



Bal Bharati
PUBLIC SCHOOL
NISHATPURA, BHOPAL

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CLASS:XII A&B

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<u>SUBJECT</u>	<u>TOPIC</u>
<u>MATHS</u>	<p><u>ACTIVITY 1.</u> <u>DRAW THE</u> <u>GRAPHS OF</u> <u>ALL 6</u> <u>INVERSE</u> <u>TRIGONOME</u> <u>TRIC</u> <u>FUNCTIONS.</u></p> <p><u>ACTIVITY 2.</u> <u>REPRESENT</u> <u>DIFFERENT</u> <u>TYPES OF</u> <u>FUNCTIONS</u> <u>WITH THE</u> <u>HELP OF</u> <u>DIAGRAMS</u></p> <p><u>Revise</u> <u>Relations</u> <u>functions</u> <u>Inverse</u> <u>trigonometric</u> <u>functions</u> <u>matrices and</u> <u>determinants</u> <u>for periodic test</u> <u>1.</u></p>
<u>BIOLOGY</u>	<p><u>Find the</u> <u>relevant</u> <u>Questions from.</u> <u>Previous year</u> <u>question paper</u> <u>from the</u> <u>Chapter/topic</u> <u>covered till.</u> <u>April.</u></p> <p><u>Make a table of</u> <u>all disease</u> <u>studied. Their</u> <u>causes and</u> <u>symptoms.</u></p> <p><u>Make detail of</u> <u>study of</u> <u>bacterial /</u></p>

	<p><u>fungal and protozoan Diseases</u></p> <p><u>Write a note on pollen germination.</u></p>
<u>ENGLISH</u>	<p><u>NOTES MAKING AND SUMMARY.</u></p> <p><u>O1 choose any 3 comprehension packages from E practice book and do notes making and summary(Follow and stick to the format and the rules)</u></p> <p><u>O2 Read the newspaper daily and cut samples of the following in the fair register of English underlining it with the holiday homework.</u></p> <p><u>(a) 3 reports</u></p> <p><u>(b) 3 articles on coronavirus</u></p> <p><u>(c) 3 posters on fight coronavirus</u></p> <p><u>(d) 5 classified advertisements.</u></p> <p><u>O3 Write a letter to the editor of a national daily</u></p>

	<p><u>highlighting the neglect of our national monuments and how these are being damaged in the present day world.</u></p> <p><u>O4. Write an article on the topic “ how google controls the life of an average person”</u></p> <p><u>O5 learn and revise all the syllabus of periodic test 1.</u></p>
<u>HINDI</u>	<p><u>कार्य परियोजना</u></p> <p><u>सूर्यकांत त्रिपाठी</u></p> <p><u>निराला का जीवन</u></p> <p><u>परिचय</u></p> <p><u>साहित्यिक</u></p> <p><u>रचनाएं एवं</u></p> <p><u>पुरस्कार तथा</u></p> <p><u>उनकी महत्वपूर्ण</u></p> <p><u>प्रसिद्ध रचनाओं</u></p> <p><u>पर विश्लेषण</u></p> <p><u>करते हुए एक</u></p> <p><u>कार्य परियोजना</u></p> <p><u>स्पाइरल बाईंडिंग</u></p> <p><u>में प्रस्तुत करें..</u></p> <p><u>कला समेकित</u></p> <p><u>परियोजना</u></p> <p><u>मध्यप्रदेश एवं</u></p>

	<u>बिहार के</u> <u>खानपान</u> <u>वेशभूषा,साहित्य</u> <u>कार,कलाकेंद्र और</u> <u>सौंदर्य पर एक</u> <u>बोशर बनाए।</u> <u>आलेख लिखें</u> <u>120 शब्दों का</u> <u>वसुधैव कुटुंबकम।</u>
<u>COMPUTE</u> <u>R</u> <u>SCIENCE</u>	<p>Python functions</p> <hr/> <p>1. Write a Python function to find the maximum of three numbers.</p> <p>2. Write a Python function to sum all the numbers in a list. <i>Sample List : (8, 2, 3, 0, 7)</i> <i>Expected Output : 20</i></p> <p>3. Write a Python function to multiply all the numbers in a list. <i>Sample List : (8, 2, 3, -1, 7)</i> <i>Expected Output : -336</i></p> <p>4. Write a Python program to reverse a string. <i>Sample String : "1234abcd"</i> <i>Expected Output : "dcba4321"</i></p> <p>5. Write a Python function to calculate the factorial of a number (a non-negative integer). The function accepts the number as an argument.</p>

