ITBP PUBLIC SCHOOL, DWARKA

SUMMER VACATION HOMEWORK

FOR GRADE 12 HUMANITIES

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ENGLISH HOLIDAY HOMEWORK

Once you learn to read, you will be forever free." – Frederick Douglass

This summer break is the only time when you can brush up and hone your reading and writing skills in English.

a) Read following books:

1. The Alchemist- Paulo Coelho
2. The international accent practice book. (Digital book provided in the whatsapp group)
3. The black book of vocabulary. (Digital book provided in the whatsapp group)

b) Watch any **one** English film from the list given below:

1) Inception 2) A Beautiful Mind 3) Day after tomorrow

c) Draw a unique flow chart of 'Figure of Speech with examples'. (Atleast 12)

d) Research the new additions from Indian Languages to the Oxford English Dictionary. Write ten such words, their source and meaning.

e) Complete the notes from the lesson Deep water in the fair notebook provided through the whatsapp group. (VSA, SA, LA, CBQ)

f) Solve the writing skills in your fair notebooks from the sample papers shared in the English group.

MATHS HOLIDAY HOMEWORK

Q.1 Show that A'A and AA' are both symmetric matrices for any matrix A.

Q.2 If A=$\begin{bmatrix} cosx & sinx \\ -sinx & cosx \end{bmatrix}$, *then show that* $A^2 = \begin{bmatrix} cos2x & sin2x \\ -sin2x & cos2x \end{bmatrix}$.

Q.3 Find the value of x for which the matrix product

$\begin{bmatrix} 2 & 0 & 7 \\ 0 & 1 & 0 \\ 1 & -2 & 1 \end{bmatrix}\begin{bmatrix} -X & 14X & 7X \\ 0 & 1 & 0 \\ X & -4X & -2X \end{bmatrix}$ *equal an identity matrix.*

Q.4 If A =$\begin{bmatrix} 1 & -1 & 0 \\ 2 & 5 & 3 \\ 0 & 2 & 1 \end{bmatrix}$, *find* A^{-1} *, using elementary row operations.*

Q.5 Find a matrix A such that 2A-3B+5C=0 where B=$\begin{bmatrix} -2 & 0 & 2 \\ 4 & 6 & 3 \\ 7 & 0 & 0 \end{bmatrix}$, $C = \begin{bmatrix} 2 & 0 & -2 \\ 7 & 1 & 6 \\ 5 & 4 & 3 \end{bmatrix}$

Q.6 If A= $\begin{bmatrix} 1 & -1 \\ 2 & -1 \end{bmatrix}$, B=$\begin{bmatrix} a & 1 \\ b & -3 \end{bmatrix}$ and $(A+B)^2=A^2+B^2$, find a and b.

Q.7 If A=$\begin{bmatrix} 1 & 2 \\ 1 & 2 \end{bmatrix}$, $f(x)=x^2-2x-3I$, find f(A)

Q.8 Given A=$\begin{bmatrix} 2 & 2 & -4 \\ -4 & 2 & -4 \\ 2 & -1 & 5 \end{bmatrix}$, $B = \begin{bmatrix} 1 & -1 & 0 \\ 2 & 3 & 4 \\ 0 & 1 & 2 \end{bmatrix}$ find BA and use this to solve the system of equations y+2z=7 , x-y=3 , 2x+3y+4z=17.

Q.9 If A=$\begin{bmatrix} 2 & x & -3 \\ 0 & 2 & 5 \\ 1 & 1 & 3 \end{bmatrix}$, *then* A^{-1} *exists if*?

Q.10 For what value of x the matrix A=$\begin{bmatrix} 1 & -2 & 3 \\ 1 & 2 & 1 \\ x & 2 & -3 \end{bmatrix}$ *is singular*?

Q.11 Determine the value of x for which the matrix $\begin{bmatrix} x+1 & -3 & 4 \\ -5 & x+2 & 2 \\ 4 & 1 & x-6 \end{bmatrix}$ is singular.

