



INTERNATIONAL PUBLIC SCHOOL

HOSHANGABAD ROAD, MISROD, BHOPAL

Holiday Homework

Class XII

Sub.: ENGLISH

1. Prepare write-ups for these topics in about 500 to 600 words. As these will be the topics for your ASL for First term.

Topics

- a) Cashless India
 - b) Travel and Tourism
 - c) Digital India
 - d) Hobbies and Interest
 - e) Important of Dress code in schools
2. Read the novel- 'You Are Born to Blossom'- by APJ Abdul Kalam and Arun Kidwani OR 'A Little Book of Friendship' -by Ruskin Bond .Write about any one of them and it's teachings in about 500 words.

PHYSICS

Investigatory Projects (do any 1)

1. To study various factors on which the internal resistance/EMF of a cell depends.
2. To study the variations in current flowing in a circuit containing an LDR because of a variation in
 - (a) The power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance).
 - (b) The distance of a incandescent lamp (of fixed power) used to 'illuminate' the LDR.
3. To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equi convex lens (made from a glass of known refractive index) and an adjustable object needle.
4. To design an appropriate logic gate combination for a given truth table.
5. 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.
6. 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.

7. 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.
8. To study the factor 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.
9. To study the earth's magnetic field using a tangent galvanometer.

CHEMISTRY

Investigatory Project

S.No.	Investigatory Project	Roll No.
1	Study of common food adulterants in fat, butter, sugar, turmeric powder, chilli powder and pepper	(1,3,5,7,9,11)
2	Study of rate of fermentation of flour, fruit juices and vegetable juices	(2,4,6,8,12,22)
3	Extraction of essential oil present in saunf (aniseed), ajwain (carum), illaichi (cardamom)	(13,10,15,17,19,21,20,23,14)
4	Study of sterilisation of water with bleaching powder	(25,27,29,31,33,)
5	Study of different drugs and their classification	(25,32,36,39,37)

BIOLOGY

1. Make an investigatory project on any topic as:
 - 1) Drugs addiction
 - 2) Pollution
 - 3) Malnutrition
 - 4) Different diseases
 - 5) Manure and Chemical fertilizers
 - 6) Ebola Virus

Biotechnology: DNA Recombination

[Note: Topic for project can be of your choice according to CBSE norms.]
2. Write questions and model answers from last 10 years question papers of Unit I(Sexual Reproduction).
{Note: Write in Biology register}
3. Make biology practical record file.
Experiments
 - 1) Study pollen germination on a slide.
 - 2) Collect and study soil from at least two different sites and study them for texture, moisture content, pH and water holding capacity. Correlate with the kinds of plants found in them.

- 3) Collect water from two different water bodies around you and study them for pH, clarity and presence of any living organism.
- 4) Study the presence of suspended particulate matter in air at two widely different sites.
- 5) Study the plant population density by quadrat method.
- 6) Study the plant population frequency by quadrat method.
- 7) Prepare a temporary mount of onion root tip to study mitosis.
- 8) Study the effect of different temperatures and three different pH on the activity of salivary amylase on starch.
- 9) Isolate DNA from available plant material such as spinach, green pea seeds, papaya, etc.

MATHEMATICS

- Que1 Construct a 2×3 matrix whose elements $a_{ij} = \frac{1}{2}(i - j)^2$
- Que2 Find the value of x, y, z and a which satisfy the matrix equation
- $$\begin{bmatrix} x + 3 & 2y + x \\ z - 1 & 4a - 6 \end{bmatrix} = \begin{bmatrix} 0 & -7 \\ 3 & 2a \end{bmatrix}$$
- Que3 Find the value of x such that $\begin{bmatrix} 1 & 1 & x \end{bmatrix} \begin{bmatrix} 1 & 0 & 2 \\ 0 & 2 & 1 \\ 2 & 1 & 0 \end{bmatrix} \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix} = 0$
- Que4 If $f(x) = x^2 - 5x + 7$ and $A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$ find $f(A)$
- Que5 If $A = \begin{bmatrix} 3 & -5 \\ -4 & 2 \end{bmatrix}$ show that $A^2 - 5A - 14I = 0$
- Que6 Express the matrix $\begin{bmatrix} 1 & 3 & 5 \\ -6 & 8 & 3 \\ -4 & 6 & 5 \end{bmatrix}$ as the sum of symmetric and skew symmetric matrix
- Que7 Using elementary transformation find inverse of $\begin{bmatrix} 2 & 0 & -1 \\ 5 & 1 & 0 \\ 0 & 1 & 3 \end{bmatrix}$
- Que8 Using properties of determinants prove that
- $$\begin{vmatrix} a + b + 2c & a & b \\ c & b + c + 2a & b \\ c & a & c + a + 2b \end{vmatrix} = 2(a + b + c)^2$$
- Que9 Using properties of determinants prove that
- $$\begin{vmatrix} 1 & x & x^2 \\ x^2 & 1 & x \\ x & x^2 & 1 \end{vmatrix} = (1 - x^3)^2$$
- Que10 Using properties of determinants prove that
- $$\begin{vmatrix} (b + c)^2 & a^2 & a^2 \\ b^2 & (c + a)^2 & b^2 \\ c^2 & c^2 & (a + b)^2 \end{vmatrix} = 2abc(a + b + c)^3$$
- Que11 Solve for x : $\begin{vmatrix} 3x - 8 & 3 & 3 \\ 3 & 3x - 8 & 3 \\ 3 & 3 & 3x - 8 \end{vmatrix} = 0$

