

# ADARSH PUBLIC SCHOOL

C-BLOCK, VIKAS PURI, NEW DELHI

HOLIDAYS' HOMEWORK

SESSION: 2026-27

CLASS: XII

## GENERAL INSTRUCTIONS

- All the questions are compulsory.
- The holidays' homework must be done in a very neat and presentable manner.
- The child will be assessed on the basis of presentation, neatness, completion of all the given questions and timely submission.
- Revise the syllabus covered in the class.
- The homework of all the subjects is to be done in the respective notebooks or as specified.
- The holidays' homework is to be submitted on 1st July, 2026.

## ENGLISH

### A. WRITING SKILLS

1. Draft a Notice on the topics given below in 50 words:

- You are Aarti/Ayush, the Head Girl/Boy of XYZ International School. Your school is soon going to publish the annual magazine. Draft a notice for the notice board inviting students to submit write-ups for the same.
- Tourism Club of your school is planning to organise a field trip. Draft a notice in not more than 50 words, to be displayed on the school notice board, inviting students to register for the same. Give all the necessary details. You are Radhika/Raj, Secretary, Tourism Club, Amazon Public School, Gurugram.

2. Write a Letter to the Editor on the following questions in 120-150 words:

- You have realized the necessity of education and financial independence of women for their family, society and in turn for the nation. Write a letter to the Editor, 'The National Times' highlighting your ideas on the importance of education of women leading to a better status for them.
- You are Kamini/Kamal of 10, Civil Lines Extension, Chanakyapuri. The main road leading to your locality has three open manholes causing frequent accidents at night, especially during the rainy season. Write a letter to the Editor, The Times of India, and drawing attention of the Municipal Commissioner to this problem of the residents.

3. Write an Article on the topics given below in 120-150 words:

- Importance of Games and Sports in Personality Development.
- The necessity of Digital Detox in today's fast paced world.

4. Draft an Invitation for the following questions:

- You are Kartik/Kaveri Sharma, Head Boy/Girl of your school. The school is organising an Inter-School Dance Competition. Draft an invitation in about 50 words to a renowned artist inviting him/her as the judge for the same.
- You are the Vice Principal of ABC Public School, Ludhiana. Your school is holding an Investiture Ceremony on 20<sup>th</sup> July, 2026. Design an invitation to be sent to the parents.

### B. Answer the following questions in 30-40 words:

1. What did Franz notice when he entered the class that day?
2. What is the significance of the 'wedding band' in Aunt Jennifer's Tigers?
3. How did the instructor build a swimmer out of Douglas?

4. Why does Pablo Neruda say “Perhaps Earth can teach us”?
5. Why has the mother been compared to “the late winter’s moon”?
6. What was Charley’s vision about Galesburg town?
7. How does Adrienne Rich showcase the idea of Aunt Jennifer being afraid of her husband?
8. What do the parting words of the poet and her smile signify?

**C. Read the extracts given below and answer the questions that follow:**

1. ....but soon  
put that thought away and  
looked out at young  
trees sprinting, the merry children spilling  
out of their homes.....  
(a) What thought did the poet drive away from her mind?  
(b) What did she see when she looked out of the car?  
(c) How do you know that the joyful scene didn’t help her drive away the painful thought from her mind?  
(d) What are the ‘merry children’ symbolic of?

**D. Answer the following questions in 120-150 words:**

1. Aunt Jennifer reflects the plight of the women in the society. Elucidate.
2. Do you see an intersection of time and space in the story The Third Level?

**MATHEMATICS**

1. If  $A = [a_{ij}]_{3 \times 3}; a_{ij} = \frac{1}{3}|-3i + j|$ , write value of  $a_{23}$ .
2. Write the element  $a_{12}$  of the matrix  $A = [a_{ij}]_{2 \times 2}; a_{ij} = 2^{2ix} \sin jx$ .
3. If  $A^T = \begin{bmatrix} 3 & 4 \\ -1 & 2 \\ 0 & 1 \end{bmatrix}$  and  $B = \begin{bmatrix} -1 & 2 & 1 \\ 1 & 2 & 3 \end{bmatrix}$ , then find  $A^T - B^T$ .
4. If  $A = \begin{bmatrix} 0 & 6 - 5x \\ x^2 & x + 3 \end{bmatrix}$  is symmetric, find the values of  $x$ .
5. If  $A = \begin{bmatrix} 3 & 2 \\ -1 & 1 \end{bmatrix}$  and  $B = \begin{bmatrix} -1 & 0 \\ 2 & 5 \\ 3 & 4 \end{bmatrix}$ , find  $(BA)^T$ .
6. If  $[2x3] \begin{bmatrix} 1 & 2 \\ -3 & 0 \end{bmatrix} \begin{bmatrix} x \\ 8 \end{bmatrix} = 0$ , find the value of  $x$ .
7. Construct a  $3 \times 2$  matrix A, whose elements are given by  $a_{ij} = \frac{(i+2j)^2}{2}$ .

8. If  $A = \begin{bmatrix} 1 & -2 & 3 \\ -4 & +2 & 5 \end{bmatrix} \wedge B = \begin{bmatrix} 2 & 3 \\ 4 & 5 \\ 2 & 1 \end{bmatrix} \wedge BA = [bij]$ , find  $b_{21} + b_{32}$ .
9. Find the value of K, if  $M = \begin{bmatrix} 1 & 2 \\ 2 & 3 \end{bmatrix} \wedge M^2 - KM - I_2 = 0$ .
10. If  $A = \begin{bmatrix} 3 & -5 \\ -4 & 2 \end{bmatrix} \wedge f(x) = x^2 - 5x - 14$ , find  $f(A)$ . Hence obtain  $A^{-1}$ .
11. Find the matrix A such that  $\begin{bmatrix} 2 & -1 \\ 1 & 0 \\ -3 & 4 \end{bmatrix} A = \begin{bmatrix} -1 & -8 & -10 \\ 1 & -2 & -5 \\ 9 & 22 & 15 \end{bmatrix}$ .
12. If  $A = \begin{bmatrix} 3 & -4 \\ 1 & 1 \\ 2 & 0 \end{bmatrix} \wedge B = \begin{bmatrix} 2 & 1 & 2 \\ 1 & 2 & 4 \end{bmatrix}$ , then verify  $(BA)^2 \neq B^2A^2$ .
13. If  $(A - 2I)(A - 3I) = 0$ , where  $A = \begin{bmatrix} 4 & 2 \\ -1 & x \end{bmatrix} \wedge I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ , then find the value of  $x$ .
14. If A is a square matrix such that  $A^2 = A$ , then find the value of  $7A - (I + A)^3$ , where I is the identity.
15. If  $A = \begin{bmatrix} 2 & 0 & 1 \\ 2 & 1 & 3 \\ 1 & -1 & 0 \end{bmatrix}$ , find  $A^2 - 5A + 4I$  and hence find a matrix  $\times$  such that  $A^2 - 5A + 4I + \times = 0$ .
16. If  $A = \begin{bmatrix} 2 & 3 \\ -1 & 2 \end{bmatrix}$ , show that  $A^2 - 4A + 7I = 0$ , hence find  $A^5$ .
17. Express  $A = \begin{bmatrix} 2 & 4 & -6 \\ 7 & 3 & 5 \\ 1 & -2 & 4 \end{bmatrix}$  as the sum of a symmetric & a skew-symmetric matrix.
18. Verify that the matrix  $\begin{bmatrix} 1 & 3 & 3 \\ 1 & 4 & 3 \\ 1 & 3 & 4 \end{bmatrix}$  is the inverse of  $\begin{bmatrix} 7 & -3 & -3 \\ -1 & 1 & 0 \\ -1 & 0 & 1 \end{bmatrix}$ .
19. Let A, B be two matrices such that  $AB = BA$ . Show that for any positive integer  $n$ ,  $(AB)^n = A^nB^n$ .
20. If  $A = \begin{bmatrix} 1 & -2 & 3 \\ -4 & 2 & 5 \end{bmatrix} \wedge B = \begin{bmatrix} 2 & 3 \\ 4 & 5 \\ 2 & 1 \end{bmatrix}$ , then find AB, BA. Show that  $AB \neq BA$ .
21. Prove that any square matrix can be expressed as the sum of symmetric and skew-symmetric matrices.
22. Evaluate  $\begin{vmatrix} \cos 15^\circ & \sin 15^\circ \\ \sin 75^\circ & \cos 75^\circ \end{vmatrix}$ .

23. Write the cofactor of  $a_{12}$  in the determinant  $\begin{vmatrix} 2 & -3 & 5 \\ 6 & 0 & 4 \\ 1 & 5 & -7 \end{vmatrix}$ .

24. If A & B are square matrices of order 3, such that  $|A| = -2 \wedge |B| = 3$ , find the value of  $|-5AB|$ .

25. Find the value of  $x$  for which the following matrix is singular:

$$A = \begin{bmatrix} 1 & -2 & 3 \\ -1 & 2 & 1 \\ x & 2 & -3 \end{bmatrix}$$

26. If A is any square matrix of order 3 &  $|A| = 6$ , find  $|2A'|$ .

27. Find K, if points  $(K, 7), (1, -5) \wedge (-4, 5)$  are collinear.

28. If  $A = \begin{bmatrix} 3 & -2 & 3 \\ 2 & 1 & -1 \\ 4 & -3 & 2 \end{bmatrix}$ , find  $A(\text{adj } A)$  without computing  $\text{adj } A$ .