Q.12 Let A=$\begin{bmatrix} 2 & 3 \\ -1 & 2 \end{bmatrix}$, *then show that* $A^2 - 4A + 7I = 0$ Using this result calculate A^3 and A^5.

Q.13 If A=$\begin{vmatrix} 1 & 2 & 0 \\ -2 & -1 & -2 \\ 0 & -1 & 1 \end{vmatrix}$, *then find the value of* A^{-1}. Using A^{-1} , solve the system

Q.14 If A=diag(1,-1,2) and B =diag(2,3,-1), find A+B, 3A+4B.

Q.15 If $[2x \quad 3]\begin{bmatrix} 1 & 2 \\ -3 & 0 \end{bmatrix}\begin{bmatrix} x \\ 8 \end{bmatrix} = 0$, *find the value of* x.

Q.16 If A=$\begin{bmatrix} 0 & -x \\ x & 0 \end{bmatrix}, B = \begin{bmatrix} 0 & 1 \\ 0 & 1 \end{bmatrix}$ *and* $x^2 = -1$ *then show that* $(A+B)^2 = A^2 + B^2$.

Q.17 If A= $\begin{bmatrix} cosx & sinx \\ -sinx & cosx \end{bmatrix}$ *and* $A^{-1} = A'$ *find the value of* x.

Q.18 If A is square matrix such that A^2=A. Show that $(I+A)^3$=7A+I

Q.19 Check the following functions for one-one and onto. f :R →R f(x)=$\frac{2x-3}{7}$

Q.20 Let f: R – $\{-\frac{4}{3}\}$ □□R – $\{\frac{4}{3}\}$ be a function given by f(x)=$\frac{4x}{3x+4}$□□Show that f is invertible with $f^{-1}(x) = \frac{4x}{4-3x}$

Q.21 Let f: R – $\{-\frac{4}{3}\}$ □□R – $\{\frac{4}{3}\}$ be a function given by f(x)=$\frac{4x}{3x+4}$□□Show that f is invertible with $f^{-1}(x) = \frac{4x}{4-3x}$

Q.22 Show that function f :A □□B defined as f(x)= $\frac{3x+4}{5x-7}$ where A= R – $\{\frac{7}{5}\}$, B= R – $\{\frac{3}{5}\}$is invertible and hence find f^{-1}.

Q.23 Consider f :R+ □□[–5, □) given by $f(x) = 9x^2 + 6x - 5$ show that f is invertible with $f^{-1}=\frac{\sqrt{x+6}-1}{3}$.

Q.24 Consider f :R+ □□[–5, □) given by $f(x) = 5x^2 + 6x - 9$ show that f is invertible with $f^{-1}=\frac{\sqrt{54+5y}-3}{5}$

PHYSICAL EDUCATION HOME WORK 2021-22

Practical file

Practical-1: Fitness tests administration for all items.
Practical-2: Procedure for Asanas, Benefits & Contraindication for any two Asanas for each lifestyle disease.
Practical-3: Procedure for administering Senior Citizen Fitness Test for 5 elderly family Members.
Practical-4: Any one game of your choice out of the list above. Labelled diagram of field & equipment (Rules, Terminologies & Skills).Basketball, Football, Kabaddi, Kho-Kho, Volleyball, Handball, Hockey, Cricket, Bocce & Unified Basketball [CWSN (Children With Special Needs - Divyang)]

Practice questions-

Q 1. Our school is going to organize football school national tournament. How will you manage the entire things for the successful conduction of the tournament?

Q2. Discuss about the various types of tournaments with their advantages and disadvantages in detail.

Q3. Draw the fixture of 20 teams on knock-out basis.

Q4. Draw the fixture of 19 teams on knock-out with the special seeding of 4 teams.

Q5. Draw the fixture of 18 teams on knock-cum-league basis.

Q6. Draw the fixture of 7 teams on league basis.

Q7. Draw the fixture of 10 teams on league basis.