6. Write a Python function to check whether a number falls within a given range.

7. Write a Python function that accepts a string and counts the number of upper and lower case letters.

Sample String : 'The quick Brow Fox'

Expected Output :

No. of Upper case characters : 3

No. of Lower case Characters : 12

8. Write a Python function that takes a list and returns a new list with distinct elements from the first list.

Sample List : [1,2,3,3,3,3,4,5]

Unique List : [1, 2, 3, 4, 5]

9. Write a Python function that takes a number as a parameter and checks whether the number is prime or not.

Note : A prime number (or a prime) is a natural number greater than 1 and that has no positive divisors other than 1 and itself.

10. Write a Python program to print the even numbers from a given list.

Sample List : [1, 2, 3, 4, 5, 6, 7, 8, 9]

Expected Result : [2, 4, 6, 8]

11. Write a Python function to check whether a number is "Perfect" or not.

According to Wikipedia : In number theory, a perfect number is a positive integer that is equal to the sum of its proper positive

divisors, that is, the sum of its positive divisors excluding the number itself (also known as its aliquot sum). Equivalently, a perfect number is a number that is half the sum of all of its positive divisors (including itself).

Example : The first perfect number is 6, because 1, 2, and 3 are its proper positive divisors, and $1 + 2 + 3 = 6$. Equivalently, the number 6 is equal to half the sum of all its positive divisors: $(1 + 2 + 3 + 6) / 2 = 6$. The next perfect number is $28 = 1 + 2 + 4 + 7 + 14$. This is followed by the perfect numbers 496 and 8128.

12. Write a Python function that checks whether a passed string is a palindrome or not.

Note: A palindrome is a word, phrase, or sequence that reads the same backward as forward, e.g., madam or nurses run.

13. Write a program to illustrate keyword arguments, default arguments and positional argument.

14. Differentiate between global variable and local variable

15. What is LEGB Rule. Explain with python code

16. What is the difference between Actual parameter and formal parameter

PHYSICS

Electrostatics-1

ONE MARK QUESTIONS

1. A glass rod when rubbed with silk acquires a charge $+1.6 \times 10^{-12}\text{C}$. What about silk ?
2. If Coulomb's law involved $1/r^3$ dependence instead of $1/r^2$, will the Gauss theorem be applicable?
3. Define electric potential. Is it a vector or a scalar quantity?
4. Which orientation of an electric dipole in a uniform electric field would correspond to stable equilibrium?
5. If the radius of the Gaussian surface enclosing a charge is halved, how does the electric flux through the Gaussian surface change?
6. Define the electric dipole moment of a dipole. Write its SI unit.
7. What is the electrostatic potential due to an electric dipole at an equatorial point?
8. What is the work done in moving a test charge q through a distance of 1 cm along the equatorial axis of an electric dipole
9. Define the term 'potential energy' of charge ' q ' at a distance ' r ' in an external electric field.
10. Name the physical quantity whose SI unit is J/C. is it scalar or vector quantity?
11. A hollow metal sphere of radius 5 cm is charged such that the potential on its surface is 10 V. what is potential at the centre of the sphere?
12. A charge ' q ' is placed at the centre of a cube of side l , what is the electric flux passing through each face of the cube?

13. What is the electric flux passing through two opposite faces of the cube?
14. Two charges of magnitude $-2Q$ and $+Q$ are located at points $(a,0)$ and $(4a, 0)$ respectively. What is the electric flux due these charges through a sphere of radius ' $3a$ ' with its centre at the origin?
15. Two charges of magnitude $-3Q$ and $+2Q$ are located at points $(a,0)$ and $(4a, 0)$ respectively. What is the electric flux due these charges through a sphere of radius ' $5a$ ' with its centre at the origin?
16. Two equal balls having equal positive charge ' q ' coulombs are suspended by two strings of equal length. What would be the effect on the force when a plastic sheet is inserted between the two?
17. A point charge $+Q$ is placed in the vicinity of a conducting surface. Trace the field lines between the charge and the conducting surface.
18. Name the physical quantities whose S.I. units are (i) coulomb/volt (ii) N/C (iii) V/m .
19. What would be the work done if a point charge $+q$ is taken from a point at the circumference of a circle to another point at the circumference if another point charge is at the centre of the circle.
20. A and B are two conducting sphere of the same radii and same material. A being solid and another hollow. Both are charged to same potential. What will be relation between the capacitances of them ? which will assume more charge?

