English

CLASS XII SUMMER BREAK HOLIDAY HOMEWORK

1. Solve any 1 comprehension passage every week and do note- making and summary on it.

(Stick to the format and rules of note- making)

2. Make a newspaper page (using chart paper sheet) having 5 classified advertisement. Decorate the page beautifully.

3. Prepare an interesting PPT on any chapter from Flamingo or Vistas.

4. Read and critically analyse the theme of the following chapters:

i. The last Lesson

ii Lost Spring

iii Deep Water

iv Journey to the End of the Earth

v The Tiger King

vi Third Level

5. Identify and list the poetic devices used in the poems:

i My Mother at Sixty- Six

ii An Elementary School Classroom in a Slum

Iii Keeping Quiet

6. Prepare an invitation card (formal) on the occasion of your parents'25th Wedding anniversary.

7. Write an article and also draft a poster on the topic: Covid- 19 A Threat to Existence.

8.'Brain Drain is not a bane for a country like India. Write a debate in 150- 200 words either for or against the motion.

9.Write the following letters:

a) You wish to place an order for air conditioners, water coolers, air purifiers for your office in Hauz Khas from Croma C-10, Nanak Pura, Rajouri Garden, New Delhi- 110027. You are Sudipta Roy/ pankaj, the Manager of 'The Crafters 21, Hauz Khas Market, New Delhi.

b) Write a letter cancelling the above order. Give suitable reasons.

c) Write a letter of complaint to the Secretary of your Resident Welfare Association regarding the growing lawlessness in your colony. You are Ravi Rai/ Ravina Raj of Greenwood Colony, New Delhi.

d) You bought Sewing machines for your tailoring unit from 'The Best Sewing Machine Company'10, Nai Sarak, Chandni Chowk, Delhi. Three of those sewing machines have developed problems in functioning. Write a letter of complaint. You are Sam Sethna of the True Form Tailors, 21 Lajpat Nagar, New Delhi.

Physics

B.V.B A.S.M.A

SUMMER HOLIDAY HOMEWORK [2020-2021]

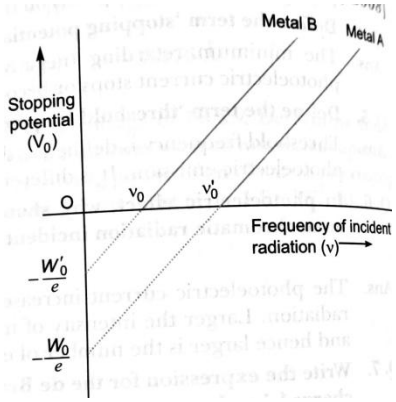
Class XII

PHYSICS

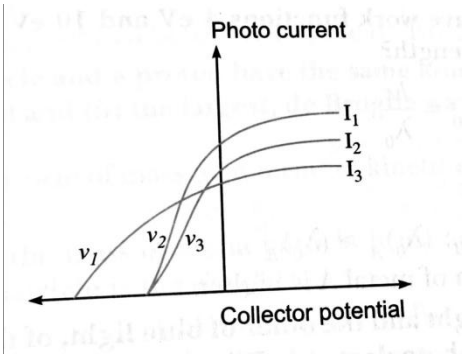
1. **Solve the assignments of given chapters in sheets:[attached]**
   a) **Dual nature of matter and radiation**
   b) **Semiconductors**
   c) **Atoms**
   d) **Nuclei**
   e) **Ray optics**
2. **Make a working model /toy/activity on electricity using trash from house.**
3. **Complete your practical files(written part only) if you are able to arrange for the files.**
   a) **Practical file[comprise of 10 expts only]**
      i) **Ohm's law**
      ii) **Meter bridge[resistivity]**
      iii) **Meter bridge[series only]**
      iv) **Potentiometer[E1/E2]**
      v) **Potentiometer[internal resistance]**
      vi) **focal length concave mirror**
      vii)**focal length convex lens**
      viii) **focal length of convex mirror using convex lens**
      ix)**I-V characteristics of pn junction**
      x) **prism**
4. **Solve NCERT examples and back exercise questions .**
5. **Complete your notes as provided during the online classes.**

BALVANTRAY MEHTA VIDYA BHAWAN
ANGURIDEVI SHERSINGH MEMORIAL ACADEMY
ASSIGNMENT-DUAL NATURE OF MATTER AND RADIATION
CLASS XII

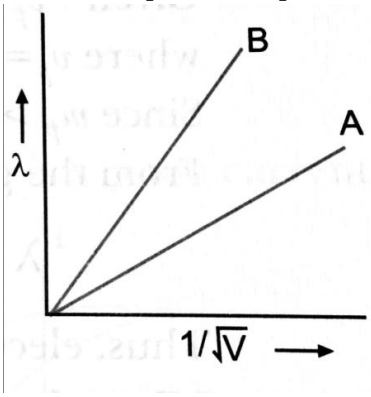
Q1 write three characteristic features in photoelectric effect which cannot be explained by classical theory.
Q2 Two metals A and B have work function 4eV and 10 eV respectively. Which metal has higher threshold wavelength?
Q3 a) why is the slope same?
b) For which metal will the emitted electrons have greater K.E for incident radiation of same frequency?
Fig:



Q4 Define the term "intensity of radiation" in photon picture. Explain the nature of the graphs.



Q5 For a photosensitive surface, threshold wavelength is λ_0.Does photoemission occur if the wavelength λ of incident radiation is i) more than λ_0 ii) less than λ_0 ?
Justify your answer.
Q6 An alpha particle and a proton are accelerated through the same potential difference. Calculate the linear momenta acquird by the two.
Q7 If the frequency of incident light on a metal surface is doubled, what will be impace on kinetic energy of electrons?
Q8 When light of wavelength 400nm is incident on the cathode of a photocell, the stopping potential recorded is 6V. If the wavelength of the incident light is increased to 600nm, calculate the new stopping potential.
Q9 Show on a graph the variation of the de Broglie wavelength associated with the square root of the stopping potential .
Q10 The two lines A and B shown in the graph represent de broglie wavelength having same charge. Which of the two represent the particle of smaller mass?



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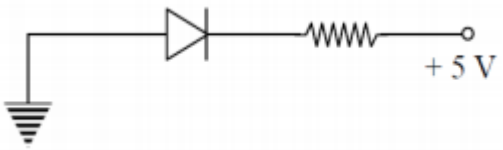
ASSIGNMENT-SOLID AND SEMICONDUCTOR

CLASS XII

Q1 In the following diagram, pn junction is forward or reverse biased?