29. There are two values of  $x$  which make  $\Delta = \begin{vmatrix} 1 & -2 & 5 \\ 2 & x & -1 \\ 0 & 4 & 2x \end{vmatrix} = 86$  find the sum of these numbers.

30. Without expanding, evaluate  $\begin{vmatrix} 2 & 3 & 4 \\ 5 & 6 & 8 \\ 6x & 9x & 12x \end{vmatrix}$ .

31. If  $A = \begin{bmatrix} 2 & 1 \\ 7 & 5 \end{bmatrix}$ , find  $|A \text{adj } A|$ .

32. Show that the points  $(a + 5, a - 4), (a - 2, a + 3) \wedge (a, a)$  do not lie on a straight line for any value of  $a$ .

33. If  $f(x) = \begin{vmatrix} a & -1 & 0 \\ ax & a & -1 \\ ax^2 & ax & a \end{vmatrix}$ , using properties of determinants find the value of  $f(2x) - f(x)$ .

34. Let  $A = \begin{bmatrix} 2 & 3 \\ 1 & 2 \end{bmatrix}, B = \begin{bmatrix} 4 & -6 \\ -2 & 4 \end{bmatrix}$ . Then compute  $AB$ .

Hence, solve the following system of equation

$$2x + y = 4$$

$$3x + 2y = 1.$$

35. Evaluate

$$\sin\left(2\cos^{-1}\left(\frac{-3}{5}\right)\right)$$

36. The principal value branch of  $\sec^{-1} x$ .

37. Find the value of  $\text{cosec}\left(\tan^{-1}(-\sqrt{3})\right)$ .

38. Prove that  $\tan\left(\frac{1}{2}\sin^{-1}\frac{3}{4}\right) = \frac{4-\sqrt{7}}{3}$ .

39. Prove that  $\cos\left(2\tan^{-1}\frac{1}{7}\right) = \sin\left(4\tan^{-1}\frac{1}{3}\right)$ .

40.  $\sin\left(2\tan^{-1}\frac{1}{3}\right) + \cos(\tan^{-1}2\sqrt{2}) = \frac{14}{15}$ .

41. Prove that  $\cos^{-1}x = \sin^{-1}\sqrt{1-x^2} = \tan^{-1}\frac{\sqrt{1-x^2}}{x}$ .

42. Write  $\sin^{-1}(x\sqrt{1-x} - \sqrt{x}\sqrt{1-x^2})$  in the simplest form.

43. Find the value of  $\tan^{-1}\left(\frac{x}{y}\right) - \tan^{-1}\left(\frac{x-y}{x+y}\right)$ .

44. Find the value of  $\tan\left[\cos^{-1}\left(\frac{4}{5}\right) + \tan^{-1}\left(\frac{2}{3}\right)\right]$ .

45. Find the value of  $\cos\left[2\cos^{-1}\left(\frac{1}{5}\right) + \sin^{-1}\left(\frac{1}{5}\right)\right]$ .

46. If  $\cot^{-1}(\sqrt{\cos \alpha}) - \tan^{-1}(\sqrt{\cos \alpha}) = x$ , then find the value of  $\sin x$ .

47. Solve for  $x$ :  $\cos^{-1}\left(\frac{x^2-1}{x^2+1}\right) + \tan^{-1}\left(\frac{2x}{x^2-1}\right) = \frac{2\pi}{3}$ .

48. Solve for  $x$ :  $2\tan^{-1}(\sin x) = \tan^{-1}(2\sec x)$ ,  $x \neq \frac{\pi}{2}$ .

49. Prove that  $\tan\left(\frac{\pi}{4} + \frac{1}{2}\cos^{-1}\frac{a}{b}\right) + \tan\left(\frac{\pi}{4} - \frac{1}{2}\cos^{-1}\frac{a}{b}\right) = \frac{2b}{a}$ .

50. Differentiate w.r.t. :

(i)  $x^{\sin x + \cos x}$

(ii) If  $x^{13}y^7 = (x+y)^{20}$ , prove that  $\frac{dy}{dx} = \frac{y}{x}$

(iii) If  $x = e^{x/y}$ , then  $\frac{dy}{dx} = \frac{x-y}{x \log x}$

51. If  $x^2 + 2xy + y^3 = 42$ , find  $\frac{dy}{dx}$ .

52.  $e^{x-y} = \log\left(\frac{x}{y}\right)$ , find  $\frac{dy}{dx}$ .

53. If  $x^m y^n = (x+y)^{m+n}$ , prove that  $\frac{dy}{dx} = \frac{y}{x}$ .

54.  $\frac{\sqrt{1-x^2}(2x-3)^{1/2}}{(x^2+2)^{3/2}}$ , differentiate w.r.t.  $x$

55. If  $y = a^x + e^x + x^x + x^a$ , find  $\frac{dy}{dx}$  at  $x = a$ .

56. If  $(\cos x)^y = (\sin y)^x$ , find  $\frac{dy}{dx}$ .

57. If  $y = \sqrt{\sin x + \sqrt{\sin x + \sqrt{\sin x + \dots \infty}}}$ , prove that  $\frac{dy}{dx} = \frac{\cos x}{2y-1}$ .

58. If  $y = e^{x+e^{x+e^{x+\dots \infty}}}$  show that  $\frac{dy}{dx} = \frac{y}{1-y}$ .

59. Find  $\frac{dy}{dx}$ , when  $x = a\cos^3 t \wedge y = a\sin^3 t$ .

60. Differentiate  $\tan^{-1}\left(\frac{\sqrt{1-x^2}}{x}\right)$ ,  $x \in \left(\frac{1}{\sqrt{2}}, 1\right)$  w.r.t  $\cos^{-1}(2x\sqrt{1-x^2})$ .

61. If  $y = \log \tan\left(\frac{\pi}{4} + \frac{x}{2}\right)$ , show that  $\frac{dy}{dx} - \sec x = 0$ .

62. If  $y = \sqrt{x^2+1} - \log\left(\frac{1}{x} + \sqrt{1 + \frac{1}{x^2}}\right)$ , find  $\frac{dy}{dx}$ .

63. If  $\log\sqrt{x^2+y^2} = \tan^{-1}\left(\frac{x}{y}\right)$ , then show that  $\frac{dy}{dx} = \frac{y-x}{y+x}$ .

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

65. Diff. w.r.f.  $x$ ,  $x^{x\cos x} + \frac{x^2+1}{x^2-1}$ .

66. Differentiate  $x^{\sin x} + (\sin x)^{\cos x}$  w.r.t.  $x$ .

67. If  $x = \cos t(3 - 2\cos^2 t) \wedge y = \sin t(3 - 2\sin^2 t)$ , find  $\frac{dy}{dx}$  at  $t = \frac{\pi}{4}$ .

68. If  $x = e^{\cos 2t} \wedge y = e^{\sin 2t}$ , prove that  $\frac{dy}{dx} = \frac{-y \log x}{x \log y}$ .

69. Find  $(AB)^{-1}$ , where  $A = \begin{bmatrix} 5 & 0 & 4 \\ 2 & 3 & 2 \\ 1 & 2 & 1 \end{bmatrix} \wedge B^{-1} = \begin{bmatrix} 1 & 3 & 3 \\ 1 & 4 & 3 \\ 1 & 3 & 4 \end{bmatrix}$ .

70. If  $x = \sqrt{a^{\sin^{-1}t}}$ ,  $y = \sqrt{a^{\cos^{-1}t}}$ ,  $a > 0 \wedge -1 < t < 1$ , show that  $\frac{dy}{dx} = \frac{-y}{x}$ .

71. Find  $\frac{d^2y}{dx^2}$ , if  $x = at^2$ ,  $y = 2at$ .

72. Differentiate  $x^2$  w.r.  $tx^3$ .

73. If  $x = a\left(\cos\theta + \log \tan \frac{\theta}{2}\right) \wedge y = a\sin\theta$ , find  $\frac{dy}{dx}$ , at  $\theta = \frac{\pi}{4}$ .

74. If  $y = x^3 \log\left(\frac{1}{x}\right)$ , then prove that  $x\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + 3x^2 = 0$ .

75. If  $y = (x + \sqrt{1+x^2})^n$ , then show that  $(1+x^2)y_2 + xy_1 = n^2y$ .

$$76. \text{ If } f(x) = \begin{cases} \frac{\sin(a+1)x + \sin x}{x}, & x < 0 \\ c, & x = 0 \\ \frac{\sqrt{x+bx^2}\sqrt{x}}{bx^{3/2}}, & x > 0 \end{cases}$$

is continuous at  $x = 0$ , then find the values of  $a$ ,  $b$  &  $c$

77. If the values of 'K' for which the function  $f$ , defined as

$$f(x) = \begin{cases} K \sin \frac{\pi}{2}(x+1), & x \leq 0 \\ \frac{\tan x - \sin x}{x^3}, & x > 0 \end{cases} \text{ is continuous at } x = 0$$

78. If  $f(x) = \begin{cases} x^2 + 3x + a, & x \leq 1 \\ bx + 2, & x > 1 \end{cases}$  is derivable, then find the values of  $a$  &  $b$ .

79. If  $3f(x) - 2f\left(\frac{1}{x}\right) = x$ , then find  $f'(2)$ .

80. If  $y = f\left(\frac{2x-1}{x^2+1}\right) \wedge f'(x) = \sin x^2$ , find  $\frac{dy}{dx}$ .

81. If  $f(x) = \frac{x}{1+|x|}$ , then show that  $f'(0)$  exists and find its value. Is  $f(x)$  differentiable for all real values of  $x$ ?