Que12 Find the value of the determinant $\begin{vmatrix} \sqrt{13} + \sqrt{3} & 2\sqrt{5} & \sqrt{5} \\ \sqrt{15} + \sqrt{26} & 5 & \sqrt{10} \\ 3 + \sqrt{65} & \sqrt{15} & 5 \end{vmatrix}$

Que13 If a, b, c are in A.P then find the value of determinant

$$\begin{vmatrix} x+2 & x+3 & x+2a \\ x+3 & x+4 & x+2b \\ x+4 & x+5 & x+2c \end{vmatrix}$$

Que14 Find the adjoint of the matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 3 & 2 & 2 \\ 3 & 3 & 4 \end{bmatrix}$

Que15 If $A = \begin{bmatrix} \cos \alpha & -\sin \alpha & 0 \\ \sin \alpha & \cos \alpha & 0 \\ 0 & 0 & 1 \end{bmatrix}$ verify that $A \cdot (\text{Adj. } A) = |A|I$

Que16 Find the inverse of $A = \begin{bmatrix} 1 & 3 & 3 \\ 1 & 4 & 3 \\ 1 & 3 & 4 \end{bmatrix}$ and verify that $A^{-1}A = I$

Que17 Show that $x = \begin{bmatrix} -8 & 5 \\ 2 & 4 \end{bmatrix}$ satisfies the equation $x^2 + 4x - 42 = 0$. Thus find x^{-1}

Que18 Using matrix method solve the following system of linear equations

$$x + 2y - 3z = 6, \quad 2x - y + z = 2 \quad \text{and} \quad 3x + 2y - 2z = 3$$

Que19 Using matrix method solve $\frac{2}{x} - \frac{3}{y} + \frac{3}{z} = 10, \frac{1}{x} + \frac{1}{y} + \frac{1}{z} = 10, \frac{3}{x} - \frac{1}{y} + \frac{2}{z} = 13$

Que20 If $A = \begin{bmatrix} -4 & 4 & 4 \\ -7 & 1 & 3 \\ 5 & -3 & -1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & -1 & 1 \\ 1 & -2 & -2 \\ 2 & 1 & 3 \end{bmatrix}$ find AB. Use the result to

$$\text{solve } x - y + z = 4, \quad x - 2y - 2z = 9 \quad \text{and} \quad 2x + y + 3z = 1$$

Que21 If $A = \begin{bmatrix} 1 & -1 & 1 \\ 2 & 1 & -3 \\ 1 & 1 & 1 \end{bmatrix}$ find A^{-1} and hence solve $x + 2y + z = 4, -x + y +$

$$z = 0, \quad x - 3y + z = 2$$

Que22 The sum of three numbers is 2. If twice the second number is added to the sum of first and third, the sum is 1. By adding second and third number to five times the first number we get 6. Find the three numbers by using matrices.

Que23 Show that $f(x) = \begin{cases} 5x - 4, & 0 < x < 1 \\ 4x^3 - 3x, & 1 < x < 2 \end{cases}$

is continuous at $x = 1$

Que24 Determine the value of k for which the following function is continuous at

$$x = 3, \quad f(x) = \begin{cases} \frac{x^2 - 9}{x - 3}, & x \neq 3 \\ k, & x = 3 \end{cases}$$

Que25 If the function $f(x)$ given by $f(x) = \begin{cases} 3ax + b, & x > 1 \\ 11, & x = 1 \\ 5ax - 2b, & x < 1 \end{cases}$

Is continuous at $x = 1$. Find the value of a & b .