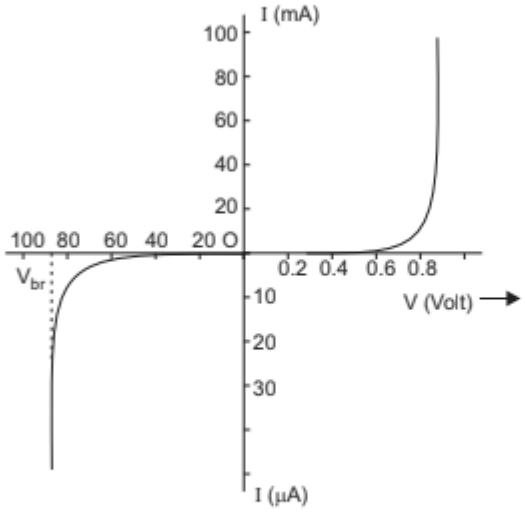
Q2 Distinguish between n-type and p-type semiconductors. Draw their energy band diagrams.

Q3 Name the important process that occurs during the formation of a pn junction. Explain briefly, with the help of a suitable diagram, how a pn junction is formed. Define the termd "barrier potential".

Q4 Explain briefly the using the necessary circuit diagram, the three basic processes which take place to generate the emf in a solar cell when light falls on it. Draw the I-V characteristics of a solar cell. Write two important criteria required for the selection of material for solar cell fabrication.

Q5

The figure adjoining shows the *V-I* characteristics of a semiconductor diode.



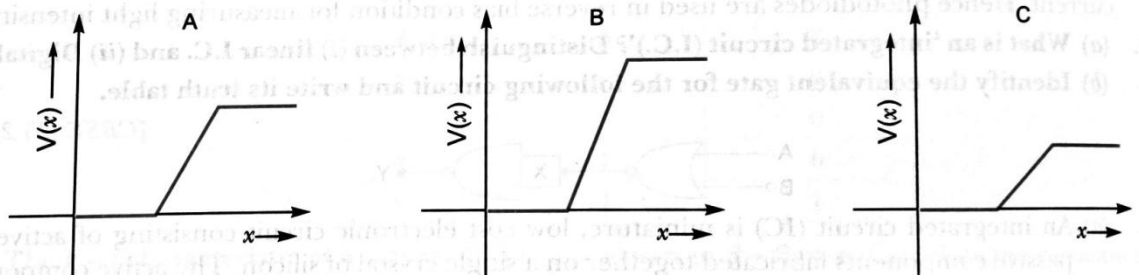
(i) Identify the semiconductor diode used.

(ii) Draw the circuit diagram to obtain the given characteristic of this device.

(iii) Briefly explain how this diode can be used as a voltage regulator.

Q6The graph of the potential barrier versus width of depletion region for an unbiased diode is shown in A. In comparison to A, graphs B and C are obtained after biasing the diode in different ways. Identify the type of biasing in B and C and justify your answer.

Fig:



Q7 A change of 0.2 mA in the base current causes a change of 5 mA in the collector current for a common emitter amplifier.

a) **Find the ac current gain of the transistor.**
b) **Ii) If the input resistance is 2KΩ and its voltage gain is 75, calculate the load resistor used in the circuit.**

Q8 Give reasons:

a) **The Zener Diode is fabricated by heavily doping both p and n sides of the junction.**
b) **A photodiode, when used as a detector of optical signals is operated under reverse bias.**
c) **The band gap of the semiconductor used for fabrication of visible LED's must be atleast 1.8eV.**

Q9 A) Distinguish between an intrinsic semiconductor and a p-type semiconductor. Give reason why a p-type semiconductor is electrically neutral, although $n_h >> n_e$.

Q10 Three photodiodes D1,D2 and D3 are made up of semiconductors 2.5eV,2eV and 3eV respectively.

Which one will be able to detect wavelength of 6000A?

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ASSIGNMENT-ATOMS
CLASS XII

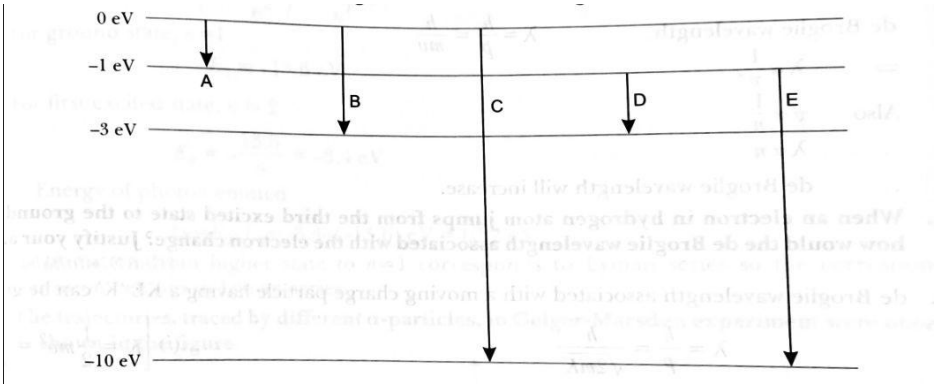
Q1Consider two different hydrogen atoms the electron in H atom is an excited state is it possible for the electron to have different energies but the same orbital angular momentum according to Bohr model ?

Q2When an electron falls from a higher energy level to a lower energy level the difference in the energies appear in the form of electromagnetic radiation. why it cannot be emitted as other form of energy?

Q3 In an experiment on Alpha particle scattering by a thin foil of gold .Draw a plot showing the number of particles scattered versus scattering angle θ.

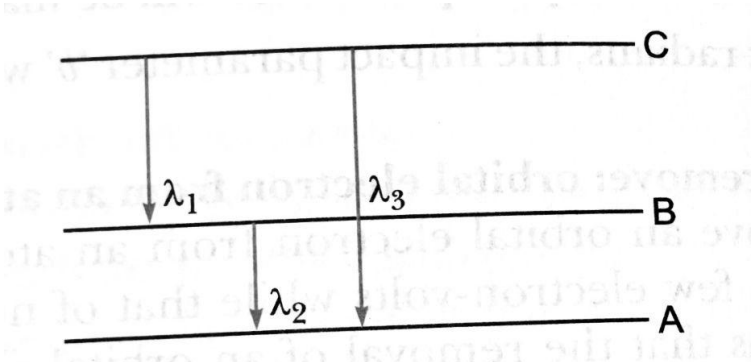
Q4 The energy levels of an atom are given below in the diagram which of the transition belong to lyman and Balmer series .calculate the ratio of shortest wavelength of lyman and Balmer series of the spectra

Fig:

