

1.Design handmade colorful comic strips exhibiting the summary of following fictions (Do any two):-

a. Lost Spring b. The Last Lesson c. The Tiger King d. Deep Water

Ruberics For Assessment: Originality, Creativity and Presentation.

2. Make a creative power point presentation on Fiction/ Poetry assigned by teacher in class. It should include 10 to 12 slides. Also add following things.....

a. Author's/Poet's Introduction and achievements

b. Theme, Central Idea, Message

c. Brief summary of the poem/fiction.

d. Poetic/literary Devices Used

Ruberics for Assessment: Creativity/Originality , Content and Presentation.

3. Complete the assignment provided along with the Holidays' Homework and paste in your English Notebook . Revise the entire topics of English syllabus covered till date.

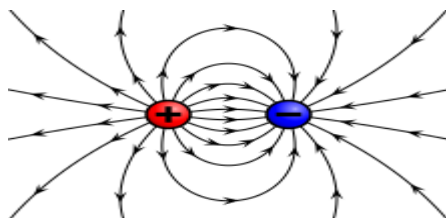
4. Read about writers/poets (Covered Till Date) and prepare a table calendar/Portfolio, which would include:

- *Coloured picture *Genre and era they belonged to
- *Personal life *education *Literary works *Achievements
- *Synopsis Of Fiction/Poet prescribed in Syllabus

CLASS XII PHYSICS

1. ELECTRIC FIELD

An electric field is the physical field that surrounds electrically charged particles. Charged particles exert attractive forces on each other when their charges are opposite, and repulse each other when their charges are the same. Because these forces are exerted mutually, two charges must be present for the forces to take place. The electric field of a single charge (or group of charges) describes their capacity to exert such forces on another charged object. These forces are described by Coulomb's law, which says that the greater the magnitude of the charges, the greater the force, and the greater the distance between them, the weaker the force. The Coulomb force on a charge of magnitude q at any point in space is equal to the product of the charge and the electric field at that point. $F = qE$. Also the electric field due to a point charge is given by $E = \frac{q}{4\pi r^2 \epsilon_0}$.



(i) The electric field required to keep a water drop of mass 'm' to remain suspended, when charged with one electron is:

- (a) mg (b) mg/e (c) emg (d) em/g

(ii) Two charges $+5 \mu\text{C}$ and $+10 \mu\text{C}$ are placed 20 cm apart. The electric field at the midpoint between the two charges is:

- (a) $4.5 \times 10^6 \text{ N/C}$ towards $+5 \mu\text{C}$ (b) $13.5 \times 10^6 \text{ N/C}$ towards $+5 \mu\text{C}$
(c) $4.5 \times 10^6 \text{ N/C}$ towards $+10 \mu\text{C}$ (d) $13.5 \times 10^6 \text{ N/C}$ towards $+10 \mu\text{C}$

(iii) Two point charges placed in a medium of dielectric constant 5 are at a distance r between them, experience an electrostatic force F between them. Force in vacuum at the same distance r will be:

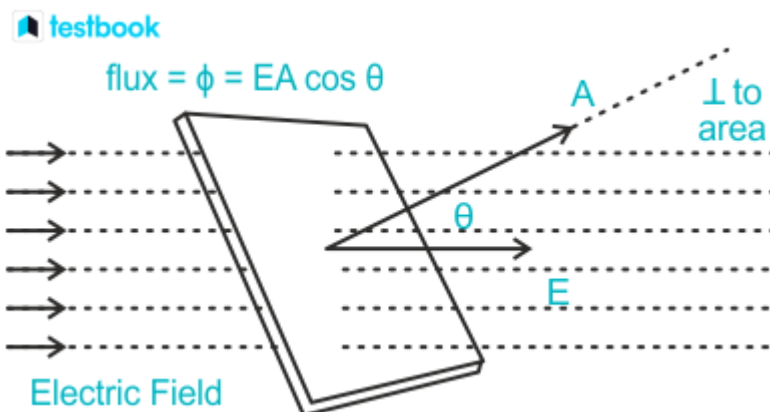
- (a) $5F$ (b) F (c) $F/2$ (d) $F/5$

(iv) A particle of mass 'm' and charge 'q' is placed at rest in a uniform electric field 'E' and then released, the kinetic energy attained by the particle after moving a distance 'x' will be:

- (a) $q^2 Ex$ (b) $q Ex$ (c) $qE^2 x$ (d) qEy

2. ELECTRIC FLUX

Electric flux is the property of electric field. It is measured as the number of electric field lines passing perpendicular to the surface. It is equal to the product of the surface area and the perpendicular component of electric field. Gauss Theorem states that the total electric flux passing through a closed surface is equal to $1/\epsilon_0$ times the total charge enclosed by the closed surface. Gauss' law is valid for any closed surface irrespective of its shape or size.



(i) A charge 'q' is first kept inside a sphere of radius 5 cm and then kept inside a cube of side 5 cm. The electric flux will be:

- (a) More in the case of sphere
- (b) More in the case of cube
- (c) Will be same in both cases
- (d) Zero in both cases

(ii) A charge 'Q' is kept inside a cube of side 'a'. What will be the electric flux through any one face of the cube?

- (a) $Q \epsilon_0$
- (b) $Q 6\epsilon_0$
- (c) $Q 24\epsilon_0$
- (d) Zero

(iii) What is the SI unit of electric flux?

- (a) Nm^{-2}C
- (b) Nm^2C^{-1}
- (c) $\text{N}^{-1}\text{m}^2\text{C}$
- (d) Nm^2C

(iv) An electric dipole consisting of charges $+10 \mu\text{C}$ and $-10 \mu\text{C}$ separated by a distance 2 cm is placed inside a sphere of radius 10 cm. If the radius of the sphere is doubled, the new electric flux will be:

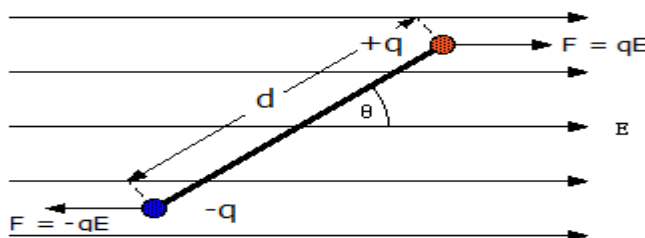
- (a) Zero
- (b) 20 units
- (c) 100 units
- (d) Cannot be determined.

3. POTENTIAL ENERGY OF A DIPOLE

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

This work is stored as the potential energy.



(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°

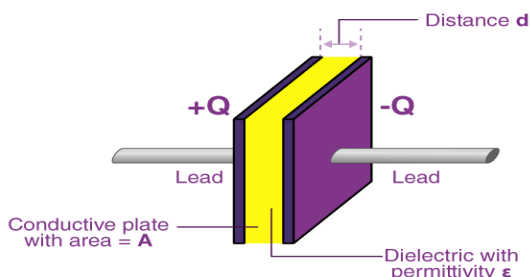
(iii) If the work done required to rotate a dipole in an uniform electric field from 0° to 60° is W , what would be the work done to rotate the dipole in same field from 0° to 180° ?

