Equal	(B) Not equal	(c) Can't calculate	(C) None
6	Which one is not correct type conversion			
	(A) int(7.0+0.1)	(B) str(1.2*3.4)	(C) float	(D) str(9/0)
7	If a = 2+4j and b=2+4j then a+b will be			
	(A) 4+8j	(B) 0+2j	(C) 22+44j	(D) 4+1j
8	The loop will be executed no of times for i in range (1,100,10): print(i)			
	(a) 100	(b) 50	(c) 10	(d) 0 times
9	Which is example of variable length argument function			
	(a) def test(a)	(b) def test(a,b)	(c) def test(a&)	(d) def test(*a)
10	return keyword is used to			
	(a) Pass the value in function	(b) release the memory space	(c) calling of function	(d) value return to the calling function
11	Eliminate immutable data type used in python			
	(a) list	(b) tuple	(c) dictionary	(d) set
12	What is the data type of a variable A=(10) and B=20, # 20 comma ,			
	(a) Int and int	(b) Tuple and int	© int and Tuple	(c) None

Short Answer Type Questions (2 marks):

Q1. Out of the following, find those identifiers, which cannot be used for naming Variables or functions in a Python program:

Total * Tax, While, Class, Switch, 3rd Row, finally, Column 31, Total.

Q2. Evaluate the following expressions:

1. 25-8**2/4 + 10
2. 25-8**2//4 + 10
3. 75%4+7-2**3+5
4. (8**2-3)%4+10
5. (8**2-3) % (4+10)
6. 18 % 4 ** 3 // 7 + 9
7. 2 > 5 or 5 == 5 and not 12 <= 9
8. 16%15//16
9. 51+4-3**3//19-3
10. 17<19 or 30>18 and not 19==0
11. 24//6%3, 24//4//2, 20%3%2
12. 24//(6%2), (24//4)*2, 20/3/2

Q3. Name the Python Library modules which need to be imported to invoke the follwing functions :

1. sqrt()
2. ceil()

Q4. Out of the following, find the identifiers, which cannot be used for naming Variable or Functions in a Python program:

_Cost, Price*Qty, float, switch, Address one, Delete, Number12, do

Q5. Out of the following find those identifiers, which can not be used for naming Variable or Functions in a Python Program:

Days * Rent, For, A_price, Grand Total, do, 2Clients, Participantl, My city

Q6. Which string method is used to implement the following:

1. To count the number of characters in the string.
2. To change the first character of the string in capital letter.
3. To check whether given character is letter or a number.
4. To change lowercase to uppercase letter.
5. Change one character into another character.

Q7. How many times will Python execute the code inside the following while loop? You should answer the question without using the interpreter! Justify your answers.

```
i = 0
while i < 0 and i > 2 :
  print("Hello ..." )
  i = i+1
```

Q8. State output of the following

```
Lst = [1, True, 12.5,"KVS","CBSE",2,5,False,55.10]
```

(i) Lst[: : -1] (ii) Lst.append(12) (iii) Lst.insert(3,6)

Q9. Evaluate the following express

(i) 12//5+5*2 (ii) print("KV2" * 3) (iii) print("CBSE\n"+"KVS")

Output Type Questions (3 marks):

Q1. Find and write the output of the following python code:

```
TXT = ["20","50","30","40"]
CNT = 3
TOTAL = 0
for C in [7,5,4,6]:
    T = TXT[CNT]
    TOTAL = float(T) + C
    print(TOTAL)
    CNT -= 1
```

Q2. Find the output of the following program:

```
Moves=[11, 22, 33, 44]
Queen=Moves
Moves[2]+=22
L=Len(Moves)
For i in range (L):
    print (“Now@”, Queen[L-i-1], “#”, Moves [i])
```

Q3. What are the possible outcome(s) executed from the following code? Also specify the maximum and minimum values that can be assigned to variable N.

```
import random
NAV = ["LEFT","FRONT","RIGHT","BACK"]
NUM = random.randint(1,3)
NAVG = ""
for C in range(NUM,1,-1):
    NAVG = NAVG + NAV[C]
    print(NAVG)
```

Q4. What output will be generated when the following Python code is executed

```
L=[]
L1=[]
L2=[]
for i in range(1,10):
    L.append(i)
for i in range(10,1,-2):
    L1.append(i)
for i in range(len(L1)):
    L2.append(L1[i]+L[i])
    L2.append(len(L)-len(L1))
print(L2)
```

Q5. Rewrite the following Python program after removing all the syntactical errors (if any), underlining each correction.:

```
def checkval():
  x = input(“Enter a number”)
  if x % 2 = 0:
    print x,”is even”
  else if x<0:
     print x,”should be positive”
  else;
     print x,”is odd
```

Q6. Find the output of the following Python program:

```
Mystr="sTUdeNT"
newstr = "  "
count = 0
for x in mystr:
    if count%2 != 0:
        newstr = newstr + str(count)
    else:
        if x.islower():
            newstr = newstr + x.upper()
        else:
            newstr = newstr + x
            count += 1
```

```
newstr = newstr + mystr[ : 1]
print("The new string is:", newstr)
```

Q7. Find and write the output of the following python code:

```
Msg="CompuTer"
Msg1=''
for i in range(0, len(Msg)):
  if Msg[i].isupper():
    Msg1=Msg1+Msg[i].lower()
  elif i%2==0:
    Msg1=Msg1+'*'
  else:
    Msg1=Msg1+Msg[i].upper()
print(Msg1)
```

Q8. . What possible outputs are expected to be displayed on the screen at the time of execution of the program from the following code? Also specify the minimum and maximum values that can be assigned to the variable c.

```
import random
temp=[10,20,30,40,50,60]
c=random.randint(0,4)
for I in range(0, c):
print(temp[i],"#")
```

(i) 10#20#
(ii) 10#20#30#40#50#
(iii) 10#20#30#
(iv) 50#60#

Q9. Find the output of the following:

```
L1 =[100,900,300,400,500]
START =1
SUM =0
for C in range(START,4):
  SUM = SUM + L1[C]
    print(C, ":", SUM)
    SUM = SUM + L1[0]*10
    print(SUM)
```

Q10. Write the output of the following Python program code:

```
A =[10,12,15,17,20,30]
for i in range(0,6):
   if (A[i]%2==0):
        A[i] /=2
    elif (A[i] % 3 == 0):
        A[i] /=3
    elif (A[i] % 5 == 0):
        A[i] /=5
for i in range(0,6):
    print(A[i],end="#")
```

Q11. What are the possible outcomes executed from the following code? Also, specify the maximum and minimum values that can be assigned to variable COUNT.

```
import random
TEXT ="CBSEONLINE"
COUNT =random.randint(0,3)
C=9
```

```
while TEXT[C] != 'L':
  print(TEXT[C]+TEXT[COUNT]+'*',end="")
  COUNT= COUNT + 1
  C =C-1
```

(i) EC* NB*IS* (ii) NS* IE*LO* (iii) ES*NE*IO* (iv)LE*NO*ON*

Q12. Study the following program and select the possible output(s) from . Also, write the maximum and the minimum values that can be assigned to variable Y.

```
importrandom
X=random.random()
Y= random.randint(0,4)
print(int(X),":",Y+int(X))
```

Writing Python Programs

Q1. Write a Programe in python that takes one list from the user and that returns a sum of all deleted even elements from that list

Q2. Write definition of a Method MSEARCH(STATES) to display all the state names from a list of STATES, which are starting with alphabet M. For example: If the list STATES contains ["MP","UP","WB","TN","MH","MZ","DL","BH","RJ","HR"]
The following should get displayed MP MH MZ

Q3. Write a program that accept a STRING from the user and and returns a list containing length of each word of a string. For example, if the string is "Come let us have some fun", the tuple will have [4, 3, 2, 4, 4, 3]

Q4. Write a programe which accepts a list from the user and generate two more lits, odd_L, even_L as its parameters. Transfer all even values of list L to even_L and all odd values of L to odd_L.
eg. If L = [10, 22, 24, 36, 37, 43, 51]
odd_L = [37, 43,51] and even_L = [10, 22, 24, 26]

Q5. Write a program that accept a dictionary ‘STUDENT’ as {admno : name } and print name of all students having admission number more than 4500 and less than 5000.