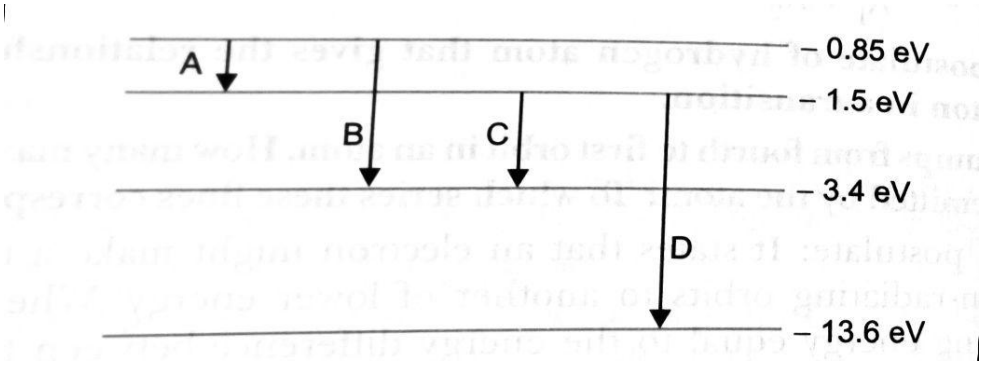


Q5 State Bohr's quantization condition for defining stationary orbits .How does de Broglie hypothesis explain the stationary orbits

Q6 Find the relation between the three wavelength λ1,λ2 and λ3 from the energy level diagram shown below.



Q7 The energy level diagrams of an element is given below identify by doing necessary calculations which transition corresponds to the emission of a spectral line of wavelength 102.7 nm?



Q8 Ground state energy of hydrogen atom is -13.6 electron volt is an electron makes a transition from an energy level -1.5 one electron volt to -3.4 electron volt calculate the wavelength of the spectral lines emitted and the name of the name the series of hydrogen spectrum to which it belongs

Q9 calculate the ratio of energies of photons produced due to transition of electrons of hydrogen atom from its second permitted energy level to the first level and highest permitted energy level 2 second permitted level.

Q10 Show mathematically how Bohr's postulate of quantisation of orbital angular momentum in hydrogen a tom is explained by de-Broglie's hypothesis.

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ASSIGNMENT- NUCLIE
CLASS XII

Q1 Radioactive isotope has half life of t years how long will it take the activity to reduce a) 3.125% b) 1% of its original value

Q2 Write the relationship between size of a nucleus and its mass number

Q3The radioactive isotope De decays according to the sequence

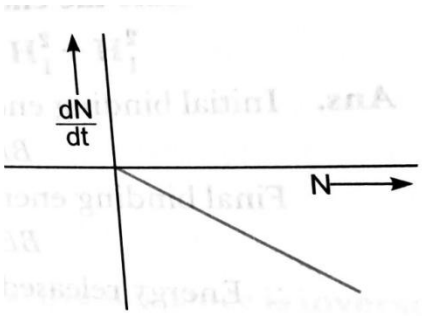
D-----α-------→D1-----β^------→D2

If the mass number and atomic number of D2 are 176 and 71 respectively what is the mass number and atomic number of D.

Q4 Two nuclei have mass number in the ratio 1 : 2 .What is the ratio of their nucleus densities ?

Q5What percentage of a given mass of radioactive substance will be left undecayed after four half periods?

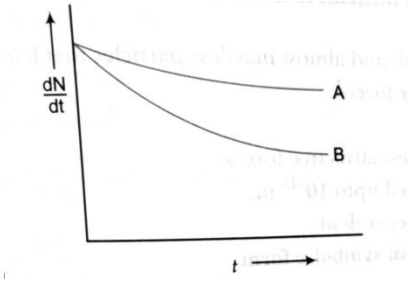
Q6 The graph is showing the variation of decay rate with number of active nuclei. Why the graph is a straight line?



Q7 What characteristic property of nuclear force explain the constancy of binding energy per nucleon in the range of mass number A lying 30 < A<170 ?

Q8 Show that the density of the nucleus over a wide range of nuclei is constant independent of mass number A.

Q9 Which sample A or B as shown in the figure has shorter mean life?



Q10 The half life of carbon is 5700 years what does it mean to Radioactive nuclei X and Y initially contain an equal number of atoms their half lives are one hour and two hours respectively. Calculate the ratio of their rates of disintegration after 2 hours.

Q11 Define the term activity of a radioactive substance . State its SI unit. Give a plot of activity of a radioactive species versus time.

Two different radioactive elements with half life T1 and T2 have N1 and N2 (undecayed) respectively present at given instant. Determine the ratio of their activities at this instant.

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ASSIGNMENT-RAY OPTICS
CLASS XII

Q1 Does the apparent depth of a tank change if viewed obliquely?

Q2 Critical angle is different for different colour of light. Is this statement true?

Justify.

Q3 The line AB in the ray diagram represents a lens. State whether the lens is convex or concave.

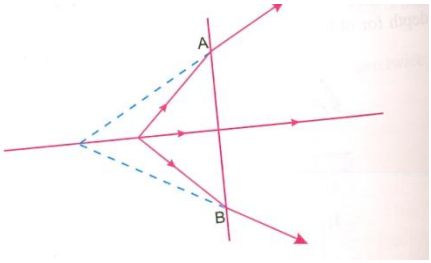


Fig:

Q4 It is difficult to view through fog. Why?

Q5 You are given the following three lenses, Which two lenses will you use as an eyepiece and as an objective to construct an astronomical telescope?

LENSES	POWER	APERTURE(IN cm)
L1	3D	8
L2	6D	1
L3	10 D	1

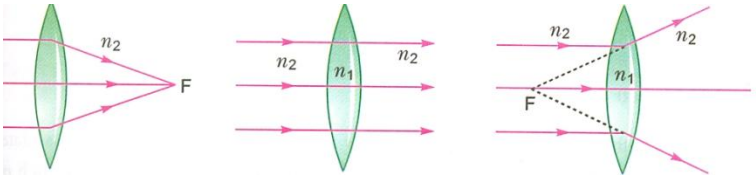
Q6 How does the focal length of a lens change when red light incident on it is replaced by violet light ? Give reason for your answer.

Q7 A convex lens made up of glass of refractive index 1.5 is dipped , in turn, in i) a medium of refractive index 1.65, ii) a medium of refractive index 1.33.

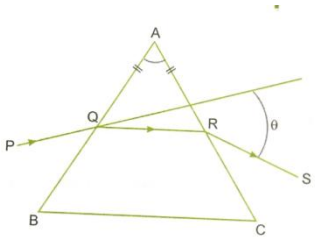
a) **Will it behave as a converging or a diverging lens in the two cases?**
b) **How will its focal length change in the two media?**

Q8 Double convex lenses are to be manufactured from a glass of refractive index 1.55, with both the faces of the same radius of curvature. What is the radius of curvature required if the focal length is to be 20 cm?