TWO MARKS QUESTIONS

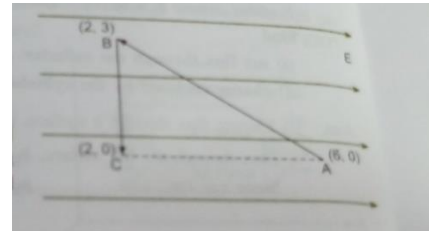
1. Four point charges $1\mu C$, $1\mu C$, $-1\mu C$

	<p>and $-1\ \mu\text{C}$ are placed at corners of a square of each side $0.1\ \text{m}$ (i) calculate electric potential at centre O of square (ii) if E is midpoint of BC, what is work done in carrying an electron from O to E?</p> <p>2. Write an expression for potential energy of two charges q_1 and q_2 at r_1 and r_2 in a uniform electric field E.</p> <p>3. A point charge Q is placed at the point O in following figure. Is the potential difference $V_A - V_B$ positive, negative or zero if Q is (i) positive (ii) negative?</p> <p style="text-align: center;">Q----- A-----B</p> <p>4. During lightning, the safest way to protect is to be inside the house or car. Why?</p> <p>5. Two capacitors of capacitances $6\ \mu\text{F}$ and $12\ \mu\text{F}$ are connected in series with a battery. The voltage across $6\ \mu\text{F}$ capacitor is $2\ \text{V}$. compute the total supply voltage.</p> <p>6. Two charged spherical conductors of radii R_1 and R_2 when connected by a connecting wire acquire charges q_1 and q_2 respectively. Find the ratio of their charge densities in the terms of their radii?</p> <p>7. Two point charges $4Q$ and Q are separated by $1\ \text{m}$ in air. At what point on the line joining the charges is the electric field intensity zero? Also calculate the electrostatic potential energy the system of</p>
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	<p>charges, taking the value of $Q = -2 \times 10^{-7} \text{ C}$.</p> <p>8. Draw the equipotential surfaces corresponding to a field that uniformly increases in magnitude but remain constant along Z-direction. How are these surfaces different from that of a constant electric field along Z-direction?</p> <p>9. Define electric flux. Write its SI unit. A charge q is enclosed by a spherical surface of radius R. If the radius is reduced to half, how would the electric flux through the surface change?</p> <p>10. A spherical conducting shell of inner radius r_1 and outer radius r_2 has a charge 'Q'. A charge 'q' is placed at the centre of the shell.</p> <ol style="list-style-type: none"> What is the surface charge density on the (i) inner surface (ii) outer surface of the shell? Write the expression for the electric field at a point $x > r_2$ from the centre of the shell. <p>11. A thin straight infinitely long conducting wire having charge density λ is enclosed by a cylindrical surface of radius r and length l, its coinciding with the length of the wire. Find the expression for the electric flux through the surface of the cylinder.</p> <p>12. Net capacitance of three identical capacitors in series is $3 \mu\text{F}$. What is their net capacitance if connected in parallel? Find the ratio of the energy stored in the two configurations if they are both connected to the same</p>
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source.

13. Plot a graph showing the variation of Coulomb force(F) versus $(1/r^2)$ where r is the distance between the two charges of each pair of charges $(1\ \mu\text{C}, 2\ \mu\text{C})$ and $(2\ \mu\text{C}, -3\ \mu\text{C})$. interpret the graphs obtained.
14. A test charge ' q ' is moved without acceleration from A to C along the path from A to B and then from B to C in electric field as shown in figure. (i) calculate the potential difference between A and C. (ii) at which point (of the two) is the electric potential more and why?



15. An electric dipole is held in a uniform electric field.
- (i) Show that the net force acting on it is zero.
 - (ii) The dipole is aligned parallel to the field. Find the work done in rotating it through the angle of 180° .
16. A slab of material of dielectric constant k has the same area as that of the plates of a parallel plate capacitor but has the thickness $d/2$, where d is the separation between the plates. Find out the expression for its capacitance when the slab is inserted between the plates of the capacitor.
17. A parallel plate capacitor of

capacitance c is charged to a potential V . If it is then connected to another uncharged capacitor having the same capacitance. Find out ratio of the energy stored in the combined system to that stored initially in the single capacitor.