82. If  $x = \sec \theta - \cos \theta \wedge y = \sec^n \theta - \cos^n \theta$ , then show that  $(x^2 + 4) \left(\frac{dy}{dx}\right)^2 = n^2(y^2 + 4)$

83. If  $y = \tan\left(\frac{1}{2} \cos^{-1} \frac{1-t^2}{1+t^2} + \frac{1}{2} \sin^{-1} \frac{2t}{1+t^2}\right) \wedge x = \frac{2t}{1-t^2}$ , prove that  $\frac{dy}{dx} = 1$ .

$$84. \text{ Let } f(x) = \begin{cases} x \cos \frac{1}{x}, & x > 0 \\ 0, & x \leq 0 \end{cases}$$

Examine the function  $f$  for continuity & differentiability at  $x = 0$ .

$$85. \text{ If } f(x) = \begin{cases} x + a\sqrt{2}\sin x, & 0 \leq x < \frac{\pi}{4} \\ 2x \cot x + b, & \frac{\pi}{4} \leq x < \frac{\pi}{2} \\ a \cos 2x - b \sin x, & \frac{\pi}{2} \leq x \leq \pi \end{cases}$$

is continuous in  $[0, \pi]$ , then find the values of  $a$  &  $b$ .

86. Show that  $f(x) = 2x - |x|$  is continuous but not differentiable at  $x = 0$ .

87. If  $x = a \left[ \cos t + \log \left( \sin \frac{t}{2} \right) \right], y = a(1 + \sin t)$  find  $\frac{d^2y}{dx^2} \wedge \frac{d^2y}{dt^2}$ .

88. If  $y = (\tan^{-1}x)^2$ , then prove that  $(1+x^2)^2 y_2 + 2x(1+x^2) y_1 = 2$ .

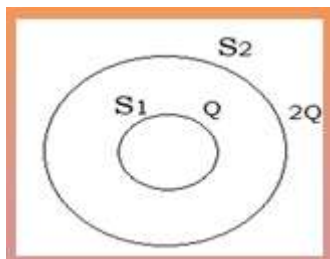
89. Complete all the activities in your Mathematics Practical file.

90. Revise chapter 2, 3 & 4.

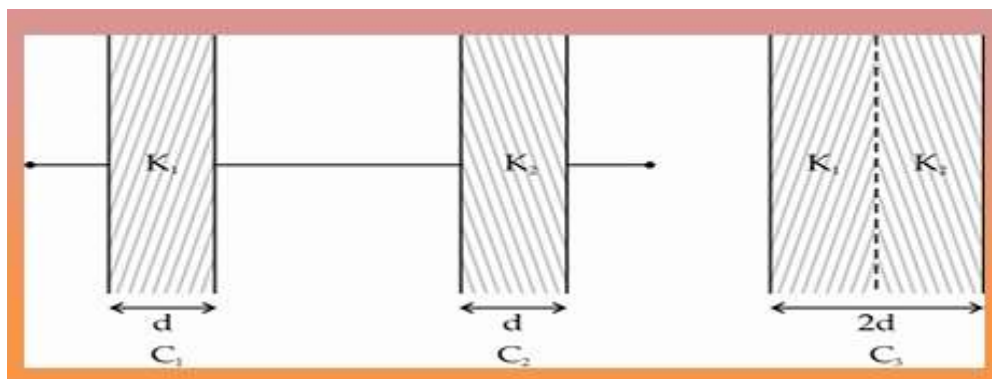
## PHYSICS

### A. Do the following assignment in your register.

1. An electric dipole with dipole moment  $4 \times 10^{-9} \text{C}\cdot\text{m}$  is aligned at  $30^\circ$  with direction of electric field of magnitude  $5 \times 10^4 \text{N/C}$ . Calculate the magnitude of the torque acting on the dipole.
2. A  $600 \text{pF}$  capacitor is charged by a  $200 \text{V}$  supply. It is then disconnected from the supply and is connected to another uncharged  $600 \text{pF}$  capacitor. How much electrostatic energy is lost in the process?
3. If  $S_1$  and  $S_2$  are two hollow spheres enclosing charges  $Q$  and  $2Q$  respectively as shown in the figure:

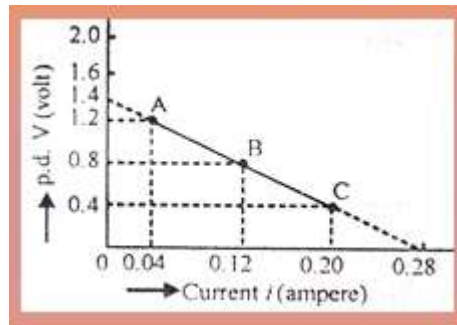


- (i) What is the ratio of the electric flux through  $S_1$  and  $S_2$ ?
  - (ii) How will the flux through the sphere  $S_1$  change, if a medium of dielectric constant 5 is filled in the space inside  $S_1$ .
4. A charge of  $24 \mu\text{C}$  is given to a hollow sphere of radius  $0.2 \text{m}$ . Find the potential
    - (i) at the surface of the sphere, and
    - (ii) at a distance of  $0.1 \text{m}$  from the centre of the sphere
    - (iii) at the centre
  5. The capacitors  $C_1$ , and  $C_2$ , having plates of area 'A' each, are connected in series, as shown in the fig. Compare the capacitance of this combination with the capacitor  $C_3$ , again having plates of area 'A' each, but 'made up' as shown in the figure.



6. Two identical charges, 'Q' each are kept at a distance 'r' from each other. A third charge 'q' is placed on the line joining the above two charges such that all the three charges are in equilibrium. What is magnitude, sign and position of the charge q?
7. Two parallel plate capacitors X and Y have same area of plates and same separation between them. X has air between the plates whereas Y has a dielectric of constant  $k = 4$ .
  - (i) Calculate capacitance of each capacitor if equivalent capacitance is  $4 \mu\text{F}$

- (ii) Calculate potential difference between the plates of X and Y  
 (iii) What is the ratio of electrostatic energy stored in X and Y
8. Using data given in graph determine (i) emf (ii) internal resistance of the cell. (iii) For what current, does maximum power dissipation occur in the circuit?



9. Calculate the temperature at which the resistance of a conductor becomes 20% more than its resistance at  $27^{\circ}\text{C}$ . The value of the temperature coefficient of resistance of the conductor is  $2 \times 10^{-4} / \text{K}$ .
10. Two wires X, Y have the same resistivity but their cross-sectional areas in the ratio 2:3 and lengths in the ratio 1:2. They are first connected in series and then in parallel to a dc source. Find out the ratio of the drift speeds of the electrons in the two wires for the two cases.
11. A short bar magnet placed with its axis at  $30^{\circ}$  to a uniform magnetic field of 0.2 T experiences a torque of 0.06 Nm.  
 (i) Calculate the magnetic moment of the magnet  
 (ii) Find out what orientation of the magnet corresponds to its stable equilibrium in the magnetic field.
12. In the Bohr model of hydrogen atom, an electron revolves around the nucleus in a circular orbit of radius  $5.11 \times 10^{-11} \text{ m}$  at a frequency of  $6.8 \times 10^{15} \text{ Hz}$ . What is the magnetic field at the centre of the orbit?
13. A galvanometer of coil resistance  $50 \Omega$  shows full scale deflection for a current of 5 mA. How can it be converted into a voltmeter of range 0 to 15 V?
14. Two long and parallel straight wires A and B carry currents of 8A and 5A in the same direction are separated by distance of 4 cm. Estimate the force on 10 cm section of wire A due to the other wire.

**B. Prepare an Investigatory Project on the topics mentioned below/ Select an investigatory project on one of the topics given in Physics Laboratory Manual for Class XII.**

- To study various factors on which the internal resistance/EMF of a cell depends.
- To study the variations in current flowing in a circuit containing an LDR because of a variation in:
  - The power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance).
  - The distance of an incandescent lamp (of fixed power) used to 'illuminate' the LDR.
- To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equiconvex lens (made from a glass of known refractive index) and an adjustable object needle.

4. To investigate the relation between the ratio of (i) output and input voltage and (ii) number of turns in the secondary coil and primary coil of a self-designed transformer.
5. To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids.
6. To estimate the charge induced on each one of the two identical Styrofoam (or pith) balls suspended in a vertical plane by making use of Coulomb's law.
7. To study the factors on which the self-inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/ (bulb) in a circuit fed up by an A.C. source of adjustable frequency.
8. To study the earth's magnetic field using a compass needle -bar magnet by plotting magnetic field lines and tangent galvanometer.

**Link for your reference-**

<https://ictsciencerekha.blogspot.com/2022/11/investigatory-projects-class-xii-physics.html>

**KINDLY NOTE:**

- Choose a topic of research of your choice.
- The AIM of the project should be very specific and content should not be copied from Internet.
- You can refer to the statistical data from Internet but the analysis should be original.
- Mention Bibliography at the end of the Project.
- The chronology of the project work should be: Title page, Acknowledgement, Certificate, Index, Content (15-20Pages), Bibliography.
- You can choose your own topic of interest out of such a wide genre in Physics.

**C.** Complete the **laboratory practical file** by writing experiments and activities given. Under the heading Aim, Apparatus required, Theory, Diagrams, Observations, Calculations, Precautions and Sources of error.