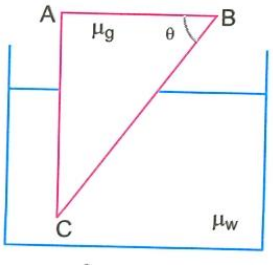
Q9 Compare the refractive indices in the given figure:



Q10A ray PQ incident on the refracting face BA is refracted in the prism BAC as shown in the figure and emerges from the other refracting face AC as RS such that AQ=R. If the angle of prism A = 60 ^{0} and refractive index of material of prism is $\sqrt{3}$, calculate Θ.



Q11 Calculate the value of Θ, for which light incident normally on face AB grazes along the face BC. Given that: μ_g=3/2, μ_w=4/3



Biology

BRMVB- ASMA

SUMMER HOLIDAY HOMEWORK [2020-2021]

Class XII

BIOLOGY

Solve the assignments of given chapters in notebook: [attached]

a) Molecular Basis of Inheritance

b) Evolution

1. **Make a working model /toy/activity on Ways of Transmission of Corona virus and preventive measures against it using waste/reusable materials from house.**
2. **Prepare a PowerPoint presentation on already allotted topics from the Unit. Ecology**
3. **Gather information on any selected topic for Project and compile this in project file (if possible).**
4. **Complete your practical files with neat handwriting and labelled diagrams.**
5. **Solve NCERT examples and back exercise questions.**
6. **Complete your notes in points for the important processes and techniques as discussed during the online classes with neat handwriting and labelled diagrams.**

CLASS XII

UNIT VI. GENETICS AND EVOLUTION

CHAPTER6.MOLECULAR BASIS OF INHERITANCE

ASSIGNMENT

VSA

1. **How many base pairs would a DNA segment of length 1.36 mm have?**
2. **Write the role of histone protein in packaging of DNA in eukaryotes.**
3. **Name the enzyme involved in the continuous replication of DNA strand. Mention the polarity of the template strand.**
4. **At which ends do 'capping' and 'tailing' of hnRNA occur, respectively.**

SA

5. **It is established that RNA is the first genetic material. Explain giving three reasons.**
6. **Why is DNA considered a better hereditary material than RNA?**
7. **(a) A DNA segment has a total of 1000 nucleotides, out of which 240 of them are adenine containing nucleotides. How many pyrimidine bases this DNA segment possesses?**

   (b) Draw a diagrammatic sketch of a portion of DNA segment to support your answer.

8. **(a) Why did Hershey and Chase use radioactive sulphur and radioactive phosphorus in their experiment?**

   (b) Write the conclusion the scientists arrived at after completing the experiment.

9. **Answer the following questions based on Meselson & Stahl's experiment:**
   a) **Write the name of the chemical substance used as a source of nitrogen in the experiment by them.**
   b) **Why did the scientists synthesise the light & the heavy DNA molecules in the organism used in the experiment?**
   c) **How did the scientists make it possible to distinguish the heavy DNA molecule from the light DNA molecule? Explain.**
   d) **Write the conclusion the scientists arrived at after completing the experiment.**
10. **The base sequence in one of the strands of DNA is TAGCATGAT.**
    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.**
11. **(a) Name the scientist who called tRNA an adapter molecule.**

    (b) Draw a clover leaf structure of tRNA showing the following:

    i. **Tyrosine attached to its amino acid site.**
    ii. **Anticodon for this amino acid in its correct site (codon for tyrosine is UCA).**

    (c) What does the actual structure of tRNA look like?

LA

12. **The average length of a DNA double helix in a typical mammalian cell is approximately 2.2 metres and the dimension of the nucleus is about 10^{-6} m.**
    a) **How is it possible that long DNA polymers are packed within a very small nucleus?**
    b) **Differentiate between euchromatin and heterochromatin.**
    c) **Mention the role of non-histone chromosomal protein.**
13. **(a) How did Griffith explain the transformation of R-strain(non-virulent) bacteria into S-strain(virulent)?**

(b) Explain how Macleod, McCarty and Avery determined the biochemical nature of the molecule responsible for transforming R-strain bacteria into S-strain bacteria.

14. **(a) What did Meselson and Stahl observe when**
    i. **they cultured E. coli in a medium containing $^{15}NH_4Cl$ for a few generations and centrifuged the content?**
    ii. **they transferred one such bacterium to the normal medium of NH_4Cl and cultured for 2 generations?**

    (b) What did Meselson and Stahl conclude from this experiment? Explain with the help of diagrams.

    (c) Which is the first genetic material? Give reasons in support of your answers.

15. **(a) Draw a labelled diagram of a "replicating fork" showing the polarity. Why does DNA replication occur within such 'forks'?**

    (b) Name two enzymes involved in the process of DNA replication, along with their properties.

16. **(a) Write the specific features of the genetic code AUG.**

    (b) Genetic codes can be universal and degenerate. Write about them, giving one example of each.

    (c) Explain the aminoacylation of the tRNA.

17. **Draw a labelled schematic structure of a transcription unit. Explain the function of each component in the unit in the process of transcription.**
18. **(a) What is an operon?**

    (b) Explain how a polycistronic structural gene is regulated by a common promoter and a combination of regulatory genes in a lac-operon.

19. **Explain the steps of DNA fingerprinting that will help in processing of the two blood samples A and B picked up from the crime scene.**

20. **Explain Human Genome Project.**

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CLASS XII

UNIT VI. GENETICS AND EVOLUTION

CHAPTER 7. EVOLUTION

ASSIGNMENT

VSA

1. **Identify the examples of homologous structures from the following:**
    a) **Vertebrate hearts**
    b) **Thorns in Bougainvillea & tendrils of Cucurbita.**

c) **Food storage organs in sweet potato & potato.**

2. **Why are the wings of a butterfly and of a bat called analogous?**

SA

3. **Describe the experiment that helped Louis Pasteur to dismiss the theory of spontaneous generation of life.**
4. **Convergent evolution and divergent evolution are the two concepts explaining organic evolution. Explain each one with the help of an example.**

OR

Differentiate between divergent & convergent evolution. Give one example of each.

5. **Branching descent & natural selection are the two key concepts of Darwinian theory of evolution. Explain each concept with the help of a suitable example.**
6. **"Post-industrialization, the population of melanised moth increased in England at the expense of white-winged moths." Provide explanation.**
7. **How is Darwin's concept of evolution different from that of de Vries?**
8. **What does the following equation represent? Explain.**

$$p^2+2pq+q^2=1$$

9. **Anthropogenic action can hasten the evolution. Explain with the help of a suitable example.**

LA

10. **(a) Name the primates that lived about 15 million years ago. List their characteristic features.**

(b) (i) Where was the first man-like animal found?

(ii) Write the order in which Neanderthals, Homo habilis & Homo erectus appeared on earth. State the brain capacity of each one of them.