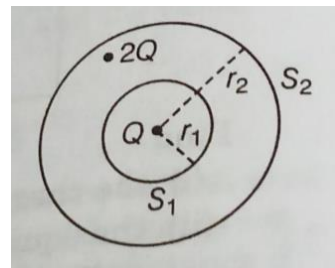
18. Derive an expression for the work done in rotating a dipole from the angle θ_0 to θ_1 on a uniform electric field E .

THREE MARKS QUESTIONS

1. The battery remains connected to a parallel plate capacitor and a dielectric slab is inserted between plates. What will be the effect on its capacitance, charge, potential difference, electric field, energy stored? Justify your answer.
2. The battery connected to a parallel plate capacitor is removed and a dielectric slab is inserted between plates. What will be the effect on its capacitance, charge, potential difference, electric field, energy stored? Justify your answer. Where does the loss of energy stored go?
3. A spherical conducting shell of inner radius r_1 and outer radius r_2 has a charge Q . (i) a charge q is placed at the centre of the shell. What is the surface charge density on the inner and outer surfaces of the shell? (ii) is the electric field intensity inside a cavity with no charge is zero, even if the shell is not spherical? Explain.
4. Define electric flux. Is it a scalar or a vector quantity? A point charges q is at a distance of $d/2$ directly above

the centre of a square of side d . Use Gauss' law to obtain the expression for the electric flux through the square. (b) If the point charge is now moved to a distance ' d ' from the centre of the square and the side of the square is doubled, explain how the electric flux will be affected.

5. A positive point charge ($+q$) is kept in the vicinity of an uncharged conducting plate. Sketch the electric field lines originating from the point on to surface of the plate. Derive expression for the electric field at the surface of a charged conductor.
6. Use Gauss's law to derive the expression for the electric field between two uniformly charged parallel sheets with surface charge densities σ and $-\sigma$ respectively.
7. A sphere S_1 of radius r_1 encloses a net charge Q . If there is another concentric sphere S_2 of radius r_2 ($r_2 > r_1$) enclosing charge $2Q$.
 - (i) Find the ratio of the electric flux through sphere S_1 and S_2 .
 - (ii) How will the electric flux through sphere S_1 change, if a medium of dielectric constant 5 is introduced in the space inside S_1 in place of air?

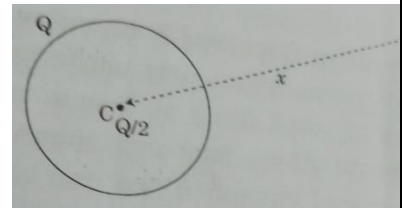


8. Two capacitors of unknown capacitances C_1 and C_2 are connected first in series and then in parallel across a 100 V battery. If the energy stored in the two combinations is 0.045J and 0.25 J respectively, then determine the value of C_1 and C_2 . Also calculate the charge on each capacitor in parallel combination.

9. A thin metallic spherical shell of radius R carries a charge Q on its surface. A point charge $Q/2$ is placed at the centre C and another charge $+2Q$ is placed outside the shell at A at a distance x from the centre as shown in the figure.

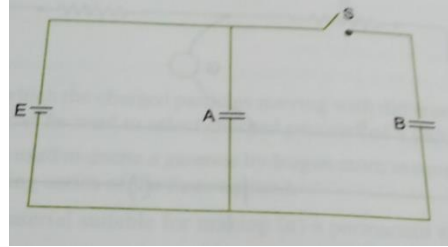
(i) Find the electric flux through the shell

(ii) State the law used

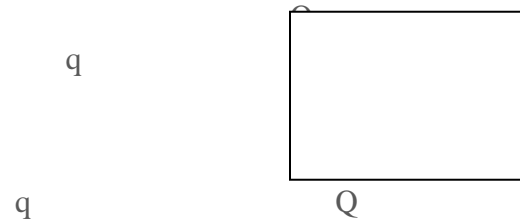


(iii) Find the force on the charges at the centre C of the shell and at the point A .

10. Two identical parallel plate capacitors A and B are connected to a battery of V volts with switch S closed. The switch is now opened and the free space between the plates of the capacitors is filled with a dielectric of dielectric constant K . Find the ratio of the total electrostatic energy stored in both capacitors before and after the introduction of the dielectric.



11. Four point charges Q , q , Q and q are placed at the corners of a square of side ' a ' as shown in the figure.

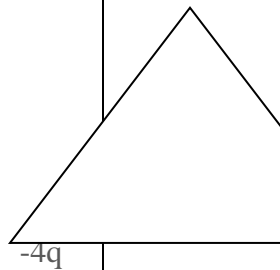


Find the

- Resultant electric force on a charge Q , and
- Potential energy of this system.