Q8. Draw the fixture of 6 teams on double league basis.

Q9. What do you mean by intramural and extramural? Mention the significance of intramural and extramural.

Q10. What do you mean by specific sports programs? Explain about health runs and run for unity in detail.

Q11. What do mean by planning? Elucidate the objectives of planning in sports in detail.

Q12. Discuss about knock-out cum league and league cum knock-out methods.

Q13. What do you understand by term SEEDING? Explain the methods of distributing seeding.

Q14. Discuss about various types of consolation tournaments in detail.

Q15. Discuss in detail about the challenging tournaments.

Q16. What do you understand by consolation tournament? Draw the consolation fixture type-II for 15 teams.

HISTORY HOLIDAY HOMEWORK

Prepare ONE project report on the any one of the topic given below-

1- Harrapan civilization

2- Buddhism and Jainism

3- vijaynagar empire

4- The three Travellers

5- Mahatma Gandhi

6- The Indian constitution

7- The revolt of 1857

8- Mughal art and architecture

Important Instructions

While preparing the project, the points to be kept in mind are:

- The project report should be handwritten.
- Use A4 size sheets.
- Compile the work in a folder.

- Page limit- 30-35sheets.
- **Project should have: cover sheet, index, introduction, conclusion, acknowledgement and bibliography/references.**
- The cover sheet of the project should have the following details:
    i. **Theme of the Project**
    ii. **Name**
    iii. **Class and Section**
    iv. **Subject**
- Use pictures, diagrams and relevant data for illustration.
- The collected data should have a reliable source and that should be mentioned with it.
- Use eco-friendly products for the project.

Mode of presentation/submission of theProject:

At the end of the stipulated term, each learner will present the research work in the Project File to the External and Internal examiner. The questions should be asked from the Research Work/ Project File of the learner. The Internal Examiner should ensure that the study submitted by the learner is his/her own original work. In case of any doubt, authenticityshould be checked and verified.

II. **Revise the covered syllabus.**

III. **Do map work in separate folder, maps provided in your class of all the chapters.**

Note: <u>This project report is a part of internal assessment.</u>

<u>ECONOMICS HOLIDAY HOMEWORK</u>

Every student has to compulsorily undertake ***<u>ANY ONE</u>*** project from following topics.

The **<u>objectives</u>**of the project work are to enable learners to:
(i) Probe deeper into theoretical concepts learnt in classes XII.
(ii) Analyse and evaluate real world economic scenarios using theoretical constructs and arguments.
(iii) Demonstrate the learning of economic theory.
(iv) Follow up aspects of economics in which learners have interest.
(v) Develop the communication skills to argue logically

The **<u>expectations</u>**of the project work are that:
(i) Learners will complete only ONE project in each academic session.
(ii) Project should be of 3,500-4,000 words (excluding diagrams & graphs), preferably hand-written.
(iii) It will be an independent, self-directed piece of study

<u>Scope of the project:</u>

Learners may work upon the following lines as a suggested flow chart:

Choose a title/topic

↓

Collection of the research material/data

↓

Organization of material/data

↓

Present material/data

↓

Analysing the material/data for conclusion

↓

Draw the relevant conclusion

↓

Presentation of the Project Work

Expected Checklist:

(i) Introduction of topic/title.

(ii) Identifying the causes, consequences and/or remedies.

(iii) Various stakeholders and effect on each of them.

(iv) Advantages and disadvantages of situations or issues identified.

(v) Short-term and long-term implications of economic strategies suggested in the course of research.

(vi) Validity, reliability, appropriateness and relevance of data used for research work and for presentation in the project file.

(vii) Presentation and writing that is succinct and coherent in project file.