**CHEMISTRY**

**A. Answer the following questions:**

1. Predict all the alkene that would be formed from dehydrohalogenation of following halides with Sodium ethoxide in ethanol, also identify the major alkene:
  - (i) 1-Bromo-1-methylcyclohexane
  - (ii) 2-Chloro-2-methylbutane
  - (iii) 2,2,3-Trimethyl-3-bromopentane
2. CONVERSIONS
  - (i) Propene to 1-nitropropane
  - (ii) to Benzyl alcohol
  - (iii) But-1-ene to But-2-ene
  - (iv) 2-Bromopropane from 1-Bromopropane
  - (v) Methyl magnesium bromide to 2-Methylpropan-2-ol
  - (vi) Aniline to Iodobenzene

- (vii) Phenol to Salicylaldehyde
  - (viii) Phenol to Chlorobenzene
  - (ix) Phenol to Picric acid.
3. Account for the following;
- (i) Dipole moment of Chlorobenzene is lower than cyclohexyl chloride.
  - (ii) Phenol is more acidic than butanol.
  - (iii) t-butyl alcohol undergo faster acid catalyzed dehydration than n-butanol.
  - (iv) o-Nitrophenol more steam volatile than p-Nitrophenol.
  - (v) t-butyl chloride on heating with sodium methoxide gives 2-methylpropene instead of t-butyl methylether.
  - (vi) Boiling point of alcohols is higher in comparison of ethers.
  - (vii) Alcohols more miscible in water as compared to haloalkanes and haloarenes.
  - (viii) Thionyl chloride is preferred for preparing alkyl chloride from alcohols.
  - (ix) Presence of nitro group at ortho/para increases the reactivity of haloarenes toward nucleophilic substitution reactions.
  - (x) Racemization occurs in SN1 reactions.
  - (xi) Dextro and Laevo-rotatory isomers of butan-2-ol difficult to separate with fractional distillation.
  - (xii) Haloalkanes more reactive towards nucleophilic substitution than vinylic halides.
  - (xiii) Boiling point of alcohols decreases with increase in branching of alkyl chain.
  - (xiv) Cresols are less acidic than phenol.
4. Write short note on the following;
- (i) Swartz Reaction
  - (ii) Freinkelstein Reaction
  - (iii) Sandmayer's Reaction
  - (iv) Luca's test for alcohols
  - (v) Types of electrophilic substitution Reaction in arenes
  - (vi) Markonikov and Anti-Markonikovv addition
  - (vii) Fittig Reaction
  - (viii) Kolbe Reaction
  - (ix) Reimer Tiemman Reaction
  - (x) Halogenation of Phenol in polar and non-polar solvents.
  - (xi) Williamson synthesis
  - (xii) Friedel craft alkylation of Anisole
  - (xiii) Reduction of Carboxylic acid, aldehyde, ketone using  $\text{LiAlH}_4$  and  $\text{H}_2\text{O}$
  - (xiv) Hydroboration of But-1-ene and But-2-ene
5. Write distinction test for following:

- (i) Ethanol and Phenol
  - (ii) Phenol and Picric acid
  - (iii) Ethyl Chloride and Chlorobenzene
  - (iv) Ethanol and Dimethyl ether.
6. Write mechanism for following;
- (i) Halogenation of benzene
  - (ii) Acid catalyzed dehydration of alcohol
  - (iii) alkyl halide from alcohols using HCl
  - (iv) Acidic hydration of alkene
7. Name the reagents used;
- (i) Primary alcohol to Carboxylic acids
  - (ii) Primary alcohol to aldehyde
  - (iii) Phenol to Benzoquinone
  - (iv) Butan-2-one to Butan-2-ol.
8. (a) Arrange the following in increasing order of :
- (i) P-cresol, P-nitrophenol, phenol { Acidic strength }
  - (ii) Ethoxyethane, Butanal, Butanol, n-butane { Boiling point }
  - (iii) R-F, R-Br, R-Cl, R-I [R is alkyl group] { Bond enthalpy }
  - (iv) 2-Bromo-2-methylbutane, 1-Bromopentane, 2-Bromopentane { SN1 }
  - (v) 2-Bromo-2-methylbutane, 1-Bromopentane, 2-Bromopentane { Elimination }
  - (vi) 2-Bromo-2-methylbutane, 1-Bromopentane, 2-Bromopentane { SN2 }
- (b) Out of 2-Bromo-2-methylbutane, 1-Bromopentane, 2-Bromopentane which one will rotate the direction of plane polarized light?
9. Although chlorine is an electron –withdrawing group, yet it is ortho-, para- directing in electrophilic aromatic substitution reactions. Why?
10. Why is sulphuric acid not used during the reaction of alcohols with KI?
11. Ortho nitrophenol has lower boiling point than p-nitrophenol. Why ?
12. Ortho-nitrophenol is more acidic than ortho-methoxyphenol. Why?
13. How would you obtain acetophenone from phenol?
14. Why is the solubility of haloalkanes in water is very low?
15. Allyl chloride is hydrolysed more readily than n-propyl chloride. Why?
- B. Prepare an investigatory project on any one of the topic mentioned below:**
- 1. Study of the presence of oxalate ions in guava fruit at different stages of ripening.
  - 2. Determination of caffeine in tea samples.
  - 3. Study of quantity of casein present in different samples of milk.
  - 4. To study the content of ascorbic acid in citrus fruit.

5. Preparation of soybean milk and its comparison with the natural milk with respect to curd formation, effect of temperature, etc.
  6. Drug addiction and abuse
  7. Study of the effect of Potassium Bisulphate as food preservative under various conditions (temperature, concentration, time, etc.)
  8. Antacids
  9. Study of digestion of starch by salivary amylase and effect of pH and temperature on it.
  10. Study the effect of metal coupling on the rate of corrosions.
  11. Comparative study of the rate of fermentation of following materials: wheat flour, gram flour, potato juice, carrot juice, etc.
  12. Determination of the contents of the cold drink.
  13. Extraction of essential oils present in Saunf (aniseed), Ajwain (carum), Illaichi (cardamom).
  14. Soaps and detergents.
  15. Study of common food adulterants in fat, oil, butter, sugar, turmeric powder, chilli powder and pepper.
  16. Measuring solubilities of saturated solutions.
  17. To study the surface chemistry of colloidal solution.
- 2. Complete your chemistry lab files.**

## **BIOLOGY**

### **A) ANSWER THE FOLLOWING QUESTIONS -**

#### **Very short answer questions**

1. What is Parthenocarpy?
2. Why do we refer to offsprings formed by asexual method of reproduction as clones?
3. Rearrange the following events of sexual reproduction in the sequence in which they occur in a flowering plant: embryogenesis, fertilisation, gametogenesis and pollination.
4. Mention the similarity between xenogamy and geitonogamy.
5. What is perisperm? Give examples of it.
6. The number of chromosomes in the shoot tip cells of a maize plant is 40. What will be the number of chromosomes in the microspore mother cells and microspore tetrad of the same plant?
7. Mention the importance of FSH, Estrogen, LH and progesterone hormones during menstrual cycle.
8. In which of the following plants cleistogamous and chasmogamous flowers are present?  
Oxalis, Parthenium, commelina, china rose, calotropis

### Short answer questions

9. How does the progeny formed from asexual reproduction differ from those formed by sexual reproduction?
10. Draw a diagram of L.S. of an anatropous ovule of angiosperm and label the following parts.  
(i) Nucellus    (ii) Integument    (iii) Antipodal cells    (iv) Hilum
11. Diagrammatically represent the sexual mode of reproduction in flowering plants.
12. Draw a labelled sectional view of seminiferous tubule of a human male.
13. Write the main differences between self and cross pollination.
14. Differentiate between oogenesis and spermatogenesis.
15. Draw a diagram of the microscopic structure of human sperm. Label the parts in it and write their functions.
16. Differentiate between gametogenesis and embryogenesis.
17. Draw a labelled diagram of the following-  
a) Graafian follicle    b) pollen grains    c) L.S. of monocot seeds

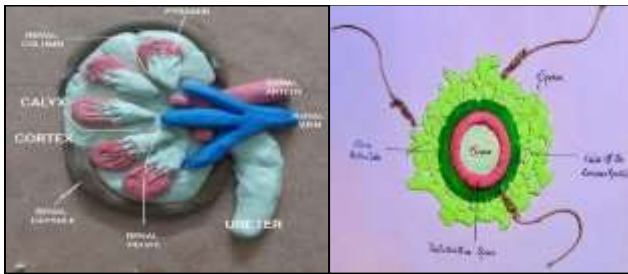
### Long answer questions

18. Explain the following-
  - a) Pre Fertilisation events
  - b) Fertilisation events
  - c) Post Fertilisation events.
19. Explain the following:
  - (i) Assisted Reproductive Technology
  - (ii) Gamete Intra Fallopian Transfer
  - (iii) IntraCytoplasmic Sperm Insemination
20. Describe the various methods of birth control.

### **B) Prepare an Investigatory Project on the topic mentioned below:**

- i) Biotechnology and its applications in medical science.
- ii) Genetic disorders
- iii) Microbes in human welfare/ Biology in everyday life
- iv) Biological warfare
- v) Assisted Reproductive Technologies
- vi) Chromosomal disorders (Any Four)
- vii) GMO (Genetically modified Organisms)
- viii) Evolutionary history of human
- ix) STDs (Sexually Transmitted Diseases)
- x) Cancer (Types, causes, Prevention and Cure)
- xi) Biodiversity Conservation (Ex-Situ and In-Situ)

NOTE: Kindly refer the following samples for Biology Project.