- (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

4. The parallel plate capacitor consists of two parallel metal plates X and Y each of area A , separated by a distance d , having a surface charge density σ as shown in figure. The medium between the plates is air. A charge $+q$ is given to the plate X. It induces a charge $-q$ on the upper surface of earthed plate Y. When the plates are very close to each other, the field is confined to the region between them. The electric lines of force starting from plate X and ending at the plate Y are parallel to each other and perpendicular to the plates. The capacitance is directly proportional to the area (A) of the plates and inversely proportional to their distance of separation (d). The capacitance (C) of the parallel plate capacitor is given by $C = \epsilon_0 A/d$. If the region between the two plates is filled with dielectric like mica or oil. Its capacitance increased by ϵ_r times of the medium.



(i) If Q is magnitude of charge on each plate of area A separated by a distance d Then potential difference between the two plates of a parallel plate capacitor is

- (a) $Qd/(\epsilon_0 A)$ (b) $d\epsilon_0/AQ$ (c) $Ad/(\epsilon_0 Q)$ (d) $QA/d\epsilon_0$

(ii) A capacitor is charged by a battery and the charging battery is disconnected and a dielectric slab is inserted in it. Then for the capacitor

- (a) Charge remains constant (b) Charge increases
(c) Potential difference remains constant (d) Potential difference increases\

(iii) Capacitance of a parallel plate capacitor does not depend on:

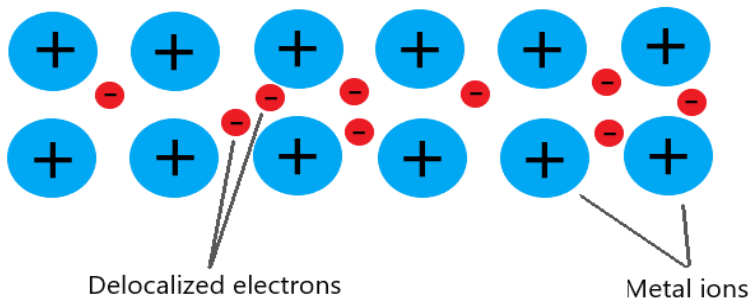
- (a) Area of the plates (b) Type of metal used for plates
(c) Separating distance between the plates (d) Dielectric constant of the medium between the plates

(iv) A parallel plate capacitor has a capacitance of $8 \mu\text{F}$ with a dielectric of relative permittivity 2. If the dielectric is removed, what will be the new capacitance?

- (a) $4 \mu\text{F}$ (b) $8 \mu\text{F}$ (c) $16 \mu\text{F}$ (d) 2 MF

5. Metals have a large number of free electrons nearly 10^{28} per cubic metre. In the absence of electric field, average terminal speed of the electrons in random motion at room temperature is of the order of 10^5 m s^{-1}

¹ When a potential difference V is applied across the two ends of a given conductor, the free electrons in the conductor experiences a force and are accelerated towards the positive end of the conductor. On their way, they suffer frequent collisions with the ions/atoms of the conductor and lose their gained kinetic energy. After each collision, the free electrons are again accelerated due to electric field, towards the positive end of the conductor and lose their gained kinetic energy in the next collision with the ions/atoms of the conductor. The average speed of the free electrons with which they drift towards the positive end of the conductor under the effect of applied electric field is called drift speed of the electrons.



(i) Magnitude of drift velocity per unit electric field is

- (a) current density (b) current (c) resistivity (d) mobility

- (ii) The drift speed of the electrons depends on
- (a) dimensions of the conductor
 - (b) number density of free electrons in the conductor
 - (c) both (a) and (b)
 - (d) neither (a) nor (b)

- (iii) We are able to obtain fairly large currents in a conductor because
- (a) the electron drift speed is usually very large
 - (b) the number density of free electrons is very high and this can compensate for the low values of the electron drift speed and the very small magnitude of the electron charge
 - (c) the number density of free electrons as well as the electron drift speeds are very large and these compensate for the very small magnitude of the electron charge
 - (d) the very small magnitude of the electron charge has to be divided by the still smaller product of the number density and drift speed to get the electric current

- (iv) Drift speed of electrons in a conductor is very small i.e., $v_d = 10^{-4} \text{ m s}^{-1}$. The Electric bulb glows immediately. When the switch is closed because
- (a) drift velocity of electron increases when switch is closed
 - (b) electrons are accelerated towards the negative end of the conductor
 - (c) the drifting of electrons takes place at the entire length of the conductor
 - (d) the electrons of conductor move towards the positive end and protons of conductor move towards negative end of the conductor

(v) The number density of free electrons in a copper conductor is $8.5 \times 10^{28} \text{ m}^{-3}$. How long does an electron take to drift from one end of a wire 3.0 m long to its other end? The area of cross-section of the wire is $2.0 \times 10^{-6} \text{ m}^2$ and it is carrying a current of 3.0 A.

- (a) $8.1 \times 10^4 \text{ s}$ (b) $2.7 \times 10^4 \text{ s}$ (c) $9 \times 10^3 \text{ s}$ (d) $3 \times 10^3 \text{ s}$