12. a. Three point charges q , $-4q$ and $2q$ are placed at the vertices of an equilateral triangle ABC of side ' l ' as shown in the figure. Obtain the expression for the magnitude of the resultant electric force acting on the charge q .

q **A**



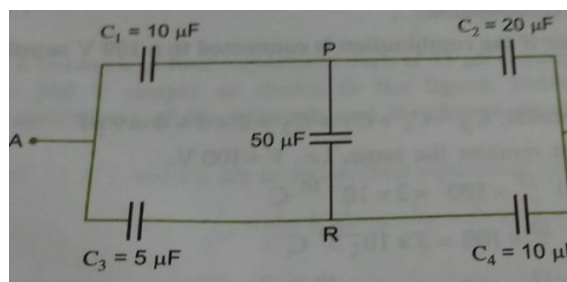
B

C $2q$

Find out the amount of work done to separate the charges at infinite distance.

13. Calculate the equivalent capacitance

between points A and B in the circuit below. If a battery of 10 V is connected across A and B, calculate the charge drawn from the battery by the circuit.



FIVE
MARKS
QUESTION
S

1. Derive an expression for the energy stored in a parallel plate capacitor. On charging a parallel plate capacitor to a potential V , the spacing between the plates is halved, and a dielectric medium of $\epsilon_r = 10$ is introduced between the plates, without disconnecting the d.c. source. Explain using suitable expression, how the (i) capacitance, (ii) electric field and (iii) energy stored in the capacitor change.
2. (a) Define electric flux. Write its SI unit.
(b) The electric field components due to a charge inside the cube of side 0.1 m . $E_x = \alpha x$ where $\alpha = 500$ N/Cm
 $E_y = 0, E_z = 0$
Calculate (i) the flux through the cube, and (ii) the charge inside the cube.
3. a. Define electric dipole moment. Is it a scalar or a vector? Derive the

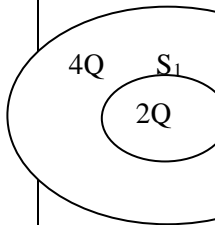
expression for the electric field of a dipole at a point on the equatorial plane of the dipole.

b. Draw the equipotential surfaces due to an electric dipole. Locate the points where the potential due to the dipole is zero.

4. Using Gauss' s law deduce the expression for the electric field due to a uniformly charged spherical conducting shell of radius R at a point (i) outside and (ii) inside the shell. Plot a graph showing the variation of electric field as a function of $r > R$ and $r < R$ (r being the distance from the centre of the shell).

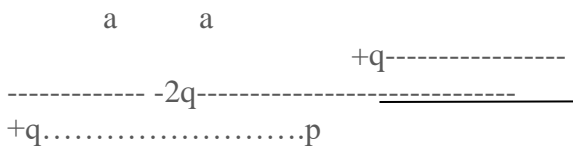
5. a. Deduce the expression for the torque acting on a dipole of dipole moment P in the presence of a uniform electric field.
b. Consider two hollow concentric spheres, S_1 and S_2 , enclosing charges $2Q$ and $4Q$ respectively as shown in figure.

S_2 4



(i) find out the ratio of electric flux through them.

(ii) How will the electric flux through the space S_1 change if a medium of dielectric constant ϵ_r is introduced in the space inside S_1 in place of air? Deduce the necessary expression.

	<p>6. a. Deduce the expression for the potential energy of an electric dipole of dipole moment P placed in a uniform electric field E.</p> <p>Find out orientation of the dipole when it is in (i) stable equilibrium (ii) unstable equilibrium.</p> <p>b. Figure shows a configuration of the charge array of two dipoles.</p> <div style="text-align: center;">  <p style="margin-left: 100px;">a a</p> <p style="margin-left: 250px;">$+q$-----</p> <p style="margin-left: 100px;">-----$-2q$-----</p> <p style="margin-left: 50px;">$+q$.....p</p> <p style="margin-left: 150px;">r</p> </div> <p>Obtain the expression for the dependence of potential r for $r \gg a$ for a point p on the axis of this array of charges.</p> <p>7. a. Define electric flux. Write its S.I unit.</p> <p>b. Using Gauss' Law, obtain the electric flux due to a point charge 'q' enclosed in a cube of side 'a'.</p> <p>c. Show that the electric field due to a uniformly charged plane sheet at any point distant x from it, is independent of x.</p> <p>8. a. Derive an expression for the electric field E due to a dipole of length '$2a$' at a point distant r from the centre of the dipole on the axial line.</p> <p>b. Draw a graph of E versus r for $r \gg a$.</p> <p>c. If this dipole were kept in a uniform external field E_0, diagrammatically represent the position of the dipole in stable and</p>
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unstable equilibrium and write the expressions for the torque acting on the dipole in both the cases.