Q6. Write a program in Python and display the prime numbers between 2 to N. N is Pass as argument to the program.

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ग्रीष्मकालीन अवकाश गृहकार्य

कक्षा 12 वीं

परियोजना कार्य – प्रश्न संख्या 1 और 2 में से किसी विषय पर परियोजना बनाएँ |

1. महादेवी वर्मा का महिला सशक्तिकरण की दिशा में साहित्यिक योगदान |(जीवनी,साहित्यिक उपलब्धियां सहित)
2. हरिवंश राय बच्चन रचित मधुशाला की साहित्यिक समीक्षा करें| (जीवनी,साहित्यिक उपलब्धियां सहित)
3. बात को अगर सीधे ढंग से प्रस्तुत न करें तो क्या- क्या समस्याएं हो सकती हैं ?
4. भक्तिन पाठ के आधार पर बताएं कि महिलाओं को समाज में किन किन समस्यायों का सामना करना पड़ता है ?
5. प्राकृतिक सौन्दर्य पर एक स्वरचित कविता लिखें |
6. अपनी किसी मनपसंद फिल्म की समीक्षा अपने शब्दों में लिखें |

संतोष कुमार शर्मा

स्नातकोत्तर शिक्षक – हिन्दी

KENDRIYA VIDYALAYA INS CHILKA 2023-24

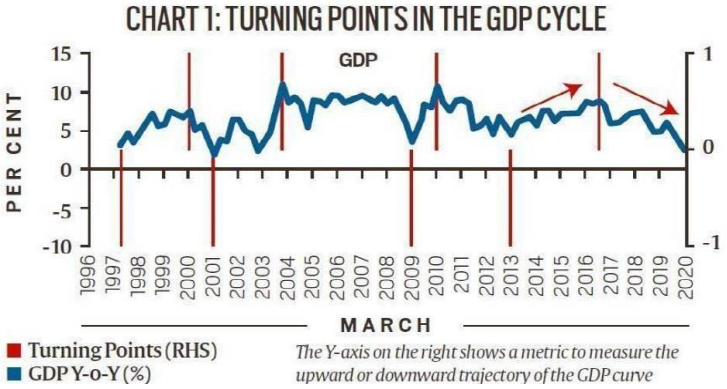
SUMMER VACTION HOLIDAY HOMEWORK

Class:XII

Subject:English

Subject Teacher:Sharika S Babu

India‘s GDP Fall in Covid-19 Pandemic The Indian government has released its latest estimates of economic growth for the last financial year that ended in March 2021. India_s Gross DomesticProduct (GDP) contracted by 7.3% in 2020-21. To understand this fall in perspective, remember that between the early 1990s until the pandemic hit the country, India grew at an average of around 7% every year. Gross Domestic Product Let us look at Chart 1, provided in the Reserve Bank of India or RBI’s Annual Report for FY21 that was released on May 27. The chart maps the turning points in India’s growth story.



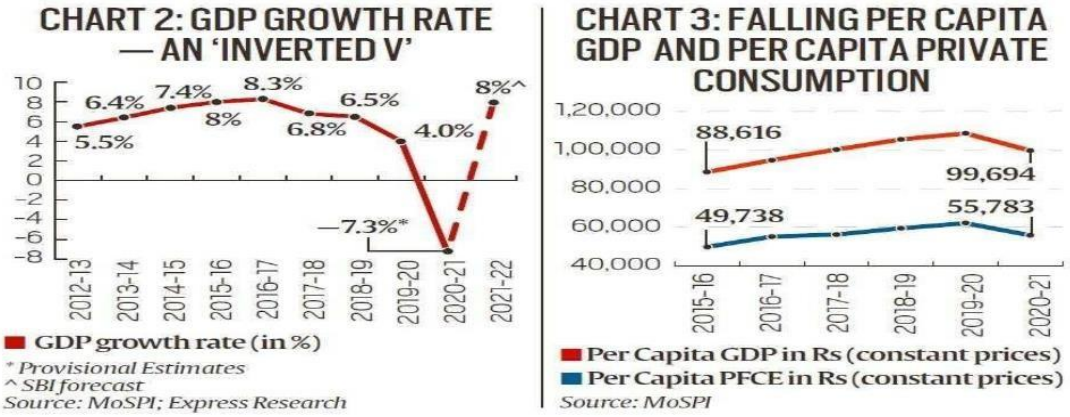
Two things stand out. After the decline in the wake of the Global Financial Crisis, the Indian economy started its recovery in March 2013 — more than a year before the present governmenttook charge. The government_s decision to demonetize 86% of India_s currency overnight on
November 8, 2016 is seen by many experts as the trigger that set India_s growth into a downwardspiral.

As the ripples of demonetization and hastily implemented Goods and Services Tax (GST) spreadthrough an economy that was already struggling with massive bad loans in the banking system, the GDP growth rate steadily fell from over 8% in FY17 to about 4% in FY20, just before
Covid-19 hit the country.

As an analysis of key variables suggests, the fundamentals of the Indian economy were alreadyquite weak even in January last year — well before the pandemic. For example, if one looks at the recent past (Chart 2), India_s GDP growth pattern resembled an ―inverted V‖ even before Covid-19 hit the economy.

Fiscal deficit

The fiscal deficit is essentially a marker of the health of government finances and tracks theamount of money that a government has to borrow from the market to meet its expenses



Rupee vs. dollar

The exchange rate of the domestic currency with the US dollar is a robust metric to capture therelative strength of the economy. A US dollar was worth Rs 59 in 2014. Seven years later, it is closer to Rs 73. The relative weakness of the rupee reflects the reduced purchasing power of the Indian currency.

What's the outlook on growth? The biggest engine for growth in India is the expenditure bycommon people in their private capacity. This ―demands for goods accounts for 55% of allGDP. In Chart 3, the blue curve shows the per capita level of this private consumption expenditure, which has fallen to levels last seen in 2016-17.

Source: - The Indian Express, 12th September 2021

1. Select the correct inference with reference to the following:

The fiscal deficit is essentially a marker of the health of government finances....

i. India_s fiscal deficit levels were just a tad more than the norms set.

ii. It tracks the amount of money that a government has to borrow from the market to meet itsexpenses.

iii. It provides the realistic data on planning.

iv. It proves that economy is very strong.

2. Select the option that displays the true statement with reference to chart-1

i. Demonetization triggered India_s growth into a downward spiral.

ii. GST caused a downfall in the growth rate of GDP.

iii. Both a & b

iv. India was growing fast when the pandemic hit its economy.