6. Practice all NCERT questions of **chapter 1, 2 and 3** read the next chapter.

Name _____ Roll No. _____ Date _____

- Molarity of a solution at 60 °C is----- than molarity at 30 °C
 a) More b) less c) same d) no effect of temperature
- For isotonic solutions which of the following is not equal
 a) concentration b) temperature c) osmotic pressure d) vapour pressure
- For non-electrolyte solute value of Van't Hoff factor is
 a) 0 b) 1 c) >1 d) <1
- KH value for Ar(g), CO₂(g), HCHO (g) and CH₄(g) are 40.39, 1.67, 1.83×10^{-5} and 0.413 respectively. Arrange these gases in the order of their increasing solubility.
 a) HCHO < CH₄ < CO₂ < Ar c) HCHO < CO₂ < CH₄ < Ar
 b) Ar < CO₂ < CH₄ < HCHO d) Ar < CH₄ < CO₂ < HCHO
- Water- HCl mixture
 I. shows positive deviations II. forms minimum boiling azeotrope
 III. shows negative deviations IV. forms maximum boiling azeotrope
 a) I and II c) II and III
 b) I and IV d) III and IV
- An azeotropic solution of two liquids has boiling point lower than either of them when solute solvent interactions are:
 a) Equal to solute solute and solvent solvent interactions
 b) Stronger than solute solute and solvent solvent interactions
 c) Weaker than solute solute and solvent solvent interactions
 d) None of the above
- Which of the following salt will have same value of Van't Hoff's factor (i) as that of K₄[Fe (CN)₆]
 a) Al₂(SO₄)₃ b) NaCl c) Al(NO₃)₃ d) Na₂SO₄
- Pure benzene has vapour pressure three times that of pure toluene. They form nearly ideal solution. What would be the ratio of their mole fractions in the vapour phase of a solution having equal mole fractions of benzene and toluene.
 a) 1 b) 2/3 c) 3 d) 1/3
- When a non-volatile solid is added to pure water it will:
 a) boil above 100 °C and freeze above 0 °C c) boil below 100 °C and freeze above 0 °C
 b) boil above 100 °C and freeze below 0 °C d) boil below 100 °C and freeze below 0 °C
- Assertion:** When methyl alcohol is added to water, the boiling point of water decreases.
Reason: When a volatile solute is added to a volatile solvent elevation in boiling point is observed.
- Assertion:** Cooking time in pressure cooker is reduced
Reason: Boiling point inside the pressure cooker is raised
- Assertion:** Vapour pressure of a liquid is constant at a constant temperature
Reason: At equilibrium rate of evaporation becomes equal to the rate of condensation.
- Assertion:** The components of azeotropic mixture can be separated by distillation
Reason: At a particular composition azeotropic mixture boil at the same temperature.
- Assertion:** The shrinking of cells is called hemolysis.
Reason: Hemolysis occurs when cell comes in contact with solution of lower osmotic pressure than that of cell.

15. a) What is the effect of temperature on the process when shrunk and dried vegetables are placed in water?

- b) The boiling point of 0.2 mol kg⁻¹ solution of X in water is greater than equimolal solution of Y in water. Which one is undergoing dissociation in water?

16. a) If the elevation in boiling point of a solution for which $i = 1$ in a solvent ($K_f = x \text{ K kg}^{-1} \text{ mol}$ and $K_b = y \text{ K kg mol}^{-1}$) is $z \text{ K}$, then calculate the depression in freezing point of the same concentration.

- b) Give two examples of materials used for making semi permeable membrane for carrying out reverse osmosis.

17. a) What is the degree of dissociation for 0.1M Ba (NO₃)₂ if i (Van't Hoff factor) is 2.74

18. b) Arrange the following solutions in increasing order of Van't Hoff factor.
0.1M CaCl₂, 0.1M KCl, 0.1M C₁₂H₂₂O₁₁, 0.1 M Al₂(SO₄)₃

19. a) Molal elevation constant for benzene is 2.52 K/m. A solution of some organic substance in benzene boils at 0.126 °C higher than benzene. What is the molality of the solution?

- b) What are the values of Van't Hoff factor for NaCl and K₂SO₄, respectively?

20. Out of the following 0.10 m aqueous solutions, which one will exhibit the largest freezing point depression? KCl, C₆H₁₂O₆, Al₂(SO₄)₃, K₂SO₄

21. If K_f for water is 1.86 °C /m, explain why 1m NaCl in water does not have a freezing point equal to
a) -1.86 °C b) -3.72 °C

22. a) 0.6 mL of acetic acid CH₃COOH, having density 1.06 g/mL, is dissolved in 1 litre of water. The depression in freezing point observed for this strength of acid was 0.0205°C. Calculate the van't Hoff factor and the dissociation constant of acid. $K_f = 1.86 \text{ K kg /mol}$.

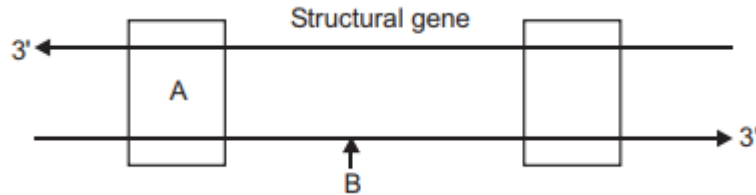
- b) How does Raoult's law become a special case of Henry's law?

BIOLOGY
CH-5 MOLECULAR BASIS OF INHERITANCE
Class: XII WORKSHEET

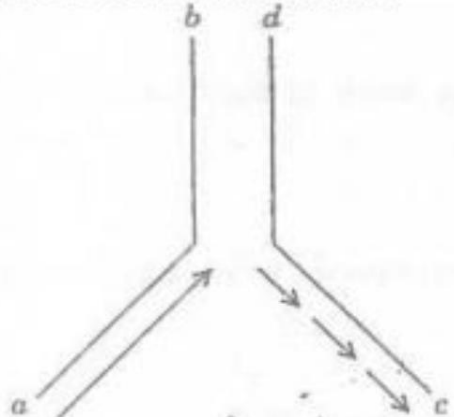
Q1. The base sequence in one of the strands of DNA is 5'TAGCATGAT 3'.

- (i) Give the base sequence of its complementary strand.
- (ii) How are these base pairs held together in a DNA molecule?
- (iii) Explain the base complementarity rules. Name the scientist who framed this rule.

Q2. Name the part A and B in transcription unit given below.



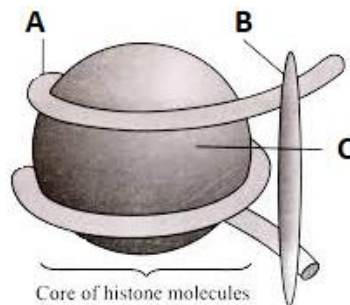
Q3. Name the type of synthesis A and B occurring in replication fork of DNA as shown below.



Q4. Retroviruses do not follow central Dogma. Comment.

Q5. What are the functions of (i) methylated guanosine cap, (ii) poly-A “tail” in a mature on RNA?

Q6. Observe following diagram and give answers.



i) Identify the structure in following diagram.

- | | |
|--------------|---------------|
| a) Ribosome | b) Nucleosome |
| c) Histosome | d) Centrosome |
- ii) How many base pair of DNA Helix are found in the structure?
- | | | | |
|---------|--------|--------|--------|
| a) 1000 | b) 500 | c) 200 | d) 100 |
|---------|--------|--------|--------|
- iii) Which amino acid are found richly in histone protein.
- | | |
|------------------------|-------------------------|
| a) Glycine and Proline | b) Proline and Arginine |
| c) Lysine and Arginine | d) Lysine and Glycine |
- iv) How many molecules are found in one Histone unit.
- | | | | |
|------|------|------|------|
| a) 1 | b) 2 | c) 4 | d) 8 |
|------|------|------|------|

v) What is the chemical nature and charge of Histone protein.

a) Acidic and Positive

b) Basic and Negative

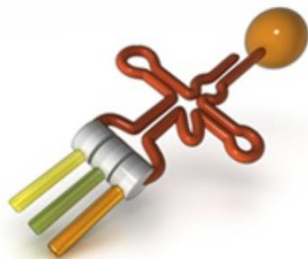
c) Basic and Positive

d) Acidic and Negative

vi) Identify A, B and C in given diagram.

