CLASS XI HOLIDAY HOMEWORK 2018-19

S.NO	SUBJECT
1.	English Core (301)
2.	Physics (042)
3.	Biology (044)
4.	Chemistry (043)
5.	Accountancy(055)
6.	B. Studies (054)
7.	Economics (030)
8.	Political Science (028)
9.	PAINTING (049)
10.	Phy. Education (048)
11.	Computer Science
12.	History
13.	Mathematics (041)

The holiday homework should be completed in your respective subject register.

Projects should be made according to the instructions given.

Q1. Children living in cities are rarely seen playing outdoors in the neighborhood. Being busy with other attractions like the television and computer games, they miss the joy of outdoor play. Write an article in 150-200 words for the magazine, ' Kids Talk' highlighting the need and value of outdoor games. You are Vidya/ Vinod

Q2. Today the 24 hour television news channels give us instant news every nook and corner of the world but the fact remains that the importance of the newspaper remains intact. Write an article in 150-200 words expressing your views on 'The Relevance of Newspaper'. You are Sunil/ Sunita.

Q3. Write a letter to the Editor , 'The Hindu', Chennai about rash and reckless driving by the people in your city, suggesting preventive measures. You are Kamal/ Kanwar of 10, Mount Road, Velacherry

Q4. As Principal of Sardar Patel Vidyalaya, Lucknow draft a notice in not more than 50 words informing students of the change in school timings with effect from the 1st October. State valid reasons for the change.

STUDENTS MUST SUBMIT LAB MANUALS BY 10/07/2018

1. Determine the number of light years in one meter.

2. The sides of a rectangle are (10..5 ± 0.2) cm and (5.2 ± 0.1) cm. Calculate its perimeter with error limits.

3. The mass of a box measured by a grocer's balance is 2.3 kg. Two gold pieces 20.15 *g* and 20.17 *g* are added to the box.(i) What is the total mass of the box ?(ii) The difference in masses of the pieces to correct significant figures.

4.. 5.74 *g* of a substance occupies 1.2 cm^3. Express its density to correct significant figures.

5.. If displacement of a body *s* = (200 ± 5) *m* and time taken by it *t* = (20 + 0.2) *s*, then find the percentage error in the calculation of velocity.

6.. If the error in measurement of mass of a body be 3% and in the measurement of velocity be 2%. What will be maximum possible error in calculation of kinetic energy.

7. The length of a rod as measured in an experiment was found to be 2.48m, 2.46m, 2.49m, 2.50m and 2.48m. Find the average length, absolute error and percentage error. Express the result with error limit.

8. A physical quantity is measured as Q = (2.1 ± 0.5) units. Calculate the percentage error in (1) Q^2 (2) 2Q.

9. When the planet Jupiter is at a distance of 824.7 million km from the earth, its angular diameter is measured to be 35.72″ of arc. Calculate diameter of Jupiter.

10.. A laser light beamed at the moon takes 2.56*s* and to return after reflection at the moon's surface. What will be the radius of lunar orbit.

11. Convert
(i) 3 *m.s*$^{-2}$ to km *h*$^{-2}$
(ii) G = 6.67 × 10–11 N *m*^{2} kg^{-2} to cm^3 *g*$^{-1}$ *s*$^{-2}$

12. A calorie is a unit of heat or energy and it equals 4.2 J where 1J = 1 kg *m*^{2}*s*$^{-2}$. Suppose we employ a system of units in which unit of mass is α kg, unit of length is β *m*, unit of time γ *s*. What will be magnitude of calorie in terms of this new system.

13. The escape velocity *v* of a body depends on–
(i) the acceleration due to gravity '*g*' of the planet,
(ii) the radius R of the planet. Establish dimensionally the relation for the escape velocity.

14.. The frequency of vibration of a string depends of on, (i) tension in the string (ii) mass per unit length of string, (iii) vibrating length of the string. Establish dimensionally the relation for frequency.

15. Derive an expression for the centripetal force F acting on a particle of mass *m* moving with velocity *v* in a circle of radius *r*.

16. The error in the measurement of radius of a sphere is 2%. What would be the error in :
(a) Volume of sphere
(b) Surface area of sphere.

17.State the principle of homogeneity. Test the dimensional homogeneity of equations—

(i) $s = ut + \dfrac{1}{2} at^2$

(ii) $S_n = u + \dfrac{a}{2}(2n-1)$

18.Using dimensions convert (a) 1 newton into dynes (b) 1 erg into joules.

19. A book with printing error contains four different formulae for displacement. Choose the correct formula/formulae

(a) $y = a \sin \dfrac{2\pi}{T} t$ (b) $y = a \sin vt$

(c) $y = \dfrac{a}{T} \sin\left(\dfrac{t}{a}\right)$

(d) $y = \dfrac{a}{T}\left(\sin \dfrac{2\pi}{T} t + \cos \dfrac{2\pi}{T} t\right)$

20. For determination of '*g*' using simple pendulum, measurements of length and time period are required. Error in the measurement of which quantity will have larger effect on the value of '*g*' thus obtained. What is done to minimise this error?