(iii) When did modern Homo sapiens appear on this planet?

11. **(a) Write the Hardy-Weinberg Principle.**

(b) Explain the three different ways in which natural selection can affect the frequency of a heritable trait in a population with help of graphs.

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Maths

HOLIDAY HOMEWORK FOR CLASS 12- MATHS

MATRICES

1. Obtain the inverse of the following matrix using elementary column operations : $\begin{bmatrix} 1 & 2 \\ 2 & -1 \end{bmatrix}$
2. Express any square matrix as the sum of symmetric and skew symmetric matrix.
3. Prove that a square matrix A is invertible if and only if A is nonsingular matrix .
4. Obtain the inverse of the following matrix using elementary operations:

$$\begin{bmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{bmatrix}$$

5. For the matrix A = $\begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$, verify that $A^3 - 6A^2 + 9A - 4I = 0$
6. If matrix A = [1 2 3], then find AA', where A' is the transpose of matrix A.
7. If $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \begin{bmatrix} 3 & 1 \\ 2 & 5 \end{bmatrix} = \begin{bmatrix} 7 & 11 \\ k & 23 \end{bmatrix}$, then find the value of k.
8. If A_{ij} is the co-factor of the element a_{ij} of the determinant $\begin{vmatrix} 2 & -3 & 5 \\ 6 & 0 & 4 \\ 1 & 5 & -7 \end{vmatrix}$, then write the value of $a_{32} A_{32}$.
9. For what value of x, is the matrix A = $\begin{bmatrix} 0 & 1 & -2 \\ -1 & 0 & 3 \\ x & -3 & 0 \end{bmatrix}$ a skew- symmetric matrix?
10. If $x\begin{bmatrix} 2 \\ 3 \end{bmatrix} + y\begin{bmatrix} -1 \\ 1 \end{bmatrix} = \begin{bmatrix} 10 \\ 5 \end{bmatrix}$, then write the value of x.
11. Let A = $\begin{bmatrix} 3 & 2 & 5 \\ 4 & 1 & 3 \\ 0 & 6 & 7 \end{bmatrix}$, express A as a sum of two matrices such that one is symmetric and other is skew symmetric.

12. Show that the matrix B′AB is symmetric or skew –symmetric according as A is symmetric or skew-symmetric.

13. Find the matrix X so that $X\begin{bmatrix}1 & 2 & 3\\ 4 & 5 & 6\end{bmatrix} = \begin{bmatrix}-7 & -8 & -9\\ 2 & 4 & 6\end{bmatrix}$

14. If $A = \begin{bmatrix}-1 & 4\\ 1 & 3\end{bmatrix}$ and $B^T = \begin{bmatrix}0 & 3\\ 1 & 2\end{bmatrix}$, then find $(7A + 5B)^T$

15. Find the matrix A, satisfying the matrix equation : $\begin{bmatrix}1 & 2\\ 2 & 3\end{bmatrix} A \begin{bmatrix}4 & 7\\ 3 & 5\end{bmatrix} = \begin{bmatrix}1 & 0\\ 0 & 1\end{bmatrix}$

16. If A is an invertible matrix, then prove that $(A')^{-1} = (A^{-1})'$.

17. If $A = [a_{ij}] = \begin{bmatrix}2 & 3 & -5\\ 1 & 4 & 9\\ 0 & 7 & -2\end{bmatrix}$ and $B = [b_{ij}] = \begin{bmatrix}2 & 1 & -1\\ -3 & 4 & 4\\ 1 & 5 & 2\end{bmatrix}$ then find $a_{22} + b_{21}$.

18. If marix $A = \begin{bmatrix}1 & -1\\ -1 & 1\end{bmatrix}$ and $A^2 = kA$, then write the value of k.

19. Matrix $A = \begin{vmatrix}0 & 2b & -2\\ 3 & 1 & 3\\ 3a & 3 & -1\end{vmatrix}$ is given to be symmetric, find values of a and b.

20. If $A = \begin{bmatrix}2 & -1\\ -1 & 2\end{bmatrix}$ and I is the identity matrix of order 2, then show that $A^2 = 4A - 3I$.

DETERMINANTS

1. Find the area of the triangle with vertices (-1,2), (4,0), and (3,9).
2. Find the value of x , such that the points (0,2), (1,x) and (3,1) are collinear.
3. Find the equation of the line joining A(1,3) and B (0,0) using determinants and find k if S (k,0) is a point such that area of triangle ABD is 3 square units.

4. Given a square matrix A of order 3X3, such that |A| =12, find the value of | A.adjA|
5. If A = $\begin{bmatrix} 2 & -3 & 5 \\ 3 & 2 & -4 \\ 1 & 1 & -2 \end{bmatrix}$, find A^{-1}. Using A^{-1} solve the system of equations :2x-3y+5z =16, 3x+2y-4z =-4, x+y -2z=-3.
6. Solve the system of equations : $\frac{2}{x}+\frac{3}{y}+\frac{10}{z}$=4, $\frac{4}{x}-\frac{6}{y}+\frac{5}{z}$==1 $\frac{6}{x}+\frac{9}{y}-\frac{20}{z}$=2
7. Given A = $\begin{bmatrix} 1 & -1 & 0 \\ 2 & 3 & 4 \\ 0 & 1 & 2 \end{bmatrix}$ and B = $\begin{bmatrix} 2 & 2 & -4 \\ -4 & 2 & -4 \\ 2 & -1 & 5 \end{bmatrix}$ verify that BA = 6I, use the result to solve the system of equations x-y =3, 2x+ 3y +4z =17, y+2z =7.
8. Two schools P and Q want to award their selected students on the values of Discipline, Politeness and punctuality. The school P wants to award Rs. X each, Rs. Y each and Rs.z each for the three respective values to its 3,2 1 students with a total award money of Rs. 1000. School Q wantsto spend Rs. 1500 to award its 4, 1 and 3 students on the respective values (by giving the same award money for the three values before). If the total amount of awards for one prize on each value is Rs. 600, using matrices, find the award money for each value.
9. Prove that $\begin{vmatrix} a+b+2c & a & b \\ c & b+c+2a & b \\ c & a & c+a+2b \end{vmatrix}$ = 2 (a+b+c)^3 .
10. Without expanding, show that $\begin{vmatrix} cosec^2\theta & cot^2\theta & 1 \\ cot^2\theta & cosec^2\theta & -1 \\ 42 & 40 & 2 \end{vmatrix}$ =0
11. Using property of determinants, prove the following:

$\begin{vmatrix} a & a+b & a+2b \\ a+2b & a & a+b \\ a+b & a+2b & a \end{vmatrix}$ = $9b^2$ (a+b)

12. Using property of determinants, prove the following:

$\begin{vmatrix} 1 & 1+p & 1+p+q \\ 2 & 3+2p & 1+3p+2q \\ 3 & 6+3p & 1+6p+3q \end{vmatrix}$ =1

13. If A is a square matrix of order 3 such that | adj A| =64, find |A|. Ans. If A is non-singular square matrix such that $A^{-1} = \begin{bmatrix} 5 & 3 \\ -2 & -1 \end{bmatrix}$, then find $(A^T)^{-1}$.