Q7. Identify the given diagram and complete the following:

_____ reads mRNA in groups of three bases called _____



Q8. In a double stranded DNA molecule, the percentage of cytosine is 18. What would be the percentage of adenine?

Q9. A short piece of DNA, having 20 base pairs, was analyzed to find the number of nucleotide bases in each of the polynucleotide strands. Some of the results are shown in the table. How many nucleotides containing Adenine and Thymine were present in strand 2?

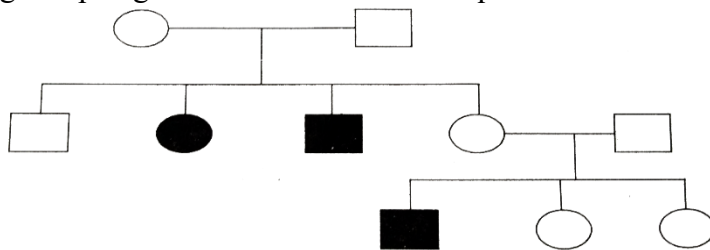
	Number of nucleotide bases			
	Adenine	Cytosine	Guanine	Thymine
Strand 1	4	4		
Strand 2		5		

CH-4-PRINCIPLE OF INHERITANCE AND VARIATION

Class: XII WORKSHEET

Q1. In a dihybrid cross white eyed , yellow bodied female Drosophila crossed with red eyed, brown bodied male drosophila produced in F₂ generation, 1.3 percent recombinants and 98.7 percent progeny with parental type combinations. This observation of Morgan deviated from Mendelian F₂ phenotypic dihybrid ratio. Explain giving reasons, Morgan 's observation.

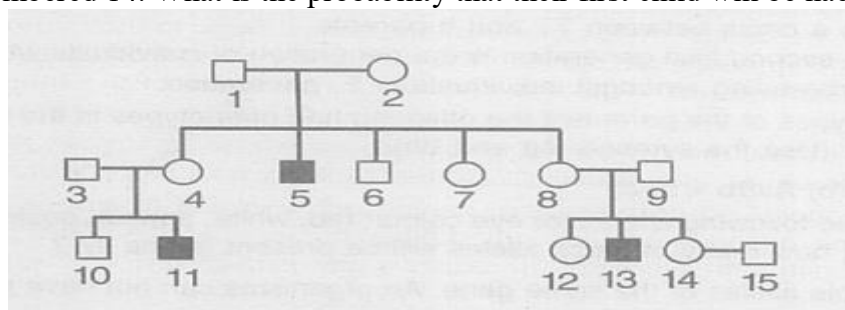
Q2. Study the given pedigree chart and answer the question that follow.



- In the trait recessive or dominant ?
- Is the trait sex-linked or autosomal ?
- Give the genotypes of the parants in generation I and of their third and fourth child in generation.

Q3. Haemophilia is sex-linked recessive disorder of humans. The pedigree chart given below shows the inheritance of haemophilia in one family. Study the pattern of inheritance and answer the questions given

- Give all the possible genotypes of the members 4, 5 and 6 in the pedigree chart
- A blood test shows that the individual 14 is a carrier of haemophilia. The member numbered 15 has recently married numbered 14. What is the probability that their first child will be haemophilic male.



Q4. A colour-blind father has a daughter with normal vision. The daughter marries a man with a normal vision. What is the probability of her children to be colour blind? Explain with the help of a pedigree chart.

COMPUTER SCIENCE WITH PYTHON

Start working on project file on any one of the below motioned topic.

1. Hotel Management System
2. School Management System
3. ATM
4. Library Management System
5. Billing Software for any shop or organization
6. Hospital Management System
7. Any other games

New idea is also welcome.

Do let me know the progress of the project. Also create project file as well.

Do any 15 program and save them.

1. A list contains the following elements: 3, 25, 13, 6, 35, 8, 14, 45. Write a function to swap the content with the next value divisible by 5 so that the resultant List will look like: 25, 3, 13, 35, 6, 8, 45, 14
2. Write a program to accept values from a user in a tuple. Add a tuple to it and display its elements one by one. Also display its maximum and minimum value.
3. Write a program to input any values for two tuples. Print it, interchange it and then compare them.
4. Write a Python program to input 'n' classes and names of their class teachers to store them in a dictionary and display the same. Also accept a particular class from the user and display the name of the class teacher of that class.
5. Write a program to store student names and their percentage in a dictionary and delete a particular student name from the dictionary. Also display the dictionary after deletion.
6. Write a Python program to capitalize first and last letters of each word of a given string.
7. Write a Python program to remove duplicate characters of a given string.
8. Write a Python program to compute sum of digits of a given string.
9. Write a Python program to find the second most repeated word in a given string.
10. Write a Python program to change a given string to a new string where the first and last chars have been exchanged.
11. Write a Python program to multiply all the items in a list.
12. Write a Python program to get the smallest number from a list.
13. Write a Python program to append a list to the second list.
14. Write a Python program to generate and print a list of first and last 5 elements where the values are square of numbers between 1 and 30 (both included).
15. Write a Python program to get unique values from a list.
16. Write a Python program to convert a string to a list.
17. Write a Python script to check if a given key already exists in a dictionary.
18. Write a Python script to merge two Python dictionaries. Write a Python program to sort a dictionary by key.
19. Write a Python program to combine two dictionary adding values for common keys. d1 = {'a':100,'b': 200, 'c':300} d2 = {'a':300, 'b':200, 'd':400}
Sample output: {'a':400,'b':400,'d':400,'c': 300}
20. Write a Python program to find the highest 3 values in a dictionary.
21. Write a Python program to sort a list alphabetically in a dictionary.
22. Write a Python program to count number of items in a dictionary value that is a list.
23. Write a python program to remove duplicate from a list.
24. Write a python program to get the largest number from a list.

Email all the program and project file on sandeepsinghs@gmail.com

PSYCHOLOGY HOLIDAY HOMEWORK-XII

Written report of the following files to be completed:

- (i) Case Study
- (ii) Practical file

HOLIDAY HOMEWORK ASSIGNMENT

General Instructions:

- Neatly write all the answers in your notebook.
- Attempt the questions keeping in mind the weightage of each question.