9. a. Use Gauss' theorem to find the electric field due to a uniformly charged infinitely large plane thin sheet with surface charge density σ .

b. An infinitely large thin plane sheet has a uniform surface charge density $+\sigma$. Obtain the expression for the amount of work done in bringing a point charge q from infinity to a point, distant r , in front of the charged plane sheet.

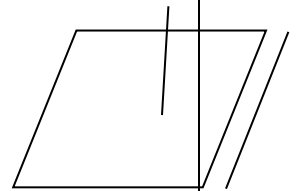
10.a) Define electric flux. Is it a scalar or a vector quantity?

A point charge ' q ' is at a distance of $d/2$ directly above the centre of a square of side d , as shown in the figure. Use Gauss' Law to obtain the expression for the electric flux through the square.

q

$d/2$

d



c) If the point charge is now moved to a distance ' d ' from the center of the square and the side of the square is doubled, explain how the electric flux will be affected?

11. Use Gauss' Law to derive the expression for the electric field (E) due to a straight uniformly charged infinite line of charge density λ C/m.

a) Draw a graph to show the variation of E with perpendicular distance r from the line of charge.

b) Find the work done in bringing a charge q from perpendicular

	distance r_1 to r_2 ($r_2 > r_1$)
<u>CHEMIST</u> <u>RY</u>	<u>project work-</u> <u>Making file of</u> <u>the project</u> <u>based on</u> <u>application of</u> <u>chemistry.</u> <u>Assignment</u> <u>questions from</u> <u>chapter-</u> <u>solution</u> <u>Conversions</u> <u>and named</u> <u>reactions from</u> <u>chapter-</u> <u>Haloalkanes</u> <u>and haloarenes</u>
<u>ECONOMI</u> <u>CS</u>	<u>Students As</u> <u>part of your</u> <u>Assignment</u> <u>prepare a 15</u> <u>page analytical</u> <u>project on any</u> <u>one of the</u> <u>given topics</u> <u>using diagrams</u> <u>and tabular</u>

	<p><u>presentation</u> <u>submit in a file</u> <u>on 19th June</u> <u>2023.</u></p> <p><u>*Agricultural</u> <u>marketing in</u> <u>Indian</u> <u>Economy</u></p> <p><u>*Make in India</u> <u>*Environmental</u> <u>Crises</u> <u>management in</u> <u>India</u></p>
<p><u>ACCOUNT</u> <u>ANCY</u></p>	<p>Ch 01- Fundamentals OF partnership TRUE/FALSE Questions of the chapter Fill in the blanks Questions of the chapter MCQ Questions of the chapter Application Based Questions of the chapter Questions no 4,5,12,23,36,40,55,58,62,66,68,72,74,78,80, 85,88,93</p> <p>Ch 02- Valuation of Goodwill TRUE/FALSE Questions of the chapter Fill in the blanks Questions of the chapter MCQ Questions of the chapter Application Based Questions of the chapter Questions no- 3,6,8,10,15,,17,22,26,30,34,38</p>
<p><u>BUSINESS</u> <u>STUDIES</u></p>	<p>Ch- 01 Introduction and Significance of Management Case studies of the chapter – 3,5,7,10,12,14,18,20 TRUE/FALSE Questions of the chapter Fill in the blanks Questions of the chapter MCQ Questions of the chapter</p> <p>Ch-02 Principles of Management Case studies of the chapter – 1,3,8,11,15,17,19</p>

	<p>TRUE/FALSE Questions of the chapter</p> <p>Fill in the blanks Questions of the chapter</p> <p>MCQ Questions of the chapter</p>
<p><u>PHYSICAL</u></p> <p><u>EDUCATI</u></p> <p><u>ON</u></p>	<p><u>1) types of tournaments</u></p> <p><u>2) Draw staircase method, cyclic method of 5,6,7,8 teams</u></p> <p><u>3) Draw knockout fixtures of 21,29,31 teams</u></p>