Que26 For what value of k the function $f(x) = \begin{cases} \frac{\sqrt{5x+2}-\sqrt{4x+4}}{x-2}, & \text{if } x \neq 2 \\ k, & \text{if } x = 2 \end{cases}$

is continuous at $x = 2$

Que27 Find the value of a and b such that the function defined by

$$f(x) = \begin{cases} 5, & \text{if } x \leq 2 \\ ax + b, & \text{if } 2 < x < 10 \\ 21, & \text{if } x \geq 10 \end{cases}$$

is continuous function

Que28 Show that $f(x) = x^2$ is differentiable at $x = 1$

Que29 Show that $f(x) = \begin{cases} x-1 \\ 2x-3 \end{cases}$ is not differentiable at $x = 2$

Que30 For what value of a and b $f(x) = \begin{cases} x^2, & x \leq c \\ ax + b, & x > c \end{cases}$

is differentiable at $x = c$

Que31 $f(x) = \begin{cases} x^2 + 3x + a & \text{for } x \leq 1 \\ bx + 2 & \text{for } x > 1 \end{cases}$ is differentiable, find the value of a & b .

Que32 If $y = [x + \sqrt{x^2 + a^2}]^n$ then prove that $\frac{dy}{dx} = \frac{ny}{\sqrt{x^2 + a^2}}$

Que33 If $y = \sqrt{\frac{1-x}{1+x}}$ prove that $(1-x^2)\frac{dy}{dx} + y = 0$

Que34 If $y = \frac{x \sin^{-1} x}{\sqrt{1-x^2}}$ then prove that $(1-x^2)\frac{dy}{dx} = x + \frac{y}{x}$

Que35 If $y = \tan^{-1}\left[\frac{2x}{1-x^2}\right] + \sec^{-1}\left[\frac{1+x^2}{1-x^2}\right]$ prove that $\frac{dy}{dx} = \frac{4}{1+x^2}$

Que36 If $y = \sin\left[2 \tan^{-1}\left(\sqrt{\frac{1-x}{1+x}}\right)\right]$ find $\frac{dy}{dx}$

Que37 If $x\sqrt{1+y} + y\sqrt{1+x} = 0$ prove that $\frac{dy}{dx} = \frac{-1}{(1+x)^2}$

Que38 If $\cos^{-1}\left(\frac{x^2-y^2}{x^2+y^2}\right) = \tan^{-1} a$ prove that $\frac{dy}{dx} = \frac{y}{x}$

Que39 If $x^2 + y^2 = t - \frac{1}{t}$ and $x^4 + y^4 = t^2 + \frac{1}{t^2}$ then $\frac{dy}{dx} = \frac{1}{x^3 y}$

Que40 If $\sin y = x \sin(a+y)$ prove that $\frac{dy}{dx} = \frac{\sin^2(a+y)}{\sin a}$

Que41 If $y = b \tan^{-1}\left(\frac{x}{a} + \tan^{-1}\frac{y}{x}\right)$ find $\frac{dy}{dx}$

Que42 If $y^x = e^{y-x}$ prove that $\frac{dy}{dx} = \frac{(1+\log y)^2}{\log y}$

Que43 If $x^m \cdot y^n = (x+y)^{m+n}$ prove that $\frac{dy}{dx} = \frac{y}{x}$

Que44 If $y = \sqrt{\sin x + \sqrt{\sin x + \sqrt{\sin x + \dots \infty}}}$ then prove that $(2y-1)\frac{dy}{dx} = \cos x$

Que45 If $y = \tan^{-1}\left[\frac{5ax}{a^2-6x^2}\right]$ prove that $\frac{dy}{dx} = \frac{3a}{a^2+9x^2} + \frac{2a}{a^2+4x^2}$

Que46 If $y = e^{\tan^{-1} x}$ show that $(1 + x^2) \frac{d^2y}{dx^2} + (2x - 1) \frac{dy}{dx} = 0$

Que47 If $x = \sin t$, $y = \sin pt$ then prove that $(1 - x^2) \frac{d^2y}{dx^2} - x \frac{dy}{dx} + p^2y = 0$

Que48 If $y = \log [x + \sqrt{x^2 + a^2}]$ then prove that $(x^2 + a^2) \frac{d^2y}{dx^2} + x \frac{dy}{dx} = 0$

Que49 If $y = \tan x + \sec x$ then prove that $\frac{d^2y}{dx^2} = \frac{\cos x}{(1 - \sin x)^2}$

Que50 Differentiate $\tan^{-1} \left[\frac{\sqrt{1+x^2} - \sqrt{1-x^2}}{\sqrt{1+x^2} + \sqrt{1-x^2}} \right]$ with respect to $\cos^{-1} x^2$

COMPUTER SCIENCE & INFORMATION PRACTICES

a) Make case study of an investigatory project on any topic as:

- 1) Hotel management System
- 2) Airline management system
- 3) Super Market
- 4) Railway reservation System
- 5) Travel & tourism
- 6) Voting System
- 7) Bank management System
- 8) Automobile System
- 9) Hospital management System
- 10) School management System
- 11) Online exam System
- 12) Online collage admission system

- Topic for project can be of your choice according to CBSE norms.
- 3 student in one group
- Make practical record file.