WEEK 1

Q1. Define self.(1)

Q2. In value assessment we try to determine the _____ values of a person. (1)

Q3. Define personality. (1)

Q4. People who are confident, can solve problems, confront the things that frighten them and nurture themselves are all qualities of which Behavioural aspect of self. Write a note on it. (3)

Q5. Rita is learning music. Many times, she has to miss her favourite serial as she has to go for music classes. Also, she wakes up early to practice despite her love her sleep. Which concept from the chapter self and personality can you link to this situation? (4)

Q6. Which concept of self is based on Bandura's social learning theory? Write a note on it. (2)

Q7. If a psychologist is evaluating you by asking your response to ink blots, which form of assessment is the psychologist using? List any two features of this form of assessment.(3)

Q8. Is there difference between self-actualization and a fully functioning individual? Support your answer with the help of examples. (3)

Q9. Distinguish between type and trait approach of personality. Give suitable examples. (6)

Q10. What is meant by delay in gratification? Discuss the technique used for self-control. (4)

WEEK 2

Q1. Intelligence tests provide a _____ of a person's general cognitive competence including the ability to profit from schooling.(1)

Q2. Aptitude tests are used to predict what an individual will be able to do if given proper _____ and _____. (1)

Q3. Define intellectual deficiency.(2)

Q4. What is Buddhi?(2)

Q5. State the characteristics of individuals with type A personality.(2)

Q6. You have assessed 20 peers of your class for mathematical comprehension/ knowledge. Create a distribution for the results you are most likely to expect. What is the shape of this distribution? (2)

Q7. The evidence for hereditary influences on intelligence comes mainly from studies of twins and adopted children. With respect to the role of environment, studies have reported that as children grow in age, their intelligence level tends to move closer to their adopted parents. Children from disadvantaged home adopted into families of higher socio-economic status exhibit in a large increase in their intelligence scores. There is evidence that environmental deprivation lowers intelligence while rich nutrition, good family background and quality schooling increases intelligence. There is a general consensus among psychologists that intelligence is the product of complex interaction of heredity and environment. Heredity can be viewed as something that sets a range within which an individual's development is shaped by the support and opportunities of the environment. Studies have also shown correlation between twins reared together (.60) and siblings reared together (.50) and sibling reared apart (.25) to share intelligence.

i. As children grows in age, their _____ tends to closer to their adoptive parents.(1)

a. Moral value b. Mental level c. Intelligence level d. All the above

- ii. Environmental deprivation lowers _____ (1)
 a. Insight b. Intelligence c. wisdom d. None of the above
- iii. The evidence for the hereditary influences on intelligence comes mainly from (1)
 a. studies of twins b. studies of adopted children c. both a & b d. neither a & nor b
- iv. children from disadvantaged homes adopted into families of higher socio-economics status exhibit a large increase in their _____. (1)
 a. educational status b. intelligence scores c. social status d. All the above
- Q8. Rehaan is good at solving mathematical problems. Which intelligence according to Gardener would he excel in? Write the key characteristics of multiple intelligence. (4)
- Q9. How do Alfred Adler and Karen Horney Explain personality development? (4)

WEEK 3

- Q1. Shweta has been writing for the school magazine and would like to pursue journalism. Which intelligence is her skill reflecting? (1)
- Q2. _____ are enduring beliefs about an ideal mode of behaviour. (1)
- Q3. High ability, creativity and commitment are found in individuals with which intelligence? (2)
- Q4. Does heredity influence intelligence? (2)
- Q5. Write a note on the test that can be given only to literate groups based on the type of items. (2)
- Q6. Shirin learnt an answer and was able to recall it exactly the way it had been learnt. According to Arthur Jensen what level of learning she is using? (2)
- Q7. Psychological attributes are multi-dimensional. Describe any three such attributes. (3)
- Q8. What are some of the erroneous practices associated with intelligence testing? (4) Q9. Which intelligence is associated with Indian culture? Write a detailed note on the same. (4)
- Q10. Explain "Maslow's humanistic approach keeping in mind an individual who is feeling low. (4)

WEEK 4

- Q1. A person having a _____ sets a standard for guiding her/his actions in life and for judging others. (1)
- Q2. _____ refers to an individual's underlying potential for acquiring skills. (1)
- Q3. Aditya has to interview, a famous politician on a live T.V. show. Which is the most appropriate type of interview he can use? (2)
- Q4. Why is emotional intelligence receiving increasing attention of educators? (2)
- Q5. Describe key feature of the case study method. (2)
- Q6. Angad has been the topper in a class. He went to the topmost college, where he was neither sensitive to his own self or to others. This led to problems in interpersonal relationships with reference to his condition. Explain the importance of the emotional intelligence in his life. (2)
- Q7. Think of an international conflict. Suggest conflict resolution strategies for the same. (3)
- Q8. Explain the competencies of Indian notion of intelligence. (4)
- Q9. How is aptitude different from intelligence? Explain how the PASS model helps us to understand intelligence. (4)
- Q10. Explain the relationship between creativity and intelligence. (4)
- Q11. Describe behavioural ratings used in the assessment of personality. Explain the major limitations in using these ratings. (6)
- Q12. According to Freud, individuals avoid anxiety by using mechanisms that protect the ego by distorting reality. What are these mechanisms called? Explain its different kinds with the help of examples. (4)
- Q13. Anand wants to become musician even though he belongs to the family of doctors. He wishes to fulfil his potential. Using Carl Roger's terminology, describe this perspective as revealed by Anand's personality. (4)
- Q14. Describe Freud's psychosexual stages of personality development. (6)

Subject: Economics

1. Which of the following is the credit money?

- (A) Cheque and draft
- (B) Promissory note
- (C) Exchange note
- (D) All of these

2. In order to encourage investment in the economy, the Central Bank may _____

- (A) Reduce Cash Reserve Ratio
- (B) Increase Cash Reserve Ratio
- (C) Sell Government securities in the open market
- (D) Increase Bank Rate

3. Institution that accepts deposits for lending purpose is known as _____

- (A) Commercial Bank
- (B) Central Bank
- (C) Government
- (D) Public

4. Who circulates all mint and one rupee note in India?

- (A) Ministry of Finance
- (B) RBI
- (C) Ministry of External Affairs
- (D) State Government

5. Which of the following is not a phase of Circular Flow of income?

- (a) Production Phase
- (b) Income phase
- (c) Expenditure phase
- (d) Growth phase

6. In closed economy, which of the following Sectors is not included?

- (a) Household
- (b) Local Firms
- (c) Local Government
- (d) Rest of the world

7. Which of the following is not a Flow Concept?

- (a) Capital
- (b) Capital Formation
- (c) Income
- (d) Depreciation

8. "Real flow" refers to the flow of : –

- (a) Goods and services across different sector of the economy
- (b) Emotions
- (c) Factor services from household sector to the producer sector
- (d) Both A and C

9. Which of the following is a "Stock Concept" ?

- (a) Population
- (b) Wealth
- (c) Capital
- (d) All of the above

10. Indian Monetary System is based on _____

- (A) Paper Standard
- (B) Metallic Standard
- (C) Gold Standard
- (D) Credit Money Standard

SECTION-B

Q11. Distinguish between consumption goods and capital goods.

Q12. State whether the following is stock or flow with reasons:

1. Money supply 2. Capital 3. Wealth 4. Investment 5. Income

Q13. All capital goods are producer goods. Why?

Q14. Explain non-monetary exchanges as a limitation of using gross domestic product as an index of welfare of a country?