(viii) Citation of the materials referred to, in the file in footnotes, resources section, bibliography etc

Topics
Micro and Small Scale Industries
Contemporary Employment situation in India
Goods and Services Tax Act and its Impact on GDP
Human Development Index
Self-help group
Monetary policy committee and its functions
Government Budget & its Components
Exchange Rate determination – Methods and Techniques
Livestock – Backbone of Rural India
SarwaSikshaAbhiyan – Cost Ratio Benefits
Minimum Support Prices
Waste Management in India – Need of the hour
Digital India- Step towards the future
Vertical Farming – an alternate way
Make in India – The way ahead
Rise of Concrete Jungle- Trend Analysis
Any other newspaper article and its evaluation on basis of economic principles
Food Supply Channel in India

Disinvestment policy of the government
Health Expenditure (of any state)
Inclusive Growth Strategy
Trends in Credit availability in India
Role of RBI in Control of Credit
Trends in budgetary condition of India
Currency War – reasons and repercussions
Alternate fuel – types and importance
Golden Quadrilateral- Cost ratio benefit
Relation between Stock Price Index and Economic Health of Nation
Minimum Wage Rate – approach and Application
Rain Water Harvesting – a solution to water crises
Silk Route- Revival of the past
Bumper Production- Boon or Bane for the farmer
Organic Farming – Back to the Nature

ग्रीष्मावकाश परियोजना कार्य - हिंदी

1. कक्षा में चर्चा किए गए विषयों पर लगभग 16 से 17 पन्नों का आकर्षक परियोजना कार्य बनाइए।
2. % जनसंचार एवं माध्यम का हिंदी साहित्य में क्या महत्व है इसे आकर्षक चार्ट पर दर्शाइए।
3. बाजार का जादू उतरने व चढ़ने पर सामान्य जनता पर क्या प्रभाव पड़ता है यह 10 पन्नों की पावरप्वाइंट स्लाइड या 3 मिनट के वीडियो के माध्यम द्वारा स्पष्ट कीजिए।
   (यह संपूर्ण ग्रीष्मावकाश कार्य आपके आंतरिक मूल्यांकन के लिए जांचा जाएगा।)

HOLIDAY HOMEWORK INFORMATICS PRACTICES

1. Write a Pandas program to multiple and divide two Pandas Series. Sample Series:

[2, 4, 8, 10], [1, 3, 7, 9]

2. Write a Pandas program to convert a dictionary to a Pandas series. Sample dictionary: d1 = {'a': 100, 'b': 200, 'c':300}

3. Write a Pandas program to sort a given Series. 400, 300.12,100, 200.

4. Write a Pandas program to change the order of index of a given series.

Original Data Series:

A 1 B 2 C 3 dtype: int64 Data Series after changing the order of index: B 2 A 1 C 3 dtype: int64

5. Write a Pandas program to get the first 3 rows of a given DataFrame.

6. Write a Pandas program to count the number of rows and columns of a DataFrame.

7. Write a Pandas program to combining two series into a DataFrame.

8. Write a Pandas program to get the specified row value of a given DataFrame.

9. Convert Dictionary into DataFrame.

10. Convert List into Dataframe.

11. Write DataFrame to CSV file.

12. Is series is a one-dimensional array which is labeled and can hold any data type?

13. Are DataFrames container for Series?

14. Write the name of methods used with series with their purpose.

15. Get index and values of a series.

Case study based questions:

16. Consider the following DataFramedf and answer the following questions from (i)-(v)

rollno	Name	UT1	UT2	UT3	UT4
1	Prerna Singh	24	24	20	22
2	Manish Arora	18	17	19	22
3	TanishGoel	20	22	18	24
4	Falguni Jain	22	20	24	20
5	KanikaBhatnagar	15	20	18	22
6	Ramandeep Kaur	20	15	22	24

(i)Write down the command that will give the following output.