ACCOUNTANCY

- 1 Calculate any 6 ratios on the basis of comprehensive project which are helpful to determine liquidity, solvency, efficiency and profitability of your enterprise.
2. Write down about the following for your specific 1 project based on financial analysis of company by computing ratios.
 - 1) Meaning and definition of Accounting Ratios.
 - 2) Objectives of Ratio Analysis.
 - 3) Classification of Accounting Ratios.
 - 4) Description of different ratios along with their objectives, significance and industrial standard.

NOTE: Use classmate sheets (One side ruled) for board project.



BUSINESS STUDIES

To make a project on anyone of the following topics:

- Principles of management
 - Business Environment
 - Marketing Management
 - Stock Market
1. Prepare for PA I Examination
 2. To make a chart on the topics given to them.

ECONOMICS

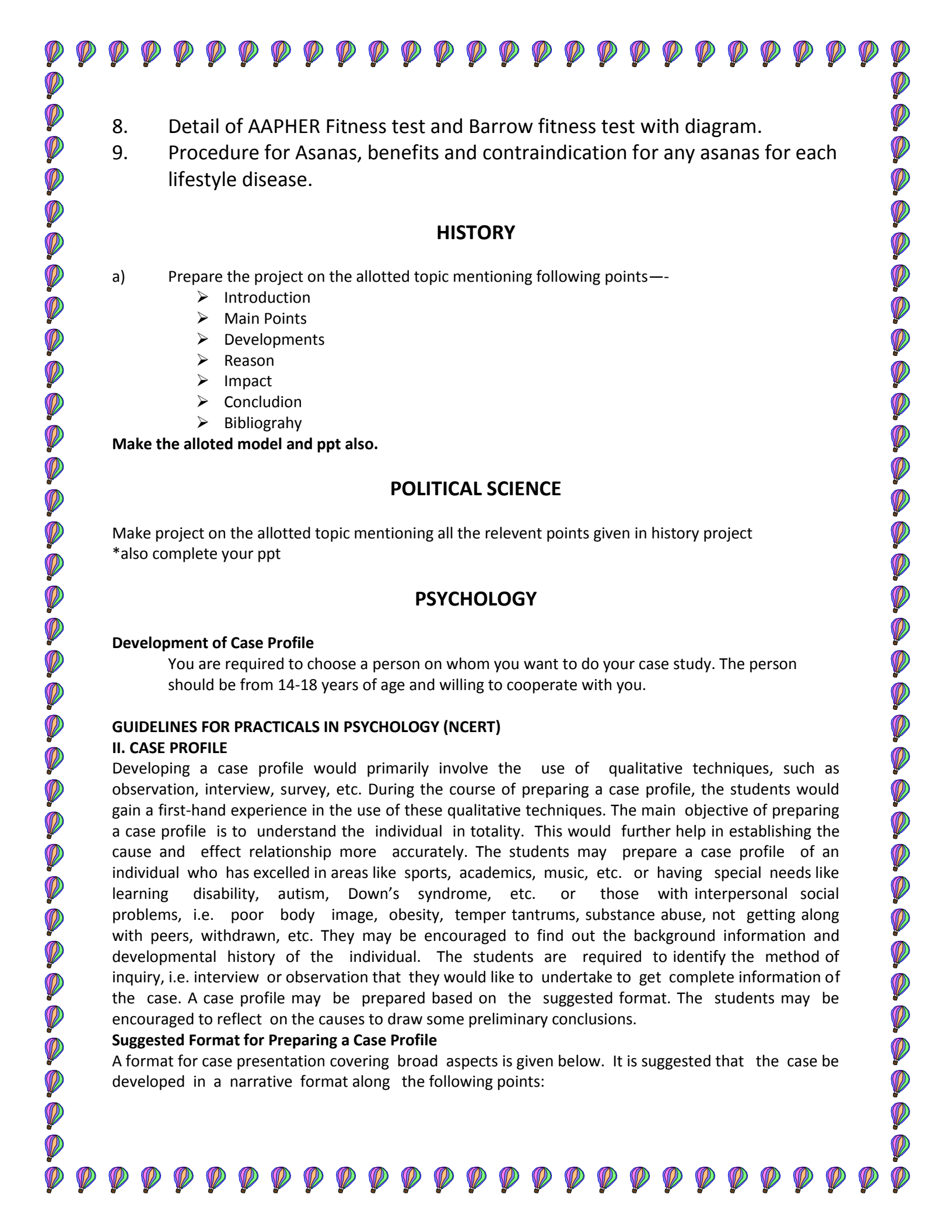
1. Project work on the topics already discussed in class.
2. Highlights of the Government Budget (2019-2020).
3. List few objectives of current 5 Year Plans.
4. Compare the development status of India before and after the Introduction of LPG policy.
5. Numerical Explanation of Credit Creation process of Commercial Banks.