3. What was the average growth rate of our GDP during the last 30 years?

4. What is the biggest engine for growth in India?

5. Choose the correct statement: -

i. Indian economy was very strong just before the pandemic.

ii. the fundamentals of the Indian economy were already quite weak before covid-19

iii. the pandemic had no effect on the economy.

iv. Both a & c.

6. What does the blue curve show in chart-3?

7. The exchange rate of the domestic currency with the US dollar shows....

8. What is the central idea of this article?

9 The word ‗ripples' in the passage means.

10.What is the outlook on growth.

II.Write an article on any two of the following.

1.Women Empowerment

2.The adverse affects of environment pollution

3.The prospects of Tourism Industry in India

4.Every teanager has a dream to achieve in life.Write an article on"What I want to be in life".

You are Sam/Sameena.Word limit-150-200

III.If you get to time travel,which time period and place you want to go to?Write a short story/write-up.(Refer "The Third Level")

IV.Attempt a self composed poem on childhood/growing up/separation from parents.

EXTRACT BASED QUESTIONS.

1.It was warm,sobrightThe birds were chirping at the edge of the woods;and in the open field back of the sawmill the Prussian soldiers were drilling.It was all much more tempting than the rule for participles,but I had the strength to resist,and hurried off to school

i.Thespeakeroftheselines is _____andheisthinkingofnotgoingtotheclass.

ii..Prussiansoldierswerein_____as there wasawargoingon.

a.play b.rehearsal c.drill d.recital

iii..The speaker is in a dilemma about goingtoschoolashehasnotlearntthe___

iv.Find word similar to ‘withstand’ from the given lines.

2.But I got mixed up on the first words and stood there,holding on to my desk,my heart beating and not daring to look up.

i.What was asked in the class ?

a)Rule of grammar

b)Addition rules

c)multiplication table of 10

d)Essay on language

ii.Why was his heart beating?

iii.Why was Franz not daring to look up?

a)He couldn’t face the wrath of his teacher

b)out of shame and guilt

c)out of his aversion towards French

d)Options b and c

3.I talked to a psychiatrist friend of mine. I told him about the Third Level at Grand Central. He said, it was a waking dream wish fulfilment.

a. Who is _I‘ in the given extract?

b. Why did he meet a psychiatrist friend?

c. What was the response of the psychiatrist friend?

d. How many levels were there at Grand Central Station according to the narrator?

4. Have you ever been there? It‘s a wonderful town still, with big old frame houses, huge lawns and tremendous trees whose branches meet overhead and roof the streets.

a. Which place is the narrator talking about?

b. How were the houses in that place?

c. Explain _roof the streets‘.

d. Why was the place mentioned called a _wonderful town still‘ by the narrator?

5. —after the airport‘s security check, standing a few yards away, I looked again at……. ……..smile. A.What is the mother‘s face compared to?

B. What is the poet‘s childhood fear?

C. What is the _familiar ache‘ the poet refers to?

D. Why does the poet smile?

Short answer type questions: (30-40 words)

1. What did the poet do to recover from the death thoughts about her mother?

2. How is death contrasted with life in the poem?

3.Those who were in class, suddenly realised the importance of French language. Why did this happen?

4.How was the learning of the boys like Franz neglected in Alsace?

5.How do Charley's wife Louisa and his friend Sam react to the narrator ' observation?
6.What do you learn about Galesburg, Illinois during 1894?

SUMMER ASSIGNMENTS FOR XIISC

MATHEMATICS

Q1. Let A = { x ∈ Z : $0 \leq x \leq 12$ }.Show that R = { (a,b) : $|a - b|$ is divisible by 4 , a ,b ∈ A }

is an equivalence relation . Find the set of all elements related to 1 .Also write the equivalence class [2].

Q2.If N denotes the set of natural numbers and R be the relation on N xN defined by (a, b) R (c,d) ,if

ad(b +c) = bc (a + d). Show that R is an equivalence relation .

Q3.Show that the relation S on the set N x N given by (a ,b) S (c ,d) → a +d = b + c is an equivalence

Relation.

Q4.Find the Principal value of :

a)$sin^{-1}(\frac{1}{\sqrt{2}})$

b) $cot^{-1}(\frac{-1}{\sqrt{3}})$

c) $sin^{-1}[\cos(sin^{-1}(\frac{\sqrt{3}}{2}))]$

d) $tan^{-1}(\tan\frac{7\pi}{6})$ (e) $sin^{-1}(\cos\frac{3\pi}{5})$

Multiple choice questions :

Q5. If tan^{-1}(x) = y ,then

a)-1 < y < 1 (b) $-\frac{\pi}{2} \leq y \leq \frac{\pi}{2}$ (c) $-\frac{\pi}{2} < y < \frac{\pi}{2}$ (d) y ∈ $\left\{-\frac{\pi}{2}, \frac{\pi}{2}\right\}$

Q6.The domain in which sine function will be one-one ,is

a)$[-\frac{\pi}{2}, \frac{\pi}{2}]$ (b) $[\frac{\pi}{2}, \frac{3\pi}{2}]$ (c) [0 , π] (d) Both (a) and (b) .

Q7.The Principal Value branch of sin^{-1} is

a)$[-\frac{\pi}{2}, \frac{\pi}{2}]$ (b) $[\frac{-3\pi}{2}, \frac{-\pi}{2}]$ (c) $[\frac{\pi}{2}, \frac{3\pi}{2}]$ (d) none of these

Q8.The graph of sin^{-1} (x) is the mirror image of the graph of sinx along the line

a)y = x (b) y = - x (c) y = x-1 (d) none of these

Q9.If the domain and range of cosine function are [0 , π] and [-1 ,1] respectively, then it is

a)one-one (b) onto (c) both one-one and onto (d) none of these

Q10.The inverse of cosine function is defined in the intervals [

a)[$-\pi$,0] (b) [$-\frac{\pi}{2}$, 0] (c) [0 , $\frac{\pi}{2}$] (d) [$\frac{\pi}{2}$, π]

Q11. cos^{-1} denotes the inverse of

a)sine function (b) cosine function (c) cotangent function (d) cosecant function.

Q12.cosecx is not defined for

a)all integral multiples of $\frac{\pi}{2}$ (b) all integral multiples of π (c) all integral multiples of $\frac{3\pi}{4}$

d)none of the above .

Q13.sec function is not defined for

a)even multiple of $\frac{\pi}{2}$ (b) odd multiple of $\frac{\pi}{2}$ (c) even multiple of π (d) odd multiple of π .

Q14.If sin^{-1} x = y ,then

a)0 <y < π (b) $\frac{-\pi}{2}$ < y < $\frac{\pi}{2}$ (c) 0 $\leq$ y $\leq \pi$ (d) $\frac{-\pi}{2}$ $\leq$y $\leq \frac{\pi}{2}$.

Q15.In the following question, a statement of Assertion (A) is followed by a statement of Reason(R) .Choose the correct answer out of the following choices.

a)Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c)A is true but R is false .

d) A is false but R is true .

Assertion(A) We can write sin^{-1}x = ($sinx)^{-1}$

Reason(R) Any value in the range of Principal value branch is called principal value of that inverse trigonometric function.

Q16. Assertion(A) : Let a relation R defined from the set A = { 1 ,2,5,6 } to A is R = { (1,1) , (1,6),(6,1) }, then R is symmetric relation.