Rollno	6
Name	TanishGoel
UT1	24
UT2	24
UT3	24
UT4	24

dtype: Object

a. print(df.max)
b. print(df.max())
c. print(df.max(axis=1))
d. print(df.max, axis=1)

(ii)The teacher needs to know the marks scored by the student with roll number

4. Help her to identify the correct set of statement/s from the given options :

a. df1=df[df['rollno']==4]

print(df1)df1

b. df1=df[rollno==4]

print(df1)

c. df1=df[df.rollno=4]

print(df1)

d. df1=df[df.rollno==4]

print(df1)

(iii)Which of the following statement/s will give the exact number of values in each column of the dataframe?

i. print(df.count())

ii. print(df.count(0))

iii. print(df.count)

iv. print(df.count(axis='index'))

Choose the correct option:

a. both (i) and (ii)

b. only (ii)

c. (i), (ii) and (iii)

e. (i), (ii) and (iv)

(iv)Which of the following command will display the column labels of DataFrame?

a. print(df.columns())

b. print(df.column())

c. print(df.column)

d. print(df.columns)

(v)Ms. Sharma, the class teacher wants to add a new column, the scores

with the values, ‘ A’, ‘B’, ‘A’, ‘A’, ‘B’, ‘A’

choose the command to do so:

a. df.column=[’A’,’B’,’A’,’A’,’B’,’A’]

b. df [‘Grade’]=[’A’,’B’,’A’,’A’,’B’,’A’]

c. df.loc[‘Grade’]= [’A’,’B’,’A’,’A’,’B’,’A’]

d. Both (b) and (c) are correct

17. Considerthefoll owing taFramedf and er any estionsfr om (i) – v)

	Daroll no	answName	quUT1	UT2	(UT3	UT4
0	1	PratimaSinha	29	30	19	20
1	2	ManojGupta	20	18	18	24
2	3	TathagataPatra	18	22	20	20
2	4	FirozKhan	22	23	27	22
4	5	KirtiRani	15	24	29	21
5	6	RamanKumar	21	15	23	30
6	7	BineetBanerjee	28	16	24	33

(i)Selecttheoptionsfromthecommand that willgive thefollowing ouput:

Roll No	7
Name	TathagataPatra
UT1	29
UT2	30
UT3	29
UT4	33
dtype:object	

(a)print(df.max)
(b)print(df.max())
(c)print(df.max(axis is=1))

(d)print(df.max, axis=1)

(ii) Theteacherneeds toknowthemarks scoredbythe studentwithroll number7.Helphim/her to identify the correct set of statements from the given options (More than oneoptionmaybecorrect):

(a) df1=df[rollno==7]
print(df1)

(b) df1=df [df [‘rollno’] = =7
]print(df1)

(c) df1=df [df.rollno = = 7
]print(df1)

(d) df1=df [rollno.df = =7
]print(df1)

(iii) Which of the following statement/s will give the exact number of values in each column of the data frame?

(i) print(df.count( ))
(ii) print(df.count(0))
(iii) print(df.count)
(iv) print(df.count(axis = ‘index’))

Choose the correct option:

(a) both (i) and (ii)
(b) only (ii)
(c) (i), (ii) and (iii)
(d) (i), (ii) and (iv)

(iv) Whichofthe followingcommandwilldisplay thecolumnlabelsofthe DataFrame?

(a) print(df.columns())
(b) print(df.column)
(c) print(df.columns)
(d) print(df.column())

(v) A student Neeraj wants to add a new column, the score of Grade with the values ‘B1’,‘B2’, ‘A2’, ‘B2’, ‘B1’, ‘A1’ , ‘A1’ to the DataFrame. Help him choose the command to doso:

(a)df[‘Grade’]=[‘B1’,‘B2’,‘A2’,‘B2’,‘B1’, ‘A1’, ‘A1’]
(b)df.column=[‘B1’, ‘B2’, ‘A2’,‘B2’,‘B1’,‘A1’,‘A1’]
(c)df.loc[‘Grade’]=[‘B1’,‘B2’,‘A2’,‘B2’,‘B1’, ‘A1’,‘A1’]

(d)both band carecorrect.