FINE ARTS

1. Make a Miniature painting on A3 size sheet and make a creative art piece on given ply.
2. Miniature Paintings should be framed properly.

PHYSICAL EDUCATION

- a) Handmade file is compulsory for every student.
 - (b) You can paste the printed photographs in file
- To complete the project file of any one game of your choice. (Basketball, Handball, football, kho-Kho, Athletics, Cricket)
1. History of game.
 2. Rules and regulation.
 3. Ground/court diagram with dimension.
 4. Details of equipment used in that game.
 5. Skill and terminologies used in that game.
 5. Award related to that game.
 6. Details of any five celebrity related to that game.
 7. Rules of officials.

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8. Detail of AAPHER Fitness test and Barrow fitness test with diagram.
 9. Procedure for Asanas, benefits and contraindication for any asanas for each lifestyle disease.

HISTORY

- a) Prepare the project on the allotted topic mentioning following points—
 - Introduction
 - Main Points
 - Developments
 - Reason
 - Impact
 - Conclusion
 - Bibliography

Make the allotted model and ppt also.

POLITICAL SCIENCE

Make project on the allotted topic mentioning all the relevant points given in history project
*also complete your ppt

PSYCHOLOGY

Development of Case Profile

You are required to choose a person on whom you want to do your case study. The person should be from 14-18 years of age and willing to cooperate with you.

GUIDELINES FOR PRACTICALS IN PSYCHOLOGY (NCERT)

II. CASE PROFILE

Developing a case profile would primarily involve the use of qualitative techniques, such as observation, interview, survey, etc. During the course of preparing a case profile, the students would gain a first-hand experience in the use of these qualitative techniques. The main objective of preparing a case profile is to understand the individual in totality. This would further help in establishing the cause and effect relationship more accurately. The students may prepare a case profile of an individual who has excelled in areas like sports, academics, music, etc. or having special needs like learning disability, autism, Down's syndrome, etc. or those with interpersonal social problems, i.e. poor body image, obesity, temper tantrums, substance abuse, not getting along with peers, withdrawn, etc. They may be encouraged to find out the background information and developmental history of the individual. The students are required to identify the method of inquiry, i.e. interview or observation that they would like to undertake to get complete information of the case. A case profile may be prepared based on the suggested format. The students may be encouraged to reflect on the causes to draw some preliminary conclusions.

Suggested Format for Preparing a Case Profile

A format for case presentation covering broad aspects is given below. It is suggested that the case be developed in a narrative format along the following points:



1. Introduction

- A brief introduction of about one or two pages presenting the nature of the problem, its incidence, likely causes, and possible counselling outcomes.
- A half page (brief) summary of the case.

2. Identification of Data

- Name (may be fictitious)
- Diagnosed Problem
- Voluntary or Referral (i.e., by whom referred — such as teacher, parent, sibling, etc.)

3. Case History

- A paragraph giving age, gender, school attended, class (grade) presently enrolled in, etc.
- Information about socio-economic status (SES) consisting of information about mother's/father's education and occupation, family income, house type, number of members in the family— brothers, sisters and their birth order, adjustment in the family, etc.
- Information about physical health, physical characteristics (e.g., height and weight), any disability/illness (in the past and present), etc.
- Any professional help taken (past and present), giving a brief history of the problem, attitude towards counseling (indicating the motivation to seek help, etc.).
- Recording signs (i.e., what is observed in terms of facial expressions, mannerisms, etc.) and symptoms (i.e., what the subject reports, for example, fears, worry, tension, sleeplessness, etc.).

4. Concluding Comments

Career Preference Record

ECONOMICS

Project work on topics already discussed in class related to any topic from Indian Economics or any other topic of Economic significance.