Reason(R) : A relation R in set A is called symmetric ,if (a,b) $\in$ R $\Rightarrow$ (b,a) $\in$ R for every a ,b $\in$ A.

Q17. Assertion(A) : The inverse of sine function is defined in the interval [- π ,0], [0, π] etc .

Reason(R) : The inverse of sine function is denoted by sin^{-1} .

CASE STUDY QUESTIONS :

Q18.In a classroom, a teacher teaches a topic Relation on a set , which is defined below .

A relation R on a set A is said to be an equivalence relation on A iff it is

I.Reflexive i.e aRa or (a, a) ∈ R , for all a ∈A .

II.Symmetric i.e aRb ⇒ bRa or (a,b) ∈ R *c* (b,a) ∈ R ,where a,b ∈ A .

III.Tranisitive i.e if aRb and bRc , then aRc or (a,b) ∈ R and (b,c) ∈ R ⇒ (a,c) ∈ R ,where a,b,c ∈ A .

Based on the above information , answer the following questions.

i)If the relation R = { (1,1), (1,2) ,(1,3),(2,2),(2,3),(3,1),(3,2),(3,3)} defined on the set A = { 1,2,3 } ,then show that R is reflexive but neither symmetric nor transitive.

ii)If the relation R = { (1,2),(2,1),(1,3),(3,1) } defined on the set A = {1, 2,3}, then show that R is symmetric but neither reflexive nor transitive .

iii)If the relation R on the set N of all natural numbers defined as R = { (x, y): y = x+5 and x < 4 } ,then show that R is neither reflexive nor symmetric nor transitive.

Or

The relation R in the set Z of integers given by R = { (a , b): 2 divides (a- b)}, show that R is an equivalence relation.

Q19.Show that the function f : R → R given by f(x) = $\frac{x}{x^2+1}$, for all x ∈ R is neither one-one nor onto.

Q20.Draw neatly the graphs of inverse trigonometric functions tan , cot ,sec and cosec.

Q21.Make a working model :To measure the radius of a sphere.

KENDRIYA VIDYALAYA INS CHILKA

SUMMER VACATION HOMEWORK

CLASS-XII SUB-PHYSICS

CHAPTER 1-

CASE BASED QUESTIONS—

Q 1- GAUSSIAN SURFACE This is the surface around a charge (point or continuous distribution) is an imaginary closed surface, such that the intensity of electric field at all points on its surface is same. Gaussian surface is an imaginary geometric surface and it may be in empty space or embedded in a solid body.

I. Charge q is first kept in a sphere of radius 7 cm and then it is kept in a cube of side 7 cm. outgoing flux

A. will be more in case of sphere B. will be more in case of cube

C. will be same in both cases D. cannot be determined

II. The electric flux through a cubical Gaussian surface enclosing net charge q is $q/\varepsilon 0$, while the electric flux through one face of the cube is

A. $q/\varepsilon 0$ B. $q/4\varepsilon 0$

C. $q/6\varepsilon 0$ D. $q/8\varepsilon 0$

III. The electric flux of a flat square having an area of 10 m2 placed in a uniform electric field of 8000 N/C passing

perpendicular to it is

A. 8 x 105 Nm2 /C B. 8 x 104 Nm2 /C

C. 16 x 105 Nm2 /C D. 4 x 104 Nm2 /C

IV. Gauss's law is valid for

A. any open surface B. any closed surface

C. only regular closed surface D. only irregular open surface

Q 2- A permanent dipole of dipole moment p is placed in a uniform external field E.There is a force qE on q and a force –qE on –q. The net force on the dipole is zero, since E is uniform. However, the charges are separated, so the forces act at different points, resulting in a torque on the dipole. When the net force is zero, the torque (couple) is independent of the origin.

A. The expression for torque experienced by the dipole can be expressed as:

(i) $\tau = p.E$ (ii) $\tau = p \times E$

(iii) $\tau = p + E$ (iv) $\tau = 2\, p\, .\, E$

B. If the dipole moment of electric dipole is making some acute angel θ electric field then:

(i) Both the force and torque will be zero. (ii) Force will be zero but Torque will be non-zero

(iii) Force will be non-zero but torque will be zero. (iv) Both the force and torque will be non-zero.

C. Torque on the dipole will be maximum when:

(i) it is in stable equilibrium (ii) it is in unstable equilibrium

° (iii) it makes angle 90° with field (iv) it makes angle 45° with field

D. An electric dipole consists of two opposite charges, each of magnitude 2.0 μC separated by a distance of 5.0 cm. The dipole is placed in an external field of 105 NC-1 . The maximum torque on the dipole is

(a) 0.01 Nm (b) 0.02 Nm

(c) 0.1 Nm (d)0.2 Nm

MUTIPLE CHOICE QUESTIONS-

Q 1- The electric flux through a closed gaussian surface depends upon

(A)Permittivity of the medium

(B) Net charge enclosed only

(C) Net charge enclosed and permittivity of the medium

(D)Net charge enclosed, shape and size of the Gaussian surface and permittivity of the medium

Q 2- Two-point charges 2μC and 4μC are placed 2 cm apart. The ratio of the Coulomb's force experienced by them is

(A)1:2 (B)2:1 (C)1:1 (D) 4:1

Q 3- the magnitude of a charge q at the center of two equal and like charges Q so that the three charges are in equilibrium

A. Q B. Q/2 C. Q/4 D. –Q/4

Q 4- Which of the following statement is correct?

(A) A body can have a charge of 0.8×10^{-8} C

(B) $Q_1 + Q_2$ Signifies that the two charges are equal and opposite.

(C) When a body acquires positive charge, its mass increases.

(D) Charges cannot reside on the surface of a conductor.

Q 5- Electric field intensity is 400 V/m when the distance is 2m from a point charge. At what distance it becomes 100 V/m?

(a) 8 m (b) 16 m (c) 4 m (d) 0.5 m

Q 6-The electric field intensity due to an infinite cylinder of radius R and having charge q per unit length at a distance r(>R) from its axis is

(a) directly proportional to r^2 (b) directly proportional to r^3

(c) inversely proportional to r (d) inversely proportional to r^2

Q7- An electric dipole is placed in an external non-uniform electric field.

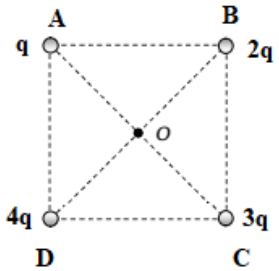
(A) It must experience force bot not torque.

(B) It must experience force and may experience torque.

(C) It will experience neither force nor torque.

(D) It may experience force and must experience torque.

Q 8- *q*, 2*q*, 3*q* and 4*q* charges are placed at the four corners *A, B, C* and *D* of a square. The field at the centre *O* of the square has the direction along.



(A) AB

(B) CB

(C) AC

(D) BD

Q 9- If the dipole of moment 2.57×10^{-17} Cm is placed into an electric field of magnitude 3.0×10^{4} N/C such that the fields lines are aligned at 30° with the line joining P to the dipole, what torque acts on the dipole?