Q15. Should the following be treated as normal resident of India? Give reasons.

1. Foreigner working in Indian embassy in UK
2. Indian student in France who has been living there for five years

Q16. The government of India has launched a scheme of “cash transfer” to the people below poverty line. Would you consider these transfers as a part of domestic income of the country.

Q17. Explain non-monetary exchanges as a limitation of using gross domestic product as an index of welfare of a country?

Q18. Differentiate between national income at current prices and national income at constant prices. Which of the two presents a better view of the economic growth of economy and why?

Q19. Define Externalities. Give an example of negative externality. What is its impact on welfare?

ASSIGNMENT CLASS XII DIFFERENTIATION

1. Find $\frac{dy}{dx}$ for the following:

(a) $y = \frac{1}{\sqrt{a^2 - x^2}}$

(b) $y = \frac{5x}{\sqrt[3]{1-x^2}} + \sin^2(2x+3)$

(c) $y = \frac{\cos x + \sin x}{\cos x - \sin x}$

(d) $y = \log \sqrt{\frac{1+\cos^2 x}{1-e^{2x}}}$

(e) $y = \log(x + \sqrt{1+x^2})$

(f) $y = \sqrt{\frac{1-\sin 2x}{1+\sin 2x}}$

2. Show that $\frac{d}{dx} \left[\frac{x}{2} \sqrt{a^2 - x^2} + \frac{a^2}{2} \sin^{-1} \left(\frac{x}{a} \right) \right] = \sqrt{a^2 - x^2}$.

3. If $y = \sqrt{\frac{1-x}{1+x}}$, prove that $(1-x^2) \frac{dy}{dx} + y = 0$.

4. If $y = (x + \sqrt{x^2 + a^2})^n$, prove that $\frac{dy}{dx} = \frac{ny}{\sqrt{x^2 + a^2}}$.

5. Find $\frac{dy}{dx}$ for the following:

(a) $\sin^{-1}(\cos x) + \cos^{-1}(\sin x)$

(b) $\tan^{-1} \left(\frac{1 - \cos x}{\sin x} \right)$

(c) $\tan^{-1} \left(\frac{\cos x - \sin x}{\cos x + \sin x} \right)$

(d) $\tan^{-1} \left(\sqrt{\frac{1+\sin x}{1-\sin x}} \right)$

(e) $\tan^{-1} \left(\frac{\sqrt{1+\sin x} + \sqrt{1-\sin x}}{\sqrt{1+\sin x} - \sqrt{1-\sin x}} \right)$

6. Find $\frac{dy}{dx}$ for the following:

(a) $\cos^{-1}(4x^3 - 3x)$

(b) $\cot^{-1} \left(\frac{1-x}{1+x} \right)$

(c) $\tan^{-1} \left(\frac{\sqrt{1+x^2} - 1}{x} \right)$

(d) $\tan^{-1} \left(\frac{\sqrt{1+x^2} - \sqrt{1-x^2}}{\sqrt{1+x^2} + \sqrt{1-x^2}} \right)$

(e) $\sin^{-1} \left(\frac{5x + 12\sqrt{1-x^2}}{13} \right)$

7. If $\sqrt{1-x^2} + \sqrt{1-y^2} = a(x-y)$, prove that $\frac{dy}{dx} = \sqrt{\frac{1-y^2}{1-x^2}}$.

8. If $y = \sqrt{x} + \frac{1}{\sqrt{x}}$, prove that $2x \frac{dy}{dx} + y = 2\sqrt{x}$.

9. If $y\sqrt{x^2+1} = \log(\sqrt{x^2+1} - x)$, show that $(x^2+1) \frac{dy}{dx} + xy + 1 = 0$.

10. If $y \log x = x - y$, prove that $\frac{dy}{dx} = \frac{\log x}{(1 + \log x)^2}$.

11. If $\log(\sqrt{x^2 + y^2}) = \tan^{-1} \frac{y}{x}$, prove that $\frac{dy}{dx} = \frac{x + y}{x - y}$.

12. If $y = \frac{\sin^{-1} x}{\sqrt{1 - x^2}}$, prove that $(1 - x^2) \frac{dy}{dx} = xy + 1$.

13. If $y = x^{\cos x} + \cos x^{\sin x}$, find $\frac{dy}{dx}$.

14. If $x^a y^b = (x + y)^{(a+b)}$, prove that $\frac{dy}{dx} = \frac{y}{x}$.

15. If $f(x) = \left(\frac{3+x}{1+x}\right)^{2+3x}$, find $f'(0)$.

16. Differentiate $\tan^{-1}\left(\frac{2x}{1-x^2}\right)$ w.r.t. $\sin^{-1}\left(\frac{2x}{1+x^2}\right)$.

17. If $x = a \sin 2t(1 + \cos 2t)$, $y = b \cos 2t(1 - \cos 2t)$, show that $\left(\frac{dy}{dx}\right)_{at=\frac{\pi}{4}} = \frac{b}{a}$.

18. If $x = a\left(\frac{1+t^2}{1-t^2}\right)$, $y = \frac{2t}{1-t^2}$, show that $\frac{dy}{dx} = \frac{1+t^2}{2at}$.

19. If $x = 2 \cos \theta - \cos 2\theta$ and $y = 2 \sin \theta - \sin 2\theta$, find $\left(\frac{d^2y}{dx^2}\right)_{\theta=\frac{\pi}{2}}$.

20. If $y = A \cos nx + B \sin nx$, prove that $\frac{d^2y}{dx^2} + n^2y = 0$.

21. If $y = e^x (\sin x + \cos x)$, prove that $\frac{d^2y}{dx^2} - 2 \frac{dy}{dx} + 2y = 0$.

22. If $y = \tan^{-1} x$, show that $(1 + x^2) \frac{d^2y}{dx^2} + 2x \frac{dy}{dx} = 0$.

23. If $y = \left[\log\left(x + \sqrt{x^2 + 1}\right)\right]^2$, show that $(1 + x^2) \frac{d^2y}{dx^2} + x \frac{dy}{dx} = 2$.