14. If $A = \begin{bmatrix} a & 0 & 0 \\ 0 & a & 0 \\ 0 & 0 & a \end{bmatrix}$, find the value of |adj A|

15. If A is an invertible matrix of order 3 and |A| =5, then find | adj A|.

16. If A is square matrix of order 3 such that |adj A | = 64, find | A|

17. Use product $\begin{bmatrix} 1 & -1 & 2 \\ 0 & 2 & -3 \\ 3 & -2 & 4 \end{bmatrix} \begin{bmatrix} -2 & 0 & 1 \\ 9 & 2 & -3 \\ 6 & 1 & -2 \end{bmatrix}$ to solve the system of equations : x- y +2z =1, 2y -3z =1, 3x-2y +4z =2

18. Using matrices , solve the following system of equations : x+y +z =6, x+2z =7, 3x +y +z =12

19. Using matrices , solve the following system of equations : 4x +3y +2z = 60, x +2y +3z =45, 6x +2y +3z =70

20. Prove that $\begin{vmatrix} a & a+b & a+b+c \\ 2a & 3a+2b & 4a+3b+2c \\ 3a & 6a+3b & 10a+6b+3c \end{vmatrix} = a^3$

21. Prove that $\begin{vmatrix} b+c & a & a \\ b & c+a & b \\ c & c & a+b \end{vmatrix} = 4abc$

INVERSE TRIGONOMETRIC EQUATIONS

1. Evaluate $\tan^{-1}\{\sin(\frac{\pi}{2})\}$
2. Find the principal value of $\tan^{-1}(\tan\frac{3\pi}{4})$
3. Find the principal value of $\tan^{-1}(\tan\frac{9\pi}{8})$
4. Solve for x: $\cos^{-1}\left(\frac{x^2-1}{x^2+1}\right) + \tan^{-1}\left(\frac{2x}{x^2-1}\right) = \frac{2\pi}{3}$
5. Prove that $\sin^{-1}(\frac{63}{65}) = \sin^{-1}(\frac{5}{13}) + \cos^{-1}(\frac{3}{5})$
6. Find the solution of the equation $\tan^{-1}x - \cot^{-1}x = \tan^{-1}(\frac{1}{\sqrt{3}})$

7. If $\tan^{-1}(\frac{1}{1+1.2}) + \tan^{-1}(\frac{1}{1+2.3})+.....+\tan^{-1}(\frac{1}{1+n.(n+1)})= \tan^{-1}\theta$, then find the value of θ.
8. If $\tan^{-1}a +\tan^{-1} b + \tan^{-1}c =\pi$, then prove that a+ b+ c =abc.
9. Solve for x: $\tan^{-1}(x+1) + \tan^{-1}(x-1)= \tan^{-1}(\frac{8}{31})$.
10. Find the principal value of $\sin^{-1}(\sin\frac{4\pi}{5})$
11. Find the principal value of $\cos^{-1}(\cos\frac{13\pi}{6})$
12. Find the value of the expression $\sin(2\tan^{-1}\frac{1}{3}) +\cos(\tan^{-1} 2\sqrt{2})$.
13. Solve the following equation : $\cos(\tan^{-1}x) = \sin(\cot^{-1}\frac{3}{4})$
14. If $\tan^{-1}x + \tan^{-1}y +\tan^{-1}z = \frac{\pi}{2}$, x, y, z >0, then find the value of xy +yz +zx.
15. Solve for x : $\sin^{-1}x +\sin^{-1}2x =\frac{\pi}{3}$

ANSWERS

1. $\frac{-\pi}{4}$
2. $\frac{\pi}{4}$
3. $\frac{\pi}{8}$
4. x= $\tan\frac{\pi}{12}$
6. x=$\sqrt{3}$
7. $\theta=\frac{n}{n+2}$
9. x= ¼
10. $\frac{\pi}{5}$
11. $\frac{\pi}{6}$
12. 14/15
13. x= $\pm\frac{3}{4}$

14. 1

15. x= $\sqrt{\frac{3}{28}}$

CONTINUITY AND DIFFERENTIABILITY

1.Find the relationship between a and b so that the function f defined by:

f(x)= $\begin{cases} ax+1, if\ x \leq 3 \\ bx+3, if\ x > 3 \end{cases}$ is continuous at x =3.

2.If $x^y = e^{x-y}$, show that $\frac{dy}{dx} = \frac{logx}{(log(xe))^2}$

3.Check the continuity and differentiability of the function f(x)

$= \begin{cases} x, if\ x \geq 0 \\ 3x, if\ x < 0 \end{cases}$ at x=0.

4.If xy = $e^{|x-y|}$, then show that $\frac{dy}{dx} = \frac{y(x-1)}{x(y+1)}$

5. Find the value of "a" for which the function f defined as

f(x) = $\begin{cases} asin\frac{\pi}{2}(x+1), x \leq 0 \\ \frac{tanx-sinx}{x^3}, x > 0 \end{cases}$

6. Find $\frac{dy}{dx}$, if y = $(cosx)^x + (sinx)^{1/x}$

7. Find $\frac{dy}{dx}$: y =$(\sin x)^x + (\cos x)^{\tan x}$

Do all questions from the NCERT book . The chapters are

1. Matrices
2. Determinants
3. Inverse Trigonometric Equations
4. Continuity and Differentiability

Computer Science

Computer Science Holiday Homework

Class XII(Science Section)

1. **Do the assignment of Unit II:- Computer Networks and Unit III:- Database Management**
2. **Complete the practical questions of practical file.**
3. **Revise Unit II and Unit III.**
4. **Complete your Projects (i.e implementation only)**

Economics

SUMMER HOLIDAY HOMEWORK

Economics

1- PROJECT WORK

Suggested topics

- **Micro and Small Scale Industries**
- **Food Supply Channel in India**
- **Contemporary Employment situation in India**
- **Contemporary Employment situation in India**
- **Disinvestment policy of the government**