A. 7.7×10^{-13} Nm B. 3.855×10^{-13} Nm

C. 3.855×10^{-15} Nm D. 7.7×10^{-15} Nm

Q 10- An infinite line charge produces a field of 18×10^{4} N/C at 0.02 m. The linear charge density is

A. 2×10^{-7} C/m B. 10^{-8} C/m

C. 10^{7} C/m D. 10^{-4} C/m

ASSERTION REASON QUESTIONS-

WRITE CORRECT OPTION FOR Q1 TO Q5

OPTIONS:

(A) Both Assertion and reason are true and reason is correct explanation of assertion.

(B) Both Assertion and reason both are true but reason is not the correct explanation of assertion.

(C) Assertion is true, reason is false.

(D) Assertion is false, reason is true.

Q 1- Assertion: Mass of a body decreases slightly when it is negatively charged.

Reason: Charging is due to actual transfer of electrons.

Q 2- Assertion :The electrostatics force increases with decrease the distance between the charges.

Reason : The electrostatic force of attraction or repulsion between any two stationary point charges is inversely proportional to the square of the distance between them.

Q 3- Assertion-When the electric flux through a closed surface is zero then the net charge inside the surface must be zero.

Reason -When the net charge inside a closed surface is zero then electric field at every point of the Gaussian surface must be zero

Q 4- Assertion: Range of coulomb force is infinite.

Reason: coulomb force acts between two charged particles

Q 5- Assertion: In a non-uniform electric field, a dipole will have translatory as well as rotatory motion.

Reason: In a non-uniform electric field, a dipole experiences a force as well as torque.

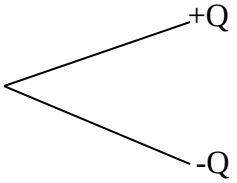
SA QUESTIONS-

Q1- Two identical conducting balls A and B have charges –Q and +3Q respectively. They are brought in contact with each other and then separated by a distance d apart. Find the nature coulomb force between them.

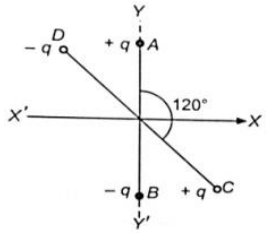
Q 2- - Four point charges qA = 2 μC, qB = – 5 μC, qC = 2 μC, and qD = –5 μC are located at the corners of a square ABCD of side 10 cm. What is the force on a charge of 1 μC placed at the centre of the square?

Q 3- Two point charges +q and -2q are placed at the vertices ‘B’ and ‘C’ of an equilateral triangle ABC of side ‘a’. obtain the expression for resultant electric field at the vertex A due to these two charges.

Q 4- Draw electric field lines for (i) q >0 (ii) q < 0 (iii) q1q2 > 0 (iv) q1q2 < 0 (V) 2Q



Q 5- Two small identical electric dipoles AB and CD ,each of dipole moment p are kept at an angle of 1200 as shown in fig .What is the resultant dipole moment of this combination?if the system is subjected to electric field E directed along +X direction? What will be the magnitude and direction of the torque acting on this?



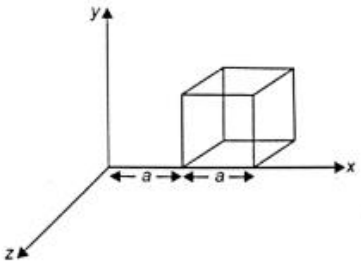
Q 6- Derive an expression for the electric field at any point on the equatorial line of an electric dipole.

Q 7 -(a) derive expression for electric field due to a dipole of length 2a at a point distant 'r' from the centre of the dipole on the axial line.
(b) Draw a graph of E versus r for r >> a.

Q 8- Derive expression for torque experienced by an electric dipole in a uniform electric field.
(b) What will happen if the field is not uniform?

Q 9- Show diagrammatically the orientation of the dipole in the uniform electric field for which torque is
(i) maximum (ii) zero (iii) half the maximum value.

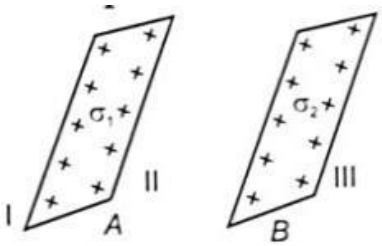
Q 10- A cube with each side a is kept in an electric field given by **E**=C*x* ***i,***(as shown in fig),where C is a positive dimensional constant.Find out
(i) the electric flux trough the cube,
(ii) the net charge inside the cube.



LA QUESTIONS

Q 1- (a) State Guass's theorem. (b) A charge Q is placed at the centre of a cube .What is the electric flux coming out from any one surface?
(c) A long charged cylinder of linear charge density +λ1 is surrounded by a hollow coaxial conducting cylinder if linear charge density – λ2 .Use Guass's law to obtain expression for the electric field at a point (i) in the space between the cylinder and (ii) outside the larger cylinder.

Q 2- (a) Two charges of magnitudes -2Q and +Q are located at points(a,0) and (4a,0) respectively..What is the electric flux due to these charges through a sphere of radius 3a with its centre at the origin?
(b) two infinitely large plane thin parallel sheets having surface densities σ1 and σ2 (σ1 > σ2) are shown in the fig.
Write the magnitudes and direction of net fields in the regions marked **II and III.**



Q 3- (a) Using guass's law obtain expression for electric field due to a thin charged spherical shell of radius R at a point
(i) inside the shell
(ii) (ii) outside the shell

(b) Show variation of electric field intensity due to a charged spherical shell with distance from center.

CHAPTER -2

CAWSE BASED QUESTIONS-

Q1 - Electrostatic potential energy of a system of two point charges is equal to the amount of work done in bringing these two charges from infinite to that distance apart. If two charges q_1 & q_2 are separated by a distance r then the potential energy of the system of these two point charges is given as
$U = (1/4\pi\varepsilon_0)(q_1q_2 /r)$
The above potential energy expression, is unaltered whatever way the charges are brought to the specified locations, because of path-independence of work for electrostatic force.

(i) The electric potentials at points P ,Q and R are 2V, 4V and 6V respectively. A point charge of 6mC is taken from P to R via point Q . The kinetic energy gained by the charge will be
(a)24 J (b) 24 x 10-3 J
(c) 12 x 10-3J (d) 12J

(ii) An electron is taken from a lower potential to a higher potential . Its potential energy
(a)increases (b) decreases
(c) remains unchanged (d) becomes zero

(iii) A square of side 'a' has a charge q placed at its center and another charge Q at one of its corners. Q is transported to the diagonally opposite corner via some mean . The work done in doing so will be
(a) $Qq/4\pi\varepsilon_0 a$ (b) $Qq/4\pi\varepsilon_0 a^2$
(c) $Qq/4\pi\varepsilon_0\sqrt{2}\, a$ (d) zero

(iv) The potential energy of the system of charges will be negative when
(a) Both charges are positive
(b) Both charges are negative
(c) Both are kept on the either side of the origin
(d) Both the charges are of opposite nature

(v) A positively charged particle is released from rest in an uniform electric field. The electric potential energy of the charge
(a)remains constant as the electric field is uniform
(b) increases because the charge moves along the electric field
(c) decreases because the charge moves along the electric field
(d) decreases because the charge moves opposite to the electric field

Q 2- For the various charge systems, we represent equipotential surfaces by curves and line of force by full line curves. Between any two adjacent equipotential surfaces, we assume a constant potential difference .The equipotential surfaces of a single point charge are concentric spherical shell with their centres at the point charge. As the lines of force point radially outwards, so they are perpendicular to the equipotential surfaces at all points.