Application of Derivatives

1. Water is dripping out from a conical funnel of semi vertical angle $\frac{\pi}{4}$ at a uniform speed of $2 \text{ cm}^3 / \text{sec}$ through a tiny hole at the vertex of the bottom. When the slant height of water is 4cm , find the rate of decrease of slant height of the water.
 2. A man is moving away from a tower 49.6 m high at the rate of 2 m/s. Find the rate at which the angle of elevation of the top of the tower is changing, when he is at a distance of 36 m from the foot of the tower. Assume that the eye level of the man is 1.6 m from the ground.
 3. Evaluate following up to three decimal places using differentiation:
 $\sqrt{25.2}$, $\sqrt[3]{29}$, $\sqrt{0.037}$
 4. Find the intervals in which the function $f(x) = \log(1+x) - \frac{2x}{2+x}$ is increasing or decreasing.
 5. Find the intervals in which the function $f(x) = (x+1)^3 (x-3)^3$ is increasing or decreasing. Also find the points at which the function has local maxima, local minima and the point of inflexion.
 6. Find all the points of local maximum and minimum and the corresponding maximum and minimum values of the following function $\frac{3}{4}x^4 - 8x^3 + \frac{45}{2}x^2 + 105$.
 7. Find the point on the curve $y^2 = 4x$ which is nearest to the point $(2, -8)$
 8. Find the equation of the tangent to the curve $y = (x^3 - 1)(x - 2)$ at the points where the curve cuts the x-axis.
 9. Find the intervals in which the function $f(x) = 2x^3 - 9x^2 + 12x + 15$ is increasing and decreasing.
 10. Separate $\left[0, \frac{\pi}{2}\right]$ into sub intervals in which $f(x) = \sin^4 x + \cos^4 x$ is increasing or decreasing.
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11. Find the points of local maxima and local minima and also the local maximum and local minimum values of the following functions : (i) $f(x) = 2\cos x + x, x \in (0, \pi)$
(ii) $f(x) = 2\sin x - x, x \in \left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$
12. Find the equation of the tangent and normal to the curve
 $x = 1 - \cos \theta, y = \theta - \sin \theta$ at $\theta = \frac{\pi}{4}$
13. Prove that the radius of the right circular cylinder of greatest curved surface area which can be inscribed in a given cone is half of that of cone.
14. An open box with a square base is to be made of given iron sheet of area 27 sq.m. Show that the maximum volume of the box is 13.5 cu. m.
15. Show that the triangle of maximum area that can be inscribed in a given circle is an equilateral triangle.
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ASSIGNMENT CLASS XII INDEFINITE INTEGRALS

Evaluate the following Integrals:

1. $e^{x \log a} + e^{a \log x} + e^{a \log a}$
2. $\frac{1}{1 + \cos x}$
3. $\frac{\sin x}{1 + \sin x}$
4. $\tan^{-1}(\sec x + \tan x)$
5. $\frac{\sin^6 x + \cos^6 x}{\sin^2 x \cos^2 x}$
6. $\tan^{-1} \sqrt{\frac{1 - \sin x}{1 + \sin x}}$
7. $\frac{1}{\sqrt{3x+4} - \sqrt{3x+1}}$
8. $\frac{x^3}{x+2}$
9. $\sin^3 x \cos^3 x$
10. $\cos^4 x$
11. $\cos 2x \cos 4x$
12. $\frac{x^4 + 3}{x^2 + 1}$
13. $\sin 4x \cos 7x$
14. $\frac{1 + \cos x}{1 - \cos x}$
15. $\frac{e^x - e^{-x}}{e^x + e^{-x}}$
16. $\frac{\sin 2x}{a^2 \sin^2 x + b^2 \cos^2 x}$
17. $\frac{\sin x}{\sin(x-a)}$
18. $\frac{1}{\sin(x-a) \sin(x-b)}$
19. $\frac{1 - \cot x}{1 + \cot x}$
20. $\frac{1}{e^x + 1}$
21. $\frac{1}{\sqrt{x}(\sqrt{x} + 1)}$
22. $\frac{\sin 2x}{(a + b \cos x)^2}$
23. $\frac{\sec^2(2 \tan^{-1} x)}{1 + x^2}$
24. $\sin^2 x \cos^5 x$
25. $\sin^5 x$
26. $\tan^3 x$
27. $\left(\frac{x+1}{x}\right)(x + \log x)^2$
28. $\frac{\cos^5 x}{\sin x}$
29. $\frac{1}{\sqrt{9 - 25x^2}}$
30. $\frac{x^4 + 1}{x^2 + 1}$
31. $\frac{1}{3 + 2x - x^2}$
32. $\frac{1}{x^2 + 8x + 20}$
33. $\frac{e^x}{e^{2x} + 6e^x + 5}$
34. $\frac{1}{x(x^n + 1)}$
35. $\frac{x}{x^4 - x^2 + 1}$
36. $\frac{1}{\sqrt{9 + 8x - x^2}}$
37. $\frac{1}{\sqrt{16 - 6x - x^2}}$
38. $\frac{2x}{\sqrt{1 - x^2 - x^4}}$
39. $\frac{2x - 3}{x^2 + 3x - 18}$
40. $\frac{2 \sin 2\phi - \cos \phi}{6 - \cos^2 \phi - 4 \sin \phi}$
41. $\frac{x + 2}{2x^2 + 6x + 5}$
42. $\frac{x^2}{x^2 + 6x + 12}$
43. $\sqrt{\frac{a-x}{a+x}}$
44. $\frac{3x + 1}{\sqrt{5 - 2x - x^2}}$
45. $\frac{1}{a^2 \sin^2 x + b^2 \cos^2 x}$
46. $\frac{\sin x}{\sin 3x}$
47. $\frac{1}{2 - 3 \cos 2x}$
48. $\frac{\sin 2x}{\sin^4 x + \cos^4 x}$
49. $\frac{1}{1 - 2 \sin x}$
50. $\frac{1}{5 + 4 \cos x}$
51. $\frac{1}{3 + 2 \sin x + \cos x}$
52. $\frac{3 \sin x + 2 \cos x}{3 \cos x + 2 \sin x}$
53. $(\log x)^2$
54. $\sin^{-1} x$
55. $\frac{x - \sin x}{1 - \cos x}$
56. $\sec^3 x$