C) Complete the Practical file.

\* Refer the link for Biology Practical demonstration.

<http://www.olabs.edu.in/?pg=topMenu&id=53>

## COMPUTER SCIENCE

**Revise the chapters 1, 2, 3, 5 & 6 thoroughly and do the following Programs in Practical File:**

1. Take a string from the user and print the following using independent functions and string as the parameter (Menu Driven).
  - a) Number of capital letters
  - b) Number of small letters
  - c) Number of spaces
  - d) Number of vowels
  - e) Number of digits
2. Take a list of 10 numbers from the user and do the following using a menu with independent function for each of the following:
  - a) Print the sum of odd elements of the list
  - b) Print the square of the smallest element of the list
  - c) Print the elements in reverse order to how they have been inputted
  - d) Generate and display the Tuple with the elements of the list in descending order. (List should remain un-altered)
3. Write a program to create a function that takes a dictionary object of Player with Name, Gender, Age and Game, and the function saves the dictionary data to the Player.dat file. Create another function show() to print the details of female players only. Use a Menu based interface to call the functions.
4. Write a program to create the following user defined functions and use a menu to work within the program.
  - a) Show() which prints the first 10 natural numbers.
  - b) Prime() which generates the list of first 10 prime numbers and prints it.
  - c) Check() which takes a number as a parameter and returns 1 if the number is an Arm Strong number otherwise returns 0.

(Note : an arm strong number is the one whose sum of the cube of each digit is same as the number itself. e.g,  $153 = 1^3 + 5^3 + 3^3$ ).

5. Write a program to use a text file named story.txt and do the following using a menu and a user defined function for each task:
  - a) Count the number of words in the string
  - b) Interchange the first 3 characters of the string with the last 3 characters of the same string.
  - c) Print the alternate characters of the string.
6. Write a program to create a binary file with Rno, Name and Marks of 3 subjects of 10 students. Later create a function to print each record from the file with total marks of each student, also print the total count of records in the file.
7. Write a program to create a csv file that stores the records of Stock available in the store with ProductName, Price and Brand. Display the records with price more than 2000. Use the specific functions to do the given task through the Menu Interface.
8. Write the code to store 5 records in Stu.CSV with details - Name, Class & Marks. Later display the details of those who have marks more than 90 using a function.
9. Write a python program to create a text file named "Data.txt" with few messages as user input to it and read the contents to display the first 4 lines from the file.
10. Write a program to store the details of trains in a binary file (tno, name, source, destination and fare). Read and display the records of those trains that are going to Lucknow using a function which takes destination as parameter
11. Write the answer to the following on the **A4 sized Ruled white pastel sheets neatly** & add to the **practical file at its end:**
  - a) Differentiate between the following :
    - List and Tuple
    - List and Dictionary
    - append() and extend() of a List
    - pop() and popitem() of a dictionary
    - sort() and sorted() with respect to lists
    - keyword parameters and positional parameters
    - w and wb modes of file handling
    - a and w modes of file handling
    - seek() and tell() methods
    - binary file and csv file
  - b) What are default arguments? Explain their relevance with an example.
  - c) What is an exception? State names of any 5 common exceptions. How can we deal with the exceptions in a Python Program? Give example and explain.
  - d) What is a CSV file? Explain the concept of CSV files along with the methods used to write and read data from them.
  - e) What is pickle module? Discuss its methods for reading and writing data.

12. **Make a project on the topic discussed in the class, explaining the need of digitization in the selected domain and various features to incorporate in the project to help the society. Also make a Mind Map diagram for the proposed project of Python. Use the given layouts for Certificate, Acknowledgement and other formats of the Project Report. Share the Project report in PDF form for approval before printing.**

## PSYCHOLOGY

### **1. Practical File Completion-**

Ensure your practical file is completed up to the SCQ (Self-Concept Questionnaire).

- Introduction to Psychological Testing
- Raven's Progressive Matrices
- Self-Concept Questionnaire

### **2. Design a creative and informative A3-size poster on the theme “Mental Health And Well-Being”.**

Your poster should highlight how different communities (such as family, school, neighbourhood, social media, movies, etc.) contribute to promoting mental well-being. Use relevant symbols, facts, quotes, and illustrations. Give your poster an appropriate title and ensure it is original, neat, and well-presented.

### **3. Select a case for your Case Study and write the introduction of the case study in your**

Psychology Case Study file, begin writing the following sections:

- What is a Case Study?
- Pros and Cons of the Case Study method
- Tools used in Case Study: Observation, Survey and Interview

### **4. Answer the following questions in your register -**

- i. Kirti is sensitive to the various aspects of nature and understands plant life. Which type of Intelligence is she high on?
  - a) Naturalistic Intelligence
  - b) Interpersonal Intelligence
  - c) Intrapersonal Intelligence
  - d) Logical Intelligence
- ii. Give the characteristics of emotionally intelligent individuals.
- iii. Individuals often use various defence mechanisms to cope with everyday behaviour. Comment using real life examples.
- iv. Creativity and Intelligence is often interrelated. How? Enlist differences between Intelligence Test and Creativity tests.
- v. Compare and contrast the behavioural and cultural approach to personality.

- vi. Raghav is a seven year old boy. Identify the current stage of personality development depicted by Raghav according to Freud. Also, explain the preceding stages.

**Links for your reference:**

[https://youtu.be/xllmlZLzb\\_U](https://youtu.be/xllmlZLzb_U)

<https://youtu.be/64pctR2COmY>

<https://youtu.be/Odk885MW92g>

**ECONOMICS**

**Section A:** Do the following assignment in your Homework register.

1. Numerical questions of National Income:

a) Calculate Net National Product at MP

ITEMS	CRORE
Compensation of Employees	450
Mixed Income of self employed	700
Profit	80
Rent	30
Interest	40
Net factor income to Abroad	-10
Net Exports	15
Depreciation	20
NIT	10

2. Calculate the net value added at the market price of a firm:

Items	Amount
Sale	2000
	-20
Change in stock	30
Depreciation	40
Net indirect taxes	20
Purchase of machinery	
Purchase of an intermediate product	250

3. Find Net National Product at Market Price.

S.no.	Contents	(Rs. in Crores)
(i)	Personal consumption expenditure	350
(ii)	Consumption of fixed capital	50
(iii)	Profit	500

S.no.	Contents	(Rs. in Crores)
(iv)	Rent	300
(v)	Change in Stock	750
(vi)	Government Final Consumption Expenditure	1600
(vii)	Interest	400
(viii)	Net Indirect Tax	300
(ix)	Net Factor Income from Abroad	20
(x)	Undistributed Profit	200
(xi)	Social Security Contribution by Employers	250

4. From the following data, calculate “Net Value Added at Factor Cost”.

S.no.	Content	(Rs. in Lakhs)
(i)	Sales	400
(ii)	Change in Stock	(-) 20
(iii)	Intermediate consumption	200
(iv)	Net indirect taxes	40
(v)	Exports	50
(vi)	Depreciation	70

5. Calculate the Net National Product at Market Price from the given details.

S.no.	Contents	(Rs. in Crores)
(i)	Mixed income of self-employed	8,000
(ii)	Depreciation	200
(iii)	Profit	1,000
(iv)	Rent	600
(v)	Interest	700
(vi)	Compensation of employees	3,000
(vii)	Net indirect taxes	500
(viii)	Net factor income to abroad	60
(ix)	Net exports	(-) 50
(x)	Net current transfers to abroad	20

6. Calculate national income and GDPfc from the following data:

From the following data, estimate the net value added at factor cost and show that it is equal to the sum of factor incomes : (i) Sales 9600 (ii) Increase in stock 2080 (iii) Intermediate Consumption 2370 (iv) Depreciation 450 (v) Wages and salaries 5400 (vi) Interest 250 (vii) Rent 750 (viii) Profit 2150 (ix) Net indirect Taxes 310

**Section B:**

I. Write down all the formulas of national income and Government Budget chapter in A-4 Sheet.

II. Analyse whether these items are included or excluded in national income with reasons.

1. Construction of a new firm.
2. Winning of a lottery prize.
3. Increase in the prices of stocks lying with a trader.
4. Rent-free house given to an employee by an employer.
5. Profit earned by foreign banks of India.
6. Profits of Reliance Industries from its chemicals business in Australia.
7. Profits earned by an Indian bank from its branches abroad.
8. Purchase of a sewing machine by a factory.
9. Earnings of a self-employed doctor having a clinic at his own residence.
10. Expenditure on the construction of a flyover by the government.

III. Do all theory questions in Register:

1. Explain the process of money creation by commercial banks.
2. Highlight the Central Bank's role as the controller of money supply or credit.
3. How did the export surplus lead to an economic drain of wealth during colonial rule?
4. Explain the advantages of British rule on Indian economy?
5. Write a short note on demographic transition.
6. Classify the following goods into intermediate goods and final goods:
  - (i) Milk purchased by a restaurant
  - (ii) Purchase of rice by a grocery shop
  - (iii) Purchase of an air conditioner for self use
  - (iv) Cloth used for making a sofa-set by the carpenter
  - (v) Electricity consumption in a business.
  - (vi) Book purchased by a student
  - (vii) Books purchased by a library
  - (viii) Postage stamps purchased by a consumer
  - (ix) Postage stamps purchased by a business unit
  - (x) Exhaust fans used for making water coolers
7. Introduction and completion of economics project as per the CBSE guidelines (First 20 sheets)

8. Read the following statements – Assertion (A) and Reason (R). Choose one of the correct alternatives given below:

Alternatives: a) Both Assertion (A) and Reason (R) are true and reason is the correct explanation of assertion. b) Both assertion (A) and reason (R) are true and reason is not the correct explanation of assertion. c) Assertion (A) His true but reason (R) is false. d) Assertion (A) is false but reason (R) is true.

i. Assertion (A): By economic units or economic agents, we mean those individuals or institutions which take economic decisions.