.

(i) Identify the wrong statement
(a) Equipotential surface due to a single point charge is spherical.
(b) Equipotential surface can be constructed for a dipoles too.
(c) The electric field is normal to the equipotential surface through the point.
(d) The work done to move a test charge on the equipotential surface is positive.

(ii) Nature of equipotential surface for a point charge is
(a) Ellipsoid with charge at foci
(b) sphere with charge at the centre of the sphere
(c) Sphere with charge on the surface of the sphere
(d) Plane with charge on the surface

(iii) A spherical equipotential surface is not possible
(a) Inside a uniformly charged sphere
(b) For a dipole
(c) Inside a spherical condenser
(d) For a point charge

(iv) The work done in carrying a charge q once round a circle of radius a with a charge Q at its centre is

(a) $Qq/4\pi\varepsilon_0 a$ (b) $Qq/4\pi\varepsilon_0 a^2$

(c) $q/4\pi\varepsilon_0 a$ (d) zero

Q 3- Consider a dipole with charge $q_1 = +q$ and $q_2 = -q$ placed in a uniform electric field E, as shown in figure. The dipole experiences no net force but experiences a torque τ given by $\tau = p \times E$, which will tend to rotate it (unless p is parallel or antiparallel to E). Suppose an external torque τ_{ext} is applied in such a manner that it just neutralizes this torque and rotates it in the plane of paper from angle θ_0 to θ_1 at an infinitesimal angular speed and without angular acceleration. The amount of work done by the external torque will be given by

$W = pE(\cos\theta_0 - \cos\theta_1)$

This work is stored as the potential energy of the system.

(i) When a dipole is placed in an uniform electric field.

(A) It experiences a force but not torque.

(B) It experiences a torque but not force.

(C) It experience both force and torque.

(D) It experience neither force nor torque.

(ii) The dipole experience maximum torque when the angle between dipole and electric field is

(A) 0° (B) 60°

(C) 90° (D) 180°

(iii) If the work done required to rotate a dipole in an uniform electric field from 0° to 60° is W, what would be the work done to rotate the dipole in same field from 0° to 180° ?

(A) W (B) 2W

(C) 3W (D) 4W

(iv) A dipole placed in an uniform electric field experiences no torque

(A) If the dipole is parallel to the field.

(B) If the dipole is antiparallel to the field.

(C) Both (A) and (B)

(D) None of these

MULTIPLE CHOICE QUESTIONS-

Q 1- Two copper spheres of the same radius, one solid and the other hollow, are charged to the same potential. Which will have more charge?

(a) Solid sphere (b) Hollow sphere

(c) Both will have an equal charge (d) None of these

Q 2- The amount of work required to increase the distance between -6μC and 4μC from 6 cm to 18 cm will be :

(a) 1.8 J (b) 2.4 J (c) 1.8 μJ (d) 2.4 μJ

Q 3- In a region of constant potential

(a) the electric field is uniform

(b) (b) the electric field is zero

(c) there can be no charge inside the region

(c) the electric field shall necessarily change, if a charge is placed outside the region

Q 4- A dielectric induces……. in an external electric field which decreases the net electric field.

(a) current (b) dipole moment

(c) magnetic field (d) polarization

Q 5- If a conductor has a potential $V \neq 0$ and there are no charges anywhere else outside, then
(a) there must be charges on the surface or in¬side itself.
(b) there cannot be any charge in the body of the conductor.
(c) there must be charges only on the surface.
(d) both (a) and (b) are correct.

Q 6- The electric field and the electric potential at a point are E and V respectively.
(a) If E = 0, V must be zero. (b) None
(c) If $E \neq 0$, V cannot be zero. (d) If $V \neq 0$, E cannot be zero

Q 7- Three charges Q, +q and +q are placed at the vertices of an equilateral triangle of side l. If the net electrostatic energy of the system is zero, then Q is equal to
(a) –q (b) Q (c) 0 (d) -q/2

Q 8- The electric potential at a point on the equatorial line of a electric dipole is
(a)directly proportional to the square of the distance
(b) inversely proportional to the square of the distance
(c)directly proportional to the charge
(d)none of the above

Q 9- A charge Q is placed at the origin. The electric potential due to this charge at a given point in space is V. The work done by an external force in bringing another charge q from infinity up to the point is
(a) v/q (b) vq (c) v+q (d) v

Q 10- Equipotential surfaces
(a) are closer in regions of large electric fields compared to regions of lower electric fields.
(b) will be more crowded near sharp edges of a conductor.
(c) will always be equally spaced.
(d) both (a) and (b) are correct

ASSERTION- REASON QUESTIONS-

WRITE CORRECT OPTION FOR Q1 TO Q5

OPTIONS:
(A) Both Assertion and reason are true and reason is correct explanation of assertion.
(B) Both Assertion and reason both are true but reason is not the correct explanation of assertion.
(C) Assertion is true, reason is false.
(D) Assertion is false, reason is true.

Q 1I Assertion : When two equally charged body are connected through a conductor. There will not be transfer of charge between them.
Reason : Transfer of charge takes place between two unequally charged body.

Q 2- Assertion : Electric field inside a conductor is zero.
Reason: The potential at all the points inside a conductor is same.

Q 3- Assertion- Polar molecules do not have permanent dipole moment .
Reason- In polar molecules, the centre of positive and negative charges coincides even when there is no external electric field.

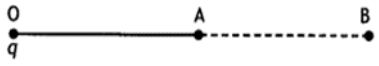
Q 4- Assertion (A) : Positive charge always move from a higher potential point to a lower potential point.
Reason (R) : Electric potential is a vector quantity.

Q 5- Assertion: The potential difference between any two points in an electric field depends only on initial and final position.
Reason: Electric field is a conservative field so the work done per unit positive charge does not depend on path followed.

SA QUESTIOS-

Q 1- (I)Draw a plot showing the variation of (i) electric field (E) and (ii) electric potential (V) with distance r due to a point charge Q.
(ii) Two thin concentric shells of radii r_1 and r_2 ($r_2 > r_1$) have charges q_1 and q_2.
Write the expression for the potential at the surface of inner and outer shells.

Q 2- A point charge 'q' is placed at O as shown in the figure. Is $V_A - V_B$ pos negative, or zero, if 'q' is an (i) positive, (ii) negative charge?



Q 3- Two point charges 5μC and −12μC are placed at two corners of a square of side 'a'.
What will be The potential difference between the other two corners due to these charges ?

Q 4- (iii)Two charges - 4μC and – 2μC are placed at points A and B 5 cm apart. Depict an equipotential surface of the system.
(iv) Draw the equipotential surface due to an electric dipole. Locate the points where the potential due to the dipole is zero

Q 5- **-(i)** Draw the equipotential surfaces corresponding to a uniform electric field in the z-direction.
(ii) Draw 3 equipotential surfaces corresponding to a field that uniformly increases in magnitude but remains constant along Z-direction. How are these surfaces different from that of a constant electric field along Z-direction?

Q 6- Calculate the work done to dissociate the system of three charges placed on the vertices of a triangle as shown.