- **Goods and Services Tax Act and its Impact on GDP**
- **Health Expenditure (of any state)**
- **Human Development Index**
- **Inclusive Growth Strategy**
- **Self-help group**
- **Trends in Credit availability in India**
- **Monetary policy committee and its functions**
- **Role of RBI in Control of Credit**
- **Government Budget & its Components**
- **Trends in budgetary condition of India**
- **Exchange Rate determination – Methods and Techniques**
- **Currency War – reasons and repercussions**
- **Livestock – Backbone of Rural India**
- **Alternate fuel – types and importance**
- **Sarwa Siksha Abhiyan – Cost Ratio Benefits**
- **Golden Quadrilateral- Cost ratio benefit**
- **Minimum Support Prices**
- **Relation between Stock Price Index and Economic Health of Nation**
- **Waste Management in India – Need of the hour**
- **Minimum Wage Rate – approach and Application**
- **Digital India- Step towards the future**
- **Rain Water Harvesting – a solution to water crises**
- **Vertical Farming – an alternate way**
- **Silk Route- Revival of the past**
- **Make in India – The way ahead**
- **Bumper Production- Boon or Bane for the farmer**
- **Rise of Concrete Jungle- Trend Analysis**
- **Organic Farming – Back to the Nature**
- **Any other newspaper article and its evaluation on basis of economic principles**
- **Any other topic**

Expected Checklist:

- **Introduction of topic/title**
- **Identifying the causes, consequences and/or remedies**
- **Various stakeholders and effect on each of them**
- **Advantages and disadvantages of situations or issues identified**
- **Short-term and long-term implications of economic strategies suggested in the course of research**
- **Validity, reliability, appropriateness and relevance of data used for research work and for presentation in the project file**
- **Presentation and writing that is succinct and coherent in project file**
- **Citation of the materials referred to, in the file in footnotes, resource section, bibliography etc.**

The expectations of the project work are that:

- **learners will complete only ONE project.**
- **project should be of 3,500-4,000 words (excluding diagrams & graphs), preferably hand written**
- **it will be an independent, self-directed piece of study.**

2- LEARN AND REVISE CHAPTERS DONE IN THE CLASS.

Assignment on Government Budget and the Economy

3-4 Marks Questions

Q.1- The following figures are based on budget estimates of Government of India for the year 2001 – 2002. Calculate i) Fiscal Deficit ii) Revenue Deficit and iii) Primary deficit.

ITEMS	RS. BILLIONS
A) Revenue receipts	2,31,745
i) Tax Revenue	1,63,031
ii) Non-tax Revenue	68,714
B) Capital receipts	1,43,478
i) Recoveries of loans	15,164
ii) Other receipts	12,000
iii) Borrowings and other liabilities	1,16,314
C) Revenue expenditure	3,10,566
i) Interest payments	1,12,300
ii) Major subsidies	27,845
iii) Defence Expenditure	1,70,421
D) Capital Expenditure	64,657
E) Total Expenditure	3,75,223
i) Plan expenditure	1,00,100
ii) Non-plan expenditure	2,75,123
C) Revenue expenditure	3,10,566
i) Interest payments	1,12,300

Q.2- From the following data about a government budget finda) Revenue Deficit b) Fiscal Deficit and c) Primary Deficit.

Items	Rs. (cr.)
Tax revenue	47
Capital receipts	34
Non-tax revenue	10
Borrowings	32
Revenue expenditure	80
Interest payments	20

Q.3- Government raises its expenditure on producing public goods. Which economic values does it reflect? Explain.

Q.4- Tax rates on higher income group have been increased. Which economic value does it reflect? Explain.

Q.5- What are Budget Receipts?

Q.6- In a Govt. Budget, revenue deficit is Rs. 8,00,000 Cr. and borrowings are Rs. 50,000 Cr. How much is the fiscal deficit?

Q.7- What is disinvestment?

Q.8- What does zero primary deficit mean?

Q.9- Which type of revenue receipts are treated as legally compulsory payment imposed on the people by the govt.? Give example also.

Q.10- When the liability to pay a tax is on one person and the burden of tax falls on some other person, state the type of tax?

Q.11-What happens to aggregate demand when the govt. budget is in deficit?

Q.12-Classify the borrowings and recovery of loans into revenue and capital receipts of Government budget. Give reason also.

Q.13- How tax revenue is different from administrative revenue?

Q.14-How government reallocates the resources and redistributes the income through Budget?

Q.15-Find out the value of total receipts of govt. Budget if budget deficit is Rs 2,000 crores and the total expenditure is Rs 3,000 crores.

Q.16- What will be the value of fiscal deficit if primary deficit is 53,000 crores and interest on borrowings is Rs 5,000 crores?

Q.17- What indicates zero primary deficits?

Q.18- What indicates revenue deficit?

Q.19-What is fiscal discipline? What happens when fiscal discipline is not maintained in the economy?

Q.20- Is fiscal deficit always harmful for an economy?

Macroeconomics Assignment

Chapter: Money and Banking

One Mark Questions

1. Define money.
2. Define money supply.
3. What is meant by barter system?
4. Write two drawbacks of barter exchange.
5. List out two main functions of money.
6. Define commercial bank.
7. Give the meaning of central bank.
8. What do you mean by credit creation by commercial banks?
9. Define bank rate.
10. Define cash reserve ratio.

11. Give the meaning of statutory liquidity ratio.
12. What is meant by open market operations (OMO)?
13. Define repo rate.
14. Write one difference between commercial bank and central bank.
15. Mention two important functions of central bank.

Three Marks Questions

1. Explain briefly any two main functions of money.
2. How does the central bank apply bank rate as a measure of credit control?
3. What are the components of M1?
4. State any THREE functions of central bank. Explain any one.
5. Explain the "lender of last resort" function of central bank.
6. What is money multiplier?
7. Explain briefly any three drawbacks of barter system
8. Explain the open market operations method of credit control used by a central bank.

Four Marks Questions

1. Explain how money solves the drawbacks of barter exchange.
2. What is money multiplier? How will you determine its value?
3. Briefly explain any TWO quantitative measures of credit control by the central bank.
4. Explain briefly the credit creation by commercial banks with the help of an example.