Reason(R): They can be only consumers who decide what and how much to consume.

ii. Assertion (A): Macroeconomics has deep roots in microeconomics. Reason(R): Macroeconomics has to study the aggregate effects of the forces of demand and supply in the markets.

iii. Assertion (A): The final goods are the crucial backbone of any production process, in aiding and enabling the production to take place. Reason(R): These goods form a part of capital and continue to enable the production process to go on for continuous cycles of production. 4

iv. Assertion (A): Income, or output, or profits are concepts that make sense only when a time period is specified.

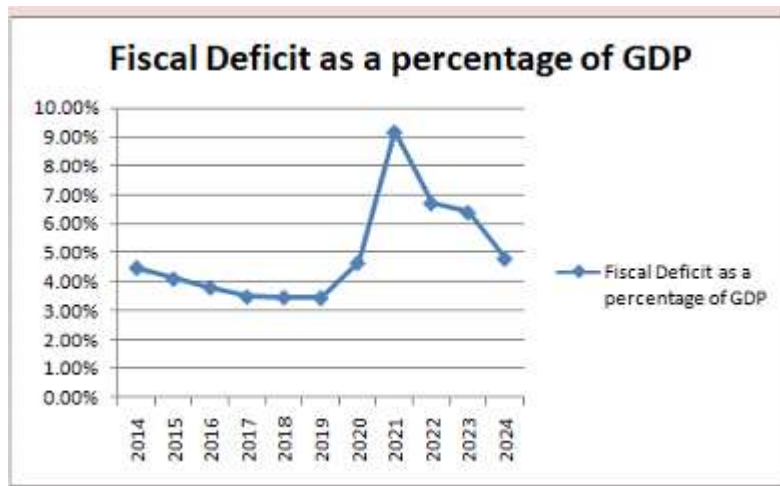
Reason(R): These are called stock because they occur at a particular point of time.

### PICTURE BASED QUESTIONS

Question 1: Which of these activities contribute to the national income? Explain why or why not.



## Question 2: Fiscal Deficit Trend



- i. What trend do you observe in the fiscal deficit over the given years?
- ii. Why might the fiscal deficit have increased in the third year?
- iii. Suggest one way to reduce the fiscal deficit.

Q3. Read the case carefully and answer the following questions: Suez Canal is an artificial waterway running from north to south across the Isthmus of Suez in north-eastern Egypt. It connects Port Said on the Mediterranean Sea with the Gulf of Suez, an arm of the Red Sea. The canal provides a direct trade route for ships operating between European or American ports and ports located in South Asia, East Africa and Oceania by doing away with the need to sail around Africa. Strategically and economically, it is one of the most important waterways in the world. Its opening in 1869 reduced the cost of transportation and made access to the Indian market easier.

- (i) Why is the Suez Canal considered one of the most important waterways in the world?
- (ii) How did the opening of the Suez Canal in 1869 impact trade with India?

## **BUSINESS STUDIES**

1. Beauty Products Ltd.' is a natural and ethical beauty brand famous for offering organic beauty products for men and women. The company uses plant based materials for its products and is the No. 1 beauty brand in the country. It not only satisfies its customers but also believes in overall protection of the planet.

Identify the marketing management philosophy being followed by 'Beauty Products Ltd.'

2. Name the marketing function which is concerned with the important decision of managing inventory. What are the factors deciding the inventory need of a marketing firm?
3. 'Buy one get one free' is printed on the label of the package of mosquito repellent. State the labelling function being performed by this statement. Also explain the need of labelling in marketing.
4. Explain the multiple objectives of management. Explain your answer with examples.

5. The advertisement of a travel agency states the following:  
'Visit Agra — The city of Love', 'Udaipur — The city of Lakes' and 'Mysore — The city of Gardens'. What is being marketed by the agency through the advertisement?
6. How business environment affect business with its different dimensions? Explain with a suitable diagram and features of different dimensions.
7. Define the following terms:
- Product
  - Extended Product
  - Generic Name
  - Brand Name
  - Trade Mark
  - Market Offer
  - Lean manufacturing
  - Mental revolution
  - Fatigue study
8. Explain how Management can be described as a science, art and a profession.
9. Discuss the concept of functional foremanship with suitable diagrams.
10. Kumar wanted to purchase a fuel efficient car having the latest standards regarding minimisation of pollution. He saw an advertisement offering such a car and visited the showroom of the company wherein the car was displayed. In his discussion, the Marketing Manager told him that the company is providing credit facilities, maintenance services and many other effective services which are helping in bringing repeat sales and developing brands loyalty. Identify the marketing function which the Marketing Manager was discussing with Kumar.
11. 'Ultra Televisions Ltd.' is offering its 90 TV sets at a discount of ₹ 15,000 for a period of one month starting from 1st March, 2019. Identify the sales promotion activity used by Ultra Televisions Ltd.'
12. Beena has been using 'Klean', a famous detergent available in the market. On watching numerous advertisements in the television, she decided to try a new brand of detergent. When she went to the near-by store to purchase the same, she saw detergents of other producers making similar claims of whiteness and stain Removing abilities. Hence, she could not make up her mind as which detergent to purchase. Name the objection of advertising being discussed in this case.
13. 'Maruti Vega Ltd. entered into the market with coloured television and have now introduced products like audio system, air-conditioners, washing machines, etc. The company is not only offering the products but also handling complaints and offering after sales services. Identify the element of marketing mix discussed here.

14. Select any topic of project work as explained in the class and prepare the project file accordingly.
15. State the principals of management given by Henry Fayol and explain their violations and benefits.
16. Distinguish between Three levels of management.
17. Ashutosh Goenka was working in 'Axe Ltd.', a company manufacturing air purifiers. He found that the profits had started declining from the last six months. Profit has an implication for the survival of the firm, so he analysed the business environment to find out the reasons for this decline.
  - (a) Identify the level of management at which Ashutosh Goenka was working.
  - (b) State three other functions being performed by Ashutosh Goenka.

**NOTE : Do all the questions in register.**

### ACCOUNTANCY

1. P and Q are partners sharing profits in the ratio of 1:2. R was manager who received the salary of ₹ 10,000 p.m. in addition to commission of 10% on net profits after charging such commission. Total remuneration to R amounted to ₹ 1,80,000. Profit for the year before charging salary and commission was:
  - a) ₹ 6,00,000
  - b) ₹ 7,80,000
  - c) ₹ 7,20,000
  - d) ₹ 6,60,000
2. What should be the minimum number of persons to form a Partnership:
  - a) 2
  - b) 10
  - c) 7
  - d) 20
3. Yogesh is a partner in a firm. He withdrew ₹ 2,000 per month on the last day of every month during the year ended 31<sup>st</sup> March, 2026. If interest on drawings is charged @ 9% p.a., the interest charged will be:
  - a) ₹ 2,160
  - b) ₹ 1,080
  - c) ₹ 990
  - d) ₹ 1,170
4. Govind and Pawan were partners in a firm sharing profit or losses in the ratio 7:5. With effect from 1<sup>st</sup> April 2025 they agreed to share profits in the ratio of 5:4. Due to the change in profit sharing ratio what is Pawan's gain or sacrifice?
  - a) Sacrifice 1/12
  - b) Gain 1/12
  - c) Sacrifice 1/36
  - d) Gain 1/36
5. Vidit and Seema were partners in a firm sharing profits and losses in the ratio of 3:2. Their capitals were ₹1,20,000 and ₹2,40,000 respectively. They were entitled to interest on capitals @ 10% p.a. The firm earned a profit of ₹18,000 during the year. The interest on Vidit's capital will be:
  - a) ₹6,000
  - b) ₹10,800
  - c) ₹7,200
  - d) ₹12,000
6. Assertion (A): Partner's private property can be used in paying off the firm's debt.  
Reason (R) : In case of partnership firm, partner's liability is unlimited.
  - a) Both A and R are true and R is the correct explanation of A.
  - b) Both A and R are true but R is not the correct explanation of A.
  - c) A is true but R is false.
  - d) A is false but R is true
7. When goodwill existing in the books is written off at the time of admission of a partner it is transferred to partners' capital account in their
  - a) old profit sharing ratio
  - b) new profit sharing ratio