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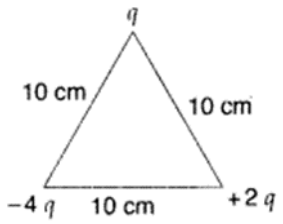
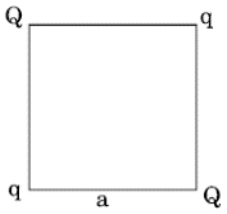




Q 7- Four point charges Q, q, Q and q are placed at the corners of a square of side 'a' as shown in the above figure. What is potential energy of this system.

Q 8- Derive an expression for the potential energy of an electric dipole of dipole movement $\vec{p}$ in the electric field $\vec{E}$.

Q 9- (a)Explain using suitable diagrams the difference in the behavior of a
(i) conductor: (ii) dielectric In the presence of the external electric field.

KV INS CHILKA

Holiday Homework For Summer Vacation

CLASS- XII(BIOLOGY)

1. Choose any one diagram from the first 2 chapters taught and Design it on a drawing sheet by using different things like coloured paper, wool, pencil sharpening, cotton, pulses / cereals etc. (Art Integrated Learning)
2. Prepare the Investigatory project as discussed and note all the references in the bibliography, you have taken to develop it.
3. Practice all the diagrams from Human Reproduction and label the parts.

Ch-1 (Sexual Reproduction in Flowering Plants) and Ch-2 (Human Reproduction)

MULTIPLE CHOICE QUESTIONS

1.The viability of pollen grains depends upon

(1) Prevailing temperature (2) Genetic potentiality of the concerned species

(3) Prevailing humidity (4) All of the above.

2. In which part of a flower both meiosis and Fertilisation occur

(1) Ovule (2) stigma (3) Anther (4) petal

3. Wind pollination is common

(1) Orchids (2) legumes (3) Lilies (4) grasses

4. Pollen grains are highly resistant due to presence of

(1) Callose (2) Pecto-cellulose (3) cellulose (4) Sporopollenin

7. How many MMC are required to produce 1000 pollen grains?

(1) 100 (2) 150 (3) 200 (4) 250

8. Which of the following represent the female gametophyte in angiosperms?

(1) Embryo (2) Embryo Sac (3) Synergid (4) Endosperm

9. The number of meiotic divisions required to produce 300 seeds in a pea plant.

(1) 200 (2) 300 (3) 375 (4) 400

10. Which of the following floral parts forms the pericarp after fertilisation?

(1) Nucellus (2) Ovary wall (3) outer integument (4) inner integument

11. Which is the unpaired gland in human male reproductive system

(1) Prostate gland (2) seminal vesicle (3) Cowper's gland (4) Bertholin gland

12. Secretion from which one of the following are rich in fructose , caicium and some enzymes?

(1) Male accessory gland (2) Liver (3) Pancreas (4) salivary gland

13. Signals from the fully developed foetus and placenta ultimately lead to parturition which requires release of

(1) Estrogen (2) Oxytocin (3) Prolactin (4) Relaxin

14. Find the odd one.

(1) Rete testis (2) Vasa efferntia (3) epididymis (4) Ampulla

15. The human embryo with 8 – 16 blastomere is called

(1) Morula (2) Blastula (3) Gastrula (4) Foetus

16. Vas deferens receives the duct of seminal vesicle and forms the

(1) epididymis (2) urethra (3) ejaculatory duct (4) urethral meatus

17. Ovulation occurs under the high influence of

(1) follicle stimulating hormone (2) lutenising hormone (3) progesterone (4) estrogen

18. There is no cell division involved in

(1) spermatogenesis (2) oogenesis (3) embryogenesis (4) spermiogenesis

19. The cell which undergoes meiosis-I during spermatogenesis, is the

(1) spermatogonium (2) spermatid (3) primary spermatocyte (4) secondary spermatocyte

20. How many functional sperms and how many ova will be formed by a primary spermatocyte and a primary oocyte , respectively?

(1) one, one (2) one, four (3) four, one (4) four, four

SA TYPE (2M / 3M QUESTIONS)

1. A bilobed dithecous anther has 150 MMCs per microsporangium. How many pollen grains can this anther produce?
2. What are applications of pollens?
3. Explain how the role of tapetum is different from cells of other layers?
4. What is the function of germ pore?
5. Draw a labelled diagram of a matured microspore of an angiosperm.
6. What is the role of filiform apparatus?
7. Mention the ploidy of the different cells present in the female gametophyte:
   (i) Antipodal cells (ii)Central cell (iii) Egg cell (iv) Synergids
8. Differentiate between geitonogamy and allogamy.
9. Why is process of fertilization in a flowering plant referred to as double fertilization? Explain.
10. What is emasculation? Explain its importance in hybridisation.
11. Why are the seeds scattered in the juicy pulp of tomato and arranged in a row in a pea pod?
12. Differentiate perisperm and endosperm giving one example of each.
13. Arrange them sequentially according to how they appear in the artificial hybridization programme.

[Re-bagging, Selection of parents, Bagging, Dusting the pollen on the stigma, Emasculation, Collection of pollen]

14. If pollen from a species 'A' falls on the stigma of species 'B' will it germinate? Why or Why not?
15. Write the adaptive features of an insect pollinated flower.
16. If the meiocyte of a maize plant contains 20 chromosomes, write the number of chromosomes in the endosperm and embryo of the maize grain and give reasons in support of your answer.
17. State any two differences between spermatogenesis and oogenesis.
18. Why are the testes of human males considered extra abdominal? What is the significance of this condition?
19. Where is acrosome present in humans? Write its function.
20. Why does corpus luteum stay active throughout pregnancy and in the absence of fertilization, is active only for 10-12 days?
21. Mention the changes taking place during the transition of a primary follicle to Graafian follicle in the oogonia.
22. Placenta acts as an endocrine gland. Explain.
23. Study the flow chart. Name the hormones involved at each stage. Explain their functions.
    Hypothalamus → Pituitary → Testes → Sperms
24. How is a primary spermatocyte different from a secondary spermatocyte?
25. What is the colostrums ? Why is it important to be given to the new born infant?

GIVE REASONS:

A) Most zygotes in angiosperms divide only after certain amount of endosperm is formed.

B) Groundnut seeds are ex-albuminous and Caster seeds are albuminous.

C) Micropyle remains as a small pore in the seed coat of a seed.

D) Integuments of an ovule harden and the water content is highly reduced as the seed matures.

E) Apple and Cashew are not called true fruits

F) Pea flowers produce assured seed sets.

G) Pollen grains in Vallisneria have a mucilaginous covering.

H) Banana produces fruits but is propagated by vegetative means.

ASSERTION-REASON TYPE QUESTIONS:

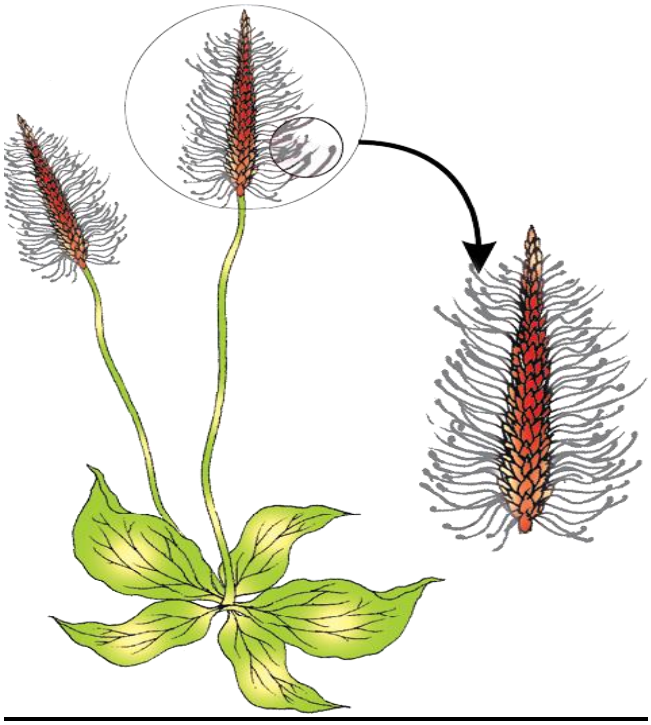
In the following questions, a statement of Assertion(A) is followed by a statement of Reason(R). Mark

(A) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(B) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
(C) If Assertion is true but Reason is false.
(D) If Assertion is false but Reason is true.