57. $\frac{\sin^{-1} x}{(1-x^2)^{3/2}}$ 58. $x^2 \tan^{-1} x$ 59. $\tan^{-1}\left(\frac{2x}{1-x^2}\right)$ 60. $\frac{\sin^{-1} x}{x^2}$
61. $e^x \left(\frac{1-\sin x}{1-\cos x}\right)$ 62. $\frac{\log x}{(1+\log x)^2}$ 63. $\frac{2-x}{(1-x)^2} e^x$ 64. $\frac{1}{\log x} - \frac{1}{(\log x)^2}$
65. $e^{ax} \cos bx$ 66. $\sqrt{7x-10-x^2}$ 67. $\frac{\sqrt{16+(\log x)^2}}{x}$ 68. $(3x-2)\sqrt{x^2+x+1}$
69. $(x+1)\sqrt{1-x-x^2}$ 70. $\frac{2x-1}{(x-1)(x+2)(x-3)}$ 71. $\frac{1}{\sin x - \sin 2x}$ 72. $\frac{3x+1}{(x-2)^2(x+2)}$
73. $\frac{8}{(x+2)(x^2+4)}$ 74. $\frac{x^2}{(x^2+1)(x^2+4)}$ 75. $\frac{\tan \theta + \tan^3 \theta}{1 + \tan^3 \theta}$ 76. $\frac{\sin 2x}{(1+\sin x)(2+\sin x)}$
77. $\frac{1}{x(x^5+1)}$ 78. $\frac{x^2-1}{x^4+x^2+1}$ 79. $\frac{x^2+4}{x^4+16}$ 80. $\frac{1}{x^4+1}$
81. $\sqrt{\tan x}$ 82. $\sqrt{\cot x}$ 83. $\frac{1}{\sin^4 x + \cos^4 x}$ 84. $\frac{x^2-1}{x^4+1}$
85. $\frac{1}{(x-3)\sqrt{x+1}}$ 86. $\frac{1}{(x^2-4)\sqrt{x+1}}$ 87. $\frac{1}{(x+1)\sqrt{x^2-1}}$ 88. $\frac{1}{x^2\sqrt{1+x^2}}$
89. $\frac{x}{x^3+x^2+x+1}$ 90. $\frac{\sin(x-\alpha)}{\sin(x+\alpha)}$ 91. $\frac{(x+1)e^x}{(x+2)^2}$ 92. $\frac{1-\tan x}{x+\log(\cos x)}$
93. $\frac{\sqrt{x^2+a^2}}{x}$ 94. $\frac{e^x}{\sqrt{5-4e^x-e^{2x}}}$ 95. $\frac{1}{x^4-5x^2+16}$ 96. $\sqrt{1+2\tan x(\sec x + \tan x)}$
97. $e^{\sqrt{x}} \frac{\cos e^{\sqrt{x}}}{\sqrt{x}}$ 98. $\cos(\log x)$ 99. $\frac{2\sin 2\theta - \cos \theta}{6 - \cos^2 \theta - 4\sin \theta}$ 100. $\tan^{-1}\left(\sqrt{\frac{1-\cos 2x}{1+\cos 2x}}\right)$

ASSIGNMENT CLASS XII DEFINITE INTEGRALS

Evaluate the following:

1. $\int_0^{\pi/2} \cos^3 x \, dx$
2. $\int_0^{\pi/4} \sqrt{1 - \sin 2x} \, dx$
3. $\int_0^4 \frac{1}{\sqrt{x^2 + 2x + 3}} \, dx$
4. $\int_0^1 \frac{2x}{5x^2 + 1} \, dx$
5. $\int_1^2 \frac{\log x}{x^2} \, dx$
6. $\int_1^2 \frac{1}{x(1+x^2)} \, dx$
7. $\int_{\pi/4}^{\pi/2} \cos 2x \log \sin x \, dx$
8. $\int_1^2 \left(\frac{x-1}{x^2} \right) e^x \, dx$
9. $\int_0^{\pi/2} \frac{\cos \theta}{(1 + \sin \theta)(2 + \sin \theta)} \, d\theta$
10. $\int_0^{1/\sqrt{2}} \frac{\sin^{-1} x}{(1-x^2)^{3/2}} \, dx$
11. $\int_0^{\pi/2} \cos^4 x \, dx$
12. $\int_0^{\pi/2} (\sqrt{\tan x} + \sqrt{\cot x}) \, dx$
13. $\int_0^{\pi} \frac{1}{5 + 4 \cos x} \, dx$
14. $\int_0^{\pi/2} \frac{1}{2 \cos x + 4 \sin x} \, dx$
15. $\int_0^{\pi/2} \frac{\cos x}{3 \cos x + \sin x} \, dx$
16. $\int_0^{\pi/2} \frac{\sin 2x}{\sin^4 x + \cos^4 x} \, dx$
17. $\int_0^1 \frac{e^x}{1+e^{2x}} \, dx$
18. $\int_0^1 \frac{\sqrt{\tan^{-1} x}}{1+x^2} \, dx$
19. $\int_0^{\pi/4} \sec^4 x \, dx$
20. $\int_0^1 \sqrt{\frac{1-x}{1+x}} \, dx$
21. $\int_1^2 \frac{1}{x(1+\log x)^2} \, dx$
22. $\int_0^{\pi} |\cos x| \, dx$
23. $\int_{-1}^1 e^{|x|} \, dx$
24. $\int_{-1}^1 f(x) \, dx$, where $f(x) = \begin{cases} 1-2x & x \leq 0 \\ 1+2x & x \geq 0 \end{cases}$
25. $\int_0^3 [x] \, dx$
26. $\int_0^2 [x^2] \, dx$
27. $\int_{-1}^1 |2x+1| \, dx$
28. $\int_{-\pi/2}^{\pi/2} (\sin |x| + \cos |x|) \, dx$
29. $\int_{-\pi/4}^{\pi/4} |\sin x| \, dx$
30. $\int_1^2 \frac{\sqrt{x}}{\sqrt{3-x} + \sqrt{x}} \, dx$
31. $\int_0^{\pi/2} \frac{\sin x}{\sin x + \cos x} \, dx$
32. $\int_0^{\pi/2} \frac{\sin^2 x}{\sin x + \cos x} \, dx$
33. $\int_0^{\pi/2} \frac{\sin^n x}{\sin^n x + \cos^n x} \, dx$
34. $\int_0^{\pi/2} \sin 2x \log(\tan x) \, dx$
35. $\int_{-\pi/4}^{\pi/4} x^3 \sin^4 x \, dx$
36. $\int_{-a}^a \sqrt{\frac{a-x}{a+x}} \, dx$
37. $\int_0^{\pi} \frac{x \tan x}{\sec x \cos ex} \, dx$
38. $\int_0^1 \cot^{-1}(1-x+x^2) \, dx$
39. $\int_{-1}^1 \log \left(\frac{2-x}{2+x} \right) \, dx$
40. $\int_0^1 \sin^{-1} \left(\frac{2x}{1+x^2} \right) \, dx$
41. $\int_0^1 \frac{\log(1+x)}{1+x^2} \, dx$
42. $\int_0^1 \cos^{-1} \left(\frac{1-x^2}{1+x^2} \right) \, dx$
43. $\int_0^{\pi/2} \frac{1}{1+\sqrt{\cot x}} \, dx$
44. $\int_0^{\infty} \frac{x(\tan^{-1} x)^2}{(1+x^2)^{3/2}} \, dx$
45. $\int_0^{\pi/2} x^2 \cos 2x \, dx$
46. $\int_{-\infty}^{\infty} \frac{1}{9+x^2} \, dx$
47. $\int_0^1 x \sqrt{\frac{1-x^2}{1+x^2}} \, dx$
48. $\int_0^{\pi/2} \frac{1}{1+\tan^3 x} \, dx$
49. $\int_0^1 x(1-x)^5 \, dx$
50. $\int_0^a \frac{1}{x+\sqrt{a^2-x^2}} \, dx$
51. $\int_0^{\infty} \frac{1}{(x^2+a^2)(x^2+b^2)} \, dx$
52. $\int_0^{2\pi} e^x \cos \left(\frac{\pi}{4} + \frac{x}{2} \right) \, dx$