c) sacrificing ratio

d) gaining ratio

8. P and S are partners sharing profits in the ratio of 3:2. R is admitted with  $\frac{1}{5}$ th share and he brings in ₹84,000 as his share of goodwill which is credited to the capital accounts of P and S respectively with ₹63,000 and ₹21,000. New profit-sharing ratio will be:  
a) 3:1:5                      b) 3:2:5                      c) 9:7:4                      d) 7:9:4
9. A and B are partners sharing profits in the ratio of 2:3. Their balance sheet shows machinery at ₹2,00,000; Stock at ₹80,000 and Debtors at ₹1,60,000. C is admitted and new profit sharing ratio is agreed at 6:9:5. Machinery is revalued at ₹1,40,000 and a provision is made for doubtful debts @5%. A's share in loss on revaluation amount to ₹20,000. Revalued value of stock will be:  
a) ₹62,000                      b) ₹60,000                      c) ₹1,00,000                      d) ₹98,000
10. Assertion (A): Rent to a Partner is transferred to the debit of Profit & Loss Account but is not transferred to the debit of Profit & Loss Appropriation Account.  
Reason (R) : Rent to a Partner is an expense which is a charge against profits and not an appropriation of profit. Hence, it is transferred to the debit of Profit & Loss Account.  
a) Both A and R are true and R is the correct explanation of A.  
b) Both A and R are true but R is not the correct explanation of A.  
c) A is true but R is false.  
d) A is false but R is true.
11. Assertion(A) : Batman, a partner in a firm with four partners has advanced a loan of ₹50,000 to the firm for last six months of the financial year without any agreement. He claims an interest on loan of ₹3,000 despite the firm being in loss for the year.  
Reasoning (R) : In the absence of any agreement / provision in the partnership deed, provisions of Indian Partnership Act, 1932 would apply.  
a) Both A and R are correct, and R is the correct explanation of A.  
b) Both A and R are correct, but R is not the correct explanation of A.  
c) A is correct but R is incorrect.  
d) A is incorrect but R is correct.
12. Annu, Banu and Chanu are partners, Chanu has been given a guarantee of minimum profit of ₹8,000 by the firm. Firm suffered a loss of ₹5,000 during the year. Capital account of Banu will be \_\_\_\_\_ by ₹ \_\_\_\_\_.  
a) Credited, ₹6,500.  
b) Debited, ₹6,500.  
c) Credited, ₹1,500.  
d) Debited, ₹1,500.
13. Interest on Partner's loan is credited to:  
a) Partner's Fixed capital account.  
b) Partner's Current account.  
c) Partner's Loan Account.  
d) Partner's Drawings Account.
14. A, B and C are in partnership business. A used ₹2,00,000 belonging to the firm without the information to other partners and made a profit of ₹35,000 by using this amount. Which decision should be taken by the firm to rectify this situation?  
a) A need to return only ₹2,00,000 to the firm.  
b) A is required to return ₹35,000 to the firm.  
c) A is required to pay back ₹35,000 only equally to B and C.  
d) A need to return ₹2,35,000 to the firm.

15. A, B and C who were sharing profits and losses in the ratio of 4:3:2 decided to share the future profits and losses in the ratio to 2:3:4 with effect from 1<sup>st</sup> April 2026. An extract of their Balance Sheet as at 31<sup>st</sup> March 2026 is:

Liabilities	(₹)	Assets	(₹)
Workmen Compensation Reserve	65,000		

At the time of reconstitution, a certain amount of Claim on workmen compensation was determined for which B's share of loss amounted to ₹5,000. The Claim for workmen compensation would be:

- a) ₹15,000                      b) ₹70,000                      c) ₹50,000                      d) ₹80,000

16. Ram and Rohan were partners sharing profits and losses in the ratio of 2 : 1. They admitted Sohan as a partner for 1/5<sup>th</sup> share in the profits. For this purpose, the Goodwill of the firm was to be valued on the basis of three years purchase of last five years average profits. The profits for the last five years were:

Year 2018 – 19 : ₹50,000; 2019 – 20 : ₹40,000; 2020 – 21: ₹75,000; 2021 – 22:(₹25,000); 2022 – 23: ₹50,000

The profit of 2018 – 19 was calculated after charging ₹ 10,000 for abnormal loss of goods by fire. Goodwill of the firm:

- a) ₹1,30,000                      b) ₹1,20,000                      c) ₹1,10,000                      d) ₹1,00,000

17. Ajay, Manish and Sachin were partners sharing profits in the ratio 5:3:2. Their capitals were ₹ 6,00,000; ₹ 8,00,000 and ₹ 11,00,000 as on April 01, 2025. As per Partnership deed, Interest on Capitals were to be provided @ 10% p.a. for the year ended March 31, 2026. Profits of ₹ 2,00,000 were distributed without providing for Interest on Capitals. Pass an adjustment entry and show the workings clearly.

18. Doremon, Shinchon and Nobita are partners sharing profits and losses in the ratio of 3:2:1. With effect from 1<sup>st</sup> April, 2026 they agree to share profits equally. For this purpose, goodwill is to be valued at two year's purchase of the Average profit of last four years which were as follows:  
 Year ending on 31<sup>st</sup> March, 2023 ₹ 50,000 (Profit)  
 Year ending on 31<sup>st</sup> March, 2024 ₹ 1,20,000 (Profit)  
 Year ending on 31<sup>st</sup> March, 2025 ₹ 1,80,000 (Profit)  
 Year ending on 31<sup>st</sup> March, 2026 ₹ 70,000 (Loss)

On 1<sup>st</sup> April, 2025 a Motor Bike costing ₹ 50,000 was purchased and debited to travelling expenses account, on which depreciation is to be charged @ 20% p.a. by Straight Line Method. The firm also paid an annual insurance premium of ₹ 20,000 which had already been charged to Profit and Loss Account for all the years.

Journalise the transaction along with the working notes.

19. M/s Aradhya having the assets of ₹ 10,00,000 and Liabilities of ₹ 4,20,000. The firm earns the annual profit of Rs. ₹90,000. The rate of interest expected from the capital having regard to the risk involved is 15%. Calculate the amount of Goodwill by Capitalisation of Super Profit method.
20. P, Q and R were partners with fixed capital of ₹ 40,000, ₹32,000 and ₹24,000. After distributing the profit of ₹48,000 for the year ended 31<sup>st</sup> March 2026 in their agreed ratio of 3:1:1 it was observed that:  
 a) Interest on capital was provided at 10% p.a. instead of 8% p.a.  
 b) Salary of ₹ 12,000 was credited to P instead of Q.

You are required to pass a single journal entry in the beginning of the next year to rectify the above omissions.

21. Cheese and Slice are equal partners. Their capitals as on April 01, 2025 were ₹ 50,000 and ₹1,00,000 respectively. After the accounts for the financial year ending March 31, 2026 have been prepared, it is observed that interest on capital @ 6% per annum and salary to Cheese @ ₹5,000 per annum, as provided in the partnership deed has not been credited to the partners' capital accounts before distribution of profits.  
You are required to give necessary rectifying entries using P&L adjustment account.
22. P, Q and R were partners sharing profits in the ratio of 3:2:1. They admitted M as a new partner for 1/7<sup>th</sup> share in profits. The new ratio will be 2:2:2:1 respectively. M brought ₹3,00,000 for his capital and ₹45,000 for his share of goodwill. Show your workings clearly and pass necessary journal entries.
23. Balance Sheet of A and B, who share profits and losses in 3:2 as on 31<sup>st</sup> December 2025 as under:-

Liabilities	₹	Assets	₹
Capital A/c		Furniture	1,00,000
A 4,00,000		Land	6,00,000
B 6,00,000	10,00,000	Machinery	2,00,000
Creditors	2,00,000	Debtors 4,10,000	
General Reserves	4,00,000	Less : provision 10,000	4,00,000
Bills Payable	80,000	Equipment	3,00,000
P/l A/c	1,20,000	Stock	1,50,000
		Goodwill	50,000
	18,00,000		18,00,000

C is admitted with 1/5<sup>th</sup> share in the profit which he acquires from A only with the Following adjustments:

1. He brings proportionate capital & ₹60,000 as goodwill. Half of this withdrawn by partners.
2. Machinery is revalued at ₹185,000.
3. Furniture was overvalued by ₹15,000
4. Land is to be appreciated by 10%p.a.
5. Maintain provision for doubtful debts @ 2%p.a. on debtors.
6. Half of the stock to be taken over by A and B equally and remaining revalued at ₹80,000.

Prepare Revaluation Account; Partner's Capital Account

24. Balance Sheet of X, Y and Z, who share profits and losses in 4:3:3 as on 31<sup>st</sup> December 2025 as:

Liabilities	₹	Assets	₹
Capital Accounts :-		Bank	10,000
X 4,00,000		Plant and Machinery	4,00,000
Y 3,00,000		furniture	90,000
Z 2,00,000	9,00,000	Building	6,00,000
Creditors	1,00,000	Debtors 1,50,000	
Bank overdraft	1,50,000	Less : provision 10,000	1,40,000
Bills Payable	50,000	Stock	1,60,000
Profits and Loss A/c	3,00,000	Goodwill	1,00,000
	15,00,000		15,00,000

W is admitted in the firm.

1. He will bring ₹1,50,000 as capital and nothing for goodwill.
2. Goodwill of the firm is valued at ₹3,00,000.
3. Plant & Machinery be depreciated by 10% and Building be appreciated by 20%.
4. Debtors are all good.
5. Stock is increased up to ₹1,70,000 and furniture is reduced to ₹70,000.
6. Capitals of the partners be adjusted on the basis of W's capital and new profit sharing ratio will be 4:3:2:1.

Prepare Revaluation Account; Partner's Capital Account and Balance Sheet after W's Admission.