1. Assertion : Chasmogamous flowers require pollinating agents.
Reason **:** Cleistogamous flowers do not expose their sex organs.
2. Assertion **:** Hydrophilly is not the mode of pollination in all aquatic plants.
Reason**:** Almost all the aquatic dicot and monocot plants require water for the transport of male gametes and for fertilisation.
3. Assertion : The two cotyledons in seed are embryonic leaves.
Reason : The embryo contains radicle and plumule.
4. Assertion : The megaspore mother cell divide mitotically to produce four spores.
Reason : Megaspore mother cells are diploid and megaspore is haploid.
5. Assertion : Unisexual flowers have separate male and female flowers.
Reason : Both monoecious or dioecious plants have unisexual flowers.
6. Assertion : The secretory phase in the human menstrual cycle is also called the luteal phase.
Reason : During the luteal phase development of corpus luteum and secretion of progesterone occurs.
7.Assertion: Secondary spermatocytes are diploid in human males.
Reason: Secondary spermatocytes are formed after meiosis.
8. Assertion: Sertoli cells are present inside seminiferous tubules.
Reason: Sertoli cells secrete androgens.
9.Assertion: Progesterone level gradually increases, if there is no fertilization and implantation.
Reason: Corpus luteum degenerates.
10. Assertion: Implantation takes place in uterus at blastocyst stage.
Reason: Implantation occurs between the 7th and 10th days after ovulation.

CASE- BASED QUESTIONS:

(A) POLLINATION



(1) On the basis of your knowledge, identify the plant and also the mechanism of pollination in the given picture.

(2) Find out the group where this pollination is common. What are the special characteristics developed by the plants to achieve this pollination.

(3) If a plant has to get pollinated by insect what characteristics do it exhibit?

OR

Write the characteristics exhibited by the water pollinated plant ?

(B) LIFE STYLE AND MENSTRUATION

Adolescence is a high-risk group because during this stage major physical and Mental change occurs. Menarche is a hallmark biological process of puberty beginning in adolescence girls and it leads to reproductive capacity. Menstrual abnormalities are common in adolescent and can lead to stressful conditions. All over the world around 75% of girls are experiencing problems associated with menstruation. The major abnormalities are dysmenorrhea, premenstrual syndrome(PMS), and menstrual irregularities. These disorders may lead to problems in daily activities such as academic excellence, achievements in sports, and loss of self- confidence. The lifestyle pattern of individual leads to menstrual disorders because female reproductive cycle directly or indirectly influences with diet, physical work, and mental stress. Menstrual disorder leads to symptoms such as pain, depression, and anxiety. In the present scenario, menstrual abnormalities are causing significant debility in adolescent girls. Hence, it is important to promote the health education programs which should include promoting adequate dietary habit, regular exercise, and awareness on menstrual hygiene in school level for improving the menstrual health. The improvement of menstrual health is important for preventing the many present and future gynaecological problems (infertility, obesity, and polycystic ovaries).

1 Which one of the following is not a factor causing menstrual disorders:

(A) Sedentary life style. (B) Junk food. (C) Physical work. (D) Mental stress

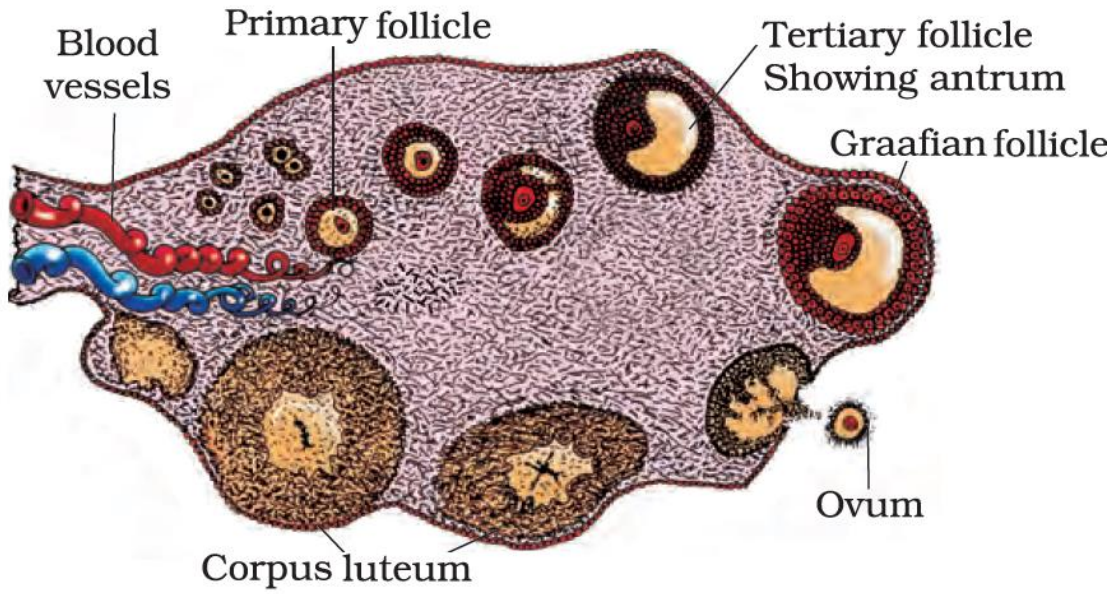
2 . What should be done to avoid menstrual disorders?

3 . List out the symptoms noticed due to menstrual disorder

OR

How is the lifestyle pattern affect health of females?

(C) OOGENESIS



The process of formation of a mature female gamete is called oogenesis which is markedly different from spermatogenesis. Oogenesis is initiated during the embryonic development stage when a couple of million gamete mother cells (oogonia) are formed within each foetal ovary; no more

oogonia are formed and added after birth. These cells start division and enter into prophase-I of the meiotic division and get temporarily arrested at that stage, called primary oocytes. Each primary oocyte then gets surrounded by a layer of granulosa cells and is called the primary follicle. A large number of these follicles degenerate during the phase from birth to puberty. Therefore, at puberty only 60,000-80,000 primary follicles are left in each ovary. The primary follicles get surrounded by more layers of granulosa cells and a new theca and are called secondary follicles .Then the secondary follicle transforms to tertiary follicles, which are characterised by a fluid filled cavity called antrum.

1. In which stage of the cell cycle primary oocytes are arrested?

a) Prophase I b) Anaphase I c) Prophase II d) None of these

2. What do you mean by Oogenesis.

3. How is the Primary follicle develop into Tertiary follicles?

OR

How is Spermatogenesis different from Oogenesis?