18. Given a data frame df as shown below---

	Country	Cases	Deaths	Region
0	United States	1,133,229	65,851	North America
1	Spain	245,567	25,100	Europe
2	Italy	207,428	28,236	Europe
3	United Kingdom	177,454	27,510	Europe
4	France	167,346	24,594	Europe
5	Germany	164,077	6,736	Europe

a. Write command to compute rename the indexes as code of the countries USA, SPA, ITA, UK, FR, GER.
b. Add a column capital =['Washington', 'Madrid', 'Rome', 'Londan', 'Paris', 'Berlin']
c. Write command to compute median of the deaths Column.
d. Write command to print first three rows.
e. Write command to drop column Region

19. Consider the following Dataframe named happy_df created using following commandhappy_df=pd.read_csv("Dataset3.csv")

Country	Region	Happiness Rank	Happiness Score	Family
Switzerland	WesternEurope	1	7.587	1.34951
Iceland	WesternEurope	2	7.561	1.40223
Denmark	WesternEurope	3	7.527	1.36058
Norway	WesternEurope	4	7.522	1.33095
Canada	NorthAmerica	5	7.427	1.32261
Finland	WesternEurope	6	7.406	1.31826
Netherlands	WesternEurope	7	7.378	1.28017
Sweden	WesternEurope	8	7.364	1.28907
NewZealand	Australiaand New Zealand	9	7.286	1.31967
Australia	Australiaand New Zealand	10	7.284	1.30923

(i) Complete the following command to display firstfive rows ofthe above Dataframe.

print(happy_df.iloc[_____:_____]

(ii) Writethe command todisplay numberofrows and columnsofthe aboveDataframe.

(a) print(happy_df.row,happy_df.columns)
(b) print(happy_df.shape())
(c) print(happy_df.shape)

(iii) Whichcommand(s)ofthefollowingwoulddisplayonlyRegioncolumnoftheabove Dataframe.

(a) print(happy_df.Region)
(b) print(happy_df.iloc[,'Region']
(c) print(happy_df.iloc[:,'Region']
(d) print(happy_df.iloc[:,1])

(iv) Whatwill be the outputofthe following command?

```
print(happy_df.loc[4:6,'Country'])
```

(v) Whichofthe following commands would displaymaximumvalue ofeverycolumn?
(a) print(happy_df.max)
(b) print(happy_df.max())
(c) print(happy_df.max(axis=1))
(d) print(happy_df.max,axis=1)

20. Consider the following DataFrame Gr and answer any four questions from (i)- (v)

	Name	Grade
0	Aamir Khan	A1
1	Nuzut	A2
2	Ishrar	B1
3	Shahid	A1
4	Furkan	B2
5	Fatima	A2
6	Rashid	A1

(i) Write down the command that will give the following output.

	Name	Grade
0	Aamir Khan	A1
1	Nuzut	A2
2	Ishrar	B1
3	Shahid	A1
4	Furkan	B2

a. print(Gr.iloc[0:5])
b. print(Gr[0:5])
c. Both
d. None

(ii) The teacher needs to add a column called Percentage with the following data :[92,89,None,95,68,None,93]. Help her to identify the correct set of statement/s from the given options :
a. Gr.column['Percentage']=[92,89,None, 95,68,None ,93]
b. Gr[' Percentage']=[92,89,None, 95,68,None ,93]
c. Gr.loc['Percentage']= [92,89,None,95,68,None,93]
d. Both (b) and (c) are correct

(iii) Which of the following statement/s will drop the column Grade by name?
a. Gr.drop('Grade')
b. Gr.drop('Grade', axis=1)
c. Both d. None of the above

(iv) Which of the following command will display the column labels of the DataFrame?
a. print(Gr.columns())
b. print(Gr.column())

c. print(Gr.column)
d. print(Gr.columns)
(v) The class teacher wants to delete the first row. Help her choose the command to do so:
a. Gr.drop(0, axis =0)
b. Gr.drop(0,axis=”index”)
c. Gr. drop([0,1,2], axis=0)
d. Both (a) and (b) are correct