25. Complete the given Project Work .

### **POLITICAL SCIENCE**

1. Answer the following:
  - a. What was Soviet known as after the disintegration?
  - b. Which ideology did the USSR follow?
  - c. What was Perestroika?
2. When was the following held?
  - a) Indo-Russian Strategic Agreement -----
  - b) The EURO Accepted-----
  - c) Disintegration of Soviet Union -----
  - d) Socialist Revolution in Russia -----
3. What role did Mikhail Gorbachev play in the disintegration of Soviet Union?
4. SAARC has taken major regional initiative in South Asian States to evolve cooperation through multilateral means. Justify the statement.
5. Write the following events in the proper sequence and mention the year of the event:
  - a) Soviet invasion in Afghanistan
  - b) Fall of Berlin Wall
  - c) CIS
  - d) Russian Revolution
6. While the Chinese economy has improved dramatically, why has everyone in China not received the benefit of the reform? State any two reasons.
7. Name the two reforms initiated by Gorbachev and its meaning.
8. What is meant by Schengen visa?
9. Identify the event that took place in 1989 which led to the collapse of the Second World War and end of the Cold War. What happened in 1961?
10. Explain about India and Pakistan conflicts with special reference to the recent development.
11. Write the full form – ASEAN, SAFTA, NATO, FTA, SEZ, CTBT, and NPT.
12. Which three republics of the USSR made a declaration in December 1991 disbanding the Soviet Union?
13. State any three reasons of the EU that makes it a influential Organisation in the world.

14. What do you mean by India's "Look East" policy and "Act East" policy of 1990s and 2014?
15. When was Referendum taken place in England for it to exit from EU, commonly known as BREXIT?
16. 'The various countries in South Asia do not have the same kind of political system'. Explain.
- 17. On the political map of Europe mark the disintegrated countries of USSR.**
- 18. Make a Project on any one of the following topics given accordingly.**

- a) Environment and Natural Resources
- b) Globalization
- c) International Organisation the UN, its importance, organs and Principle key Agencies - UNESCO, UNICEF ILO, IMF, World Bank, the Amnesty International
- d) The End of Bipolarity
- e) Contemporary South Asia
- f) Era of one party dominance and Challenges and Restoration of Congress System
- g) Challenges of Nation Building
- h) Regional aspiration
- i) Crisis of Democratic Order
- j) Contemporary Centres of Power

The project must have illustration, data's and should include following pages  
Cover page, Certificate, Acknowledgement, Index, Introduction, Sub-topics and content,  
Bibliography

## **HISTORY**

1. Mention the three periods of Harappan Civilisation?
2. What does the citadel include ? Discuss
3. Why the script of Indus people called enigmatic?
4. Fill in the blanks:
  - a) Metals known to Harappan people-----
  - b) Crafts of Indus valley civilization-----
  - c) Stone used to make weights-----
  - d) Materials used for making seals-----
  - e) Major sites discovered-----
5. Who was the first archaeologist to work in India?
6. Discuss the eight fold path given by Buddha.
7. How did Harappans obtain red colour of carnelian?
8. Discuss the functions performed by the Chandalas.
9. Who is the father of Indian Archaeology?
10. Name two sacrifices performed by kings during the Vedic period?

11. Mention about the structure of the Stupa.

**12. Cartographic skill:**

**On the political map of India mark**

- a) The major Harappan sites
- b) The 16 Mahajanpadas
- c) The major Buddhist sites

**Make a creative and informative Project file on any of the topics:**

- Digging the mounds of Harappa.
- Through the eyes of Travellers.
- The great Epic of Mahabharata.
- The Legendary Soul- GANDHI.
- The Vijaynagara Empire
- The Revolt of 1857
- The Mauryan Empire
- Bhakti and Sufi Traditions
- The Constitution – A Living Document
- Path to Enlightenment – Lord Buddha
- The life of Santhals and Paharias

**ENTERPRENEURSHIP**

- **Make a creative and informative Project file as given in syllabus.**
- **Do all the questions in register:**

1. State the components of macro environment.
2. Why an entrepreneur should be able to creatively identify an idea?
3. Kartik wants to start a new ready made garments shop in his colony. He knows that it is the best opportunity for him and it is going to give him high rate of promising returns. How do you agree with Kartik that he has selected a right opportunity? Also write the other elements of business opportunities.
4. Since her college days Mehak, loved the thrill of adventure sports. She was an avid reader which helped her to keep track of various new adventure sports taken up all around the world. She had recently read an article on increasing trend towards ‘space tourism and adventurous holidays’. Using her personal experiences and her passion for adventure sports she decided to start a company called ‘YOLO’. For the same purpose she also decided to collect statistics to see how much of these sports were accepted in our country. Identify the ways in which she was able to spot the trend. Explain other such ways along with a suitable example.
5. Why is environment an important factor for entrepreneurship?
6. Why do we need to scan our environment?
7. What is the difference between creativity and innovation?

8. Describe Perceiving and Sensing Opportunities.
9. How an environment offers the firm/ entrepreneur numerous opportunities in changing the needs of customers and market? Give two examples.
10. Why is scanning of environment considered as interface between spotting and product identification? Support your answer with at least one example.
11. Difference between Micro and Macro Environment.
12. What is Innovation and explain the elements of an Innovative Process?
13. From the following identify the elements of macro environment that would play a dominant role in the transformation of shopping malls in future.
 

d. Economic	c) Legal
e. Social	d) Technological
14. What are Marketing Plans?
15. Read the following newspaper article and identify and explain the two elements of PESTEL model which have been presented in this article : A popular brand of mobile phones has used repurposed fishing nets in its latest model of smartphones. Fishing nets are made of Nylon which has the basic property of adsorbing moisture and water. Use of this material would make the phones waterproof and dust resistant. Every year around 6,40,000 tonnes fishing nets end up in oceans, posing a serious threat to the marine ecosystem.

According to the Managing Director, Research and Development Department, they are working to replace fossil-based raw materials with bio-based raw materials which are renewable. The company has been researching and developing sustainable materials.

- **Make all the required flowcharts in your register to picture present each relevant concept of chapter-1 and chapter-2.**

## **PAINTING**

- **Visit the National Museum, New Delhi and carefully observe the Miniature Paintings displayed in the galleries.**
- Pay special attention to the use of colours, composition, detailing, perspective and depiction of scenes.
- Complete your Painting Portfolio with neat presentation and creative work related to your course curriculum , including

\*STILL LIFE COMPOSITION

\* SCENE COMPOSITION

NOTE – Use A2 size sheets and portfolio

## ARTIFICIAL INTELLIGENCE

Revise chapters 1, 2, 3 of Part A and 1, 2 & 7 of Part B thoroughly and do the following

### Programs in Practical File:

1. Write a program to do the following using independent functions using the Menu.
  - a) Create the dataframe and send to the function for storing the data to a csv file of Players with Name, gender, age and game where player number should be the row index.
  - b) Enter the data in dataframe as user input and call the above function
  - c) Display the data of the dataframe.
  - d) Filter the n number of records from the csv file after taking the value of n as a parameter to the function.
2. Write a program to depict the prices of the Computer Components in a Bar graph for any 4 months.
3. Write a program to depict the trend of profits earned by an organization over the last 5 years using a line graph.
4. Create the Dataframe object to store the marks of the students with their names, roll as index and do the following on the same:
  - a) to delete a row whose index is given by the user
  - b) add a column grade to a DataFrame
  - c) delete the grade column from the dataframe
5. Develop a Python program to display summary statistics (mean, median, mode) of a dataset.
6. Write the answers to the following on the **A4 sized Ruled white pastel sheets neatly** & add to the **practical file at its end:**
  - a) Differentiate between the following :
    - Series and DataFrame
    - Numpy and Pandas
    - Array and Series
    - loc() and iloc()
  - b) What is the purpose of Matplotlib? Explain the relevance of the same with examples.
  - c) List the different attributes of the functions used for displaying the graphs with Matplotlib library of Python (along with their purpose).
7. **Make a project on the topic discussed in the class, explaining the need of Artificial Intelligence in the selected domain and various features to incorporate in the project to help the society to meet any Sustainable Development Goal. Also make a Mind Map diagram for the proposed project of Python. Use the given layouts for Certificate,**

**Acknowledgement and other formats of the Project Report. Share the Project report in PDF form for approval before printing.**

### **HINDI**

1. निम्नलिखित विषय पर लगभग 150 शब्दों में अपने विचार प्रकट कीजिए ।
  - क. यह समय युद्ध का नहीं बुद्ध का है ।
  - ख. देश की सुरक्षा -अपनी रक्षा ।
  - ग. धर्म और राजनीति
2. नाटक व कहानी के तत्वों की विवेचना कीजिए।
3. पूर्व निर्देशित विषय पर आधारित परियोजना कार्य पूर्ण कीजिए ।

**नोट- सभी कार्य गृहकार्य पुस्तिका में करना है।**  
**परियोजना कार्य A-4 साइज पृष्ठ पर करनी है।**

### **PHYSICAL EDUCATION**

**Make a Record File containing the following:**

Practical-1: Fitness tests administration. (SAI Khelo India Test)

- Practical-2: Procedure for Asanas, Benefits & Contraindication for any two Asanas for each lifestyle disease.
- Practical-3: Anyone one IOA recognised Sport/Game of choice. Labelled diagram of Field & Equipment. Also, mention its Rules, Terminologies & Skills.
- **HEALTH & PHYSICAL EDUCATION**

Oxygen is energy for your vital organs, including your brain and nerves. Make a project on how Yoga benefits in breathing and mental wellness and paste pictures of various exercise used in the Project (1000 words).