P.Education

PHYSCIAL EDUCATION

CLASS- XII

HOLIDAY HOMEWORK

2020-21

(JOGINDER SINGH)

Chapter 1

1. How many byes will be given if 19 teams are participating in a knock-out tournament?

(a) 12 (b) 13 (c) 14 (d) 15

2. How many methods can be used for preparing fixtures in a league tournament?

(a) 2 (b) 4 (c) 3 (d) 5

3. Tournaments are helpful for the development of:

(a) Social qualities (b) Selection of players (c) Sports skills (d) All the above

4. How many teams will be placed in IIIrd quarter if 31 teams are participating in a knock-out Tournament?

(a) 6 (b) 7 (c) 8 (d) None

5. Intramurals are significant for:

(a) Physical development (b) Mental development

(c) Social development (d) All the above

6. Which sports competition is organised within the school?

(a) Interstate (b) Extramural

(c) Intramural (d) None of these

7. Which one of the following methods is not used for preparing fixtures in league or round robin tournament?

(a) Staircase method (b) Cyclic method

(c) Combination method (d) Tabular method

8. In which type of tournament, a team once defeated gets eliminated from the tournament?

(a) League tournament (b) Knock-out tournament

(c) Challenge tournament (d) Round Robin tournament

9. In which tournament, strong teams may have the possibility to be eliminated in the preliminary round?

(a) League tournament (b) Knock-out tournament

(c) Challenge tournament (d) League cum league tournament

10. National Sports Day in India is celebrated every year on:

(a) 29th July (b) 29th September

(c) 29th October (d) 29th August

QUESTIONS FOR 3 MARKS

1. Write three differences between intramurals and extramural.

2. What is the importance of tournaments? Discuss any three points.

3. Briefly explain the advantages and disadvantages of knock-out tournament.

4. Briefly explain about any three specific sports programmes.

5. Draw a fixture of 11 football teams participating in a tournament on the basis of knock-out.

6. Draw a fixture of 6 teams on league basis following the Cyclic Method.

7. Enlist the committees for organizing sports events and explain any eight committees in detail.

8. What do you mean by planning? Elucidate the objectives of planning in sports in detail.

Chapter 2

Fill in the blanks.

1. Our blood contains ..... percent of water.

2. Minerals and ..... are included in micronutrients.

3. The deficiency of ..... may cause goitre.

4. About ..... percent of our body weight is made up of minerals.

5. Vitamin 'C' is also known as ..... .

Choose the correct answer.

1. In most of the carbohydrates, the ratio of hydrogen atoms to oxygen atoms is:

(a) 2 : 1 (b) 1 : 2 (c) 1 : 3 (d) None of these

2. Trypsin helps in the digestion of:

(a) Vitamins (b) Fats (c) Protein (d) Carbohydrates

3. Which group of fats usually increases the chances of heart diseases?

(a) Saturated fats (b) Poly unsaturated fats

(c) Mono-unsaturated fats (d) None of the above

4. Which one of the following is not the example of macrominerals?

(a) Sodium (b) Potassium (c) Iron (d) Calcium

5. Which one of the following is an example of water soluble vitamins?

(a) Vitamin 'D' (b) Vitamin 'C' (c) Vitamin 'A' (d) Vitamin 'E'

6. Which disease is caused by the deficiency of vitamin B5?

(a) Beri-beri (b) Pellagra (c) Rickets (d) Night blindness

7. Which one of the given minerals plays an important role in the formation of haemoglobin?

(a) Iron (b) Sulphur (c) Phosphorus (d) Sodium

8. Which one of the following is not the non-nutritive component of diet?

(a) Roughage (b) Colour compounds (c) Protein (d) Flavour compounds

9. What is the other name of Vitamin B3?

(a) Riboflavin (b) Biotin (c) Niacin (d) Thiamine

QUESTIONS FOR 3 MARKS

1 Clarify the meaning of balanced diet in brief.

2. What do you mean by macro and micro nutrients?

3. What do you mean by nutritive and non-nutritive components of diet?

4. What do you mean by vitamin? Explain about fat soluble and water soluble vitamins.

5. What do you understand by food myths?

6. Explain various pitfalls of dieting.

QUESTIONS FOR 5 MARKS

1. What do you mean by nutritive components of diet? Explain about any three of them in brief.

2. What do you mean by food intolerance? Explain the causes, symptoms and management of food intolerance in detail.

3. What are the nutritive and non-nutritive components of diet? Explain.

Chapter 3

State True or False.

1. *Tadasana* is performed in sitting position. (True/False)

2. *Shavasana* is performed in supine position. (True/False)

3. Regular practice of *Tadasana, Vakrasana, Shalabhasana* and *Bhujangasana* helps in reducing backpain. (True/False)

4. Bones and joints become strong by regular practice of asanas. (True/False)

5. A person suffering from joint pain should perform *vajrasana*. (True/False)

Choose the correct answer.

1. Which one of the following asana is not a remedial asana for treating obesity?

(a) ***Vajrasana*** **(b)** ***Trikonasana***

(c) ***Chakrasana*** **(d)** ***Ardhmatseyendrasana***

2. Which one of the following asanas is not performed in standing position?

(a) ***Tadasana*** **(b)** ***Ardhchakrasana*** **(c)** ***Sukhasana***

3. In which type of lifestyle diseases our airways become blocked or narrowed causing difficulty in breathing?

(a) Obesity (b) Asthma (c) Diabetes (d) Back Pain

4. The other name of ***Bhujangasana*** **is:**

(b) (a) Eagle pose (b) Cobra pose

(c) (c) Fish pose (d) Tree pose

QUESTIONS FOR 5 MARKS

1. **What do you mean by diabetes? Discuss the procedure, benefits and contraindications of *Bhujangasana*.**
2. **What do you mean by Asthma? Explain the procedure, benefits and contraindications of Chakrasana.**
3. **What is hypertension? Discuss the benefits and contraindications of *Vajrasana* and *Ardha Chakrasana*.**
4. **What do you mean by Back Pain? Discuss the procedure and benefits of *Shalabhasana*.**

CHAPTER -4

MULTIPLE CHOICE QUETIONS

1. **Which of the following is not a physical disability ?**
   - **(a) Injury to spinal cord**
   - **(b) Injury to neck**
   - **(c) Loss of limb**
   - **(d) Attention deficit disorder**

2. **Attention deficit hyperactivity disorder (ADHD) is the most commonly diagnosed mental disorder of :**
   - **(a) Adults**
   - **(b) Men**
   - **(c) Women**

(d) children

3. **children having behavioural symptoms including hyperactivity, impulsiveness and inattentiveness generally suffer from :**
   (a) ADHD
   (b) Mental retardation
   (c) SPD
   (d) ASD
4. **A disorder related to brains trouble in receiving and responding to information can be termed as _____?**
   (a) ODD
   (b) OCD
   (c) ADHD
   (d) SPD

State True or False.

1. **ODD refers to obsessive defiant disorder.**
2. **Cognitive disability hampers an individual's ability to make judgements and maintain focus.**
3. **Poverty is one of the major causes of disabilities.**
4. **Serious illness that affects the brain is not a cause of physical disability.**

<u>QUESTIONS FOR 3 MARKS</u>

1. **What do you understand by 'physical disability'?**
2. **Define disorder.**
3. **What are types of disability?**
4. **What do you mean by intellectual disability?**

<u>QUESTIONS FOR 5 MARKS</u>

1. **Explain a few strategies to make physical activity assessable for children with special needs.**
2. **What are the characteristics of cognitive disability?**
3. **Write short notes on :**

(a) ADHD

(b) SPD

(c) ASD

(d) ODD

(e) OCD