- **Students will prepare a project report/ case study/ model on the topic assigned in class.**
- **Students will also complete following assignment in their note books.**
  1. Name the highest categories of classification? [1]
  2. What are the three codes of nomenclatures? [1]
  3. What do you mean by "chemotaxonomy? [1]
  4. Who gave binomial name of classification? [1]
  5. What is meant by identification of a species? [1]
  6. Name the vascular plants which produces only spores but no flowers or seeds?
  7. Where are the antheridia & archaegonia located in ferns? [1]
  8. What are the two main classes of bryophytes? [1]
  9. What is a cone?[1]
  10. Name the second largest phylum of animal kingdom?[1]
  11. What is a taxon? Illustrate the taxonomical hierarchy with a suitable example?[2]
  12. Give reason why a snail & an octopus are classified under the same phylum?[2]
  13. Why are echinoderms considered closer to chordates than any other phylum ?[2]
  14. Mention the unique features of nematodes [2]
  15. Distinguish between bony fish & cartilaginous fish.[2]
  16. What is the difference between syngamy & triple fusion? [3]
  17. What are basic plans of body design in animals? [3]
  18. What are ferns? Describe its salient features. [3]
  19. Both gymnosperms & angiosperm bear seeds but then why are they classified separately?[3]
  20. Give reason why arthopda constitute the largest group of animal kingdom?[3]
  21. List three adaptations that help the birds (Aves) in flying. [3]
  22. Give any four characteristics of hemichordate. [3]
  23. Differentiate between Red, Brown & Green algae. [3]
  24. What are the basis of classification of animalia ? [3]
  25. Explain the life cycle in algae? [3]
  26. Members of which phylum are known as "segmented worm" Write about their body symmetry, mode of excretion & respiration.[3]
  27. Enlist the main salient features of phylum ctenophora.[3]
  28. Write about circulatory systems, respiratory systems and reproductive systems in animals?[3]
  29. Explain diplo-haplontic life cycle in plants?[3]
  30. Describe the basis of five kingdom system of classification?[3]

CHEMISTRTY   CLASS XI
HOLIDAY HOMEWORK WORKSHEET

1) Explain why electron gain enthalpy of fluorine is less than that of chlorine?
2) All transition elements are D block elements but all d block elements are not transition elements.why?
3) What do you understand by periodicity of elements?
4) Explain variation of atomic radii in across the period and down the group.
5) Explain the concept of ionization enthalpies and discuss its type.
6) Explain the variation of ionization enthalpy in across the perios and down the group.
7) Diffrenece between electron gain enthalpy and electronegativity.
8) What is diagnol relationship in periodic table. Explain with suitable example.
9) How would you explain that the first ionization of sodium is less than that of magnesium but the second ionization is higher than that of magnesium.
10)   What are quantum numbers. Discuss various types of quantum no with examples.
11)   Write all the mathematical relation given by Niels Bohr for hydrogen and like particles.
12)   Draw the shapes of P & D subshell orbitals.
13)   Derive mathematical relation of Debroglie hypothesis.
14)   Why electron cannot exist inside the nucleus.
15)   Explain the phenomena of Zeeman effect and starck effect by suitable examples.

Note:

✓ **Students Must submit their practical files also on 9th july, 2018 positively.**

✓ **Projects files and practical files must be in accordance with the instructions given in class.**

1. **Give Journal Entries for the following transactions:**
   2005
   Jan. 6   Sold goods to Muskan of the list price of Rs.2,00,000 at trade discount of 20%.
   ''   8   muskan returned goods of the list price of Rs.5,000.
   ''   15   Received from Muskan the full payment under a Cash discount of 4%.

2. **Give Journal Entries for the following transactions in the books of Raja Ram:**
   2005
   March 3 Bought for cash of the lost price of Rs.80,000 at 10% trade discount and 2.5% cash discount.
   ''   5   Sold goods for cash of the list price of Rs. 1,00,000 at 15% trade discount and 3% Cash discount.
   ''   7 Purchased goods form Henry for Rs.50,000 on 10% trade discount and 4% cash discount and paid
           60% amount by cheque.
   ''   15   Bought goods from Amit for Rs.2,00,000 at terms 5% cash discount and 20% trade discount . Paid
           3/4th of the amount in cash at the time of purchase.

3. **Journalise the following transactions:**   **Rs.**
   1. Paid into bnak for opening a Current Account   10,000
   2. Goods sold for Rs.50,000 and the amount was deposited into the bank on same day.
   3. Amount withdrew from bank for office use.   20,000
   4. Goods sold for cash   15,000
   5. Amount deposited into bank   12,000
   6. Goods purchased and payment made by cheque   25,000

4. **Journalise the following transactions of Raj Kumar, a timber merchant:-**
   1. Purchased timber from kuldeep Kumar, for cash Rs.2,000 and credit Rs.10,000.
   2. Paid to kuldeep kumar in full settlement for cash Rs.2,000 and credit Rs.10,000.
   3. Paid rent in advance Rs.480.
   4. Purchased machinery for Rs.1,00,000 by cheque and carriage Rs.2,000 and installation charges Rs.1,000 paid in cash.
   5. Purchased goods for Rs.50,000 from Govind and sold it to Mnohar for Rs.65,000.

5. **Journalise the following transactions:**

1. Purchased Machinery for Rs.20,000 and paid Rs.200 for its carriage.
2. Received a cheque of Rs.4,850 from X in full settlement of his account of Rs.5,000. Cheque was immediately
   deposited into Bank.
3. Received a first and final payment of 60 paise in a Rupee from y who owed us rs.10,000.
4. Sold goods to Z for Rs.10,000 at a trade disount of 20%. Next day a cheque was received from him after deducting
   5% cash discount. Cheque was immediately not deposited into Bank.
5. Goods costing Rs.20,000 sold to Manoj at profit of 20% on cost less 10% trade discount.

6. **Journalise the following transactions:**
   1. Goods for Rs.50,000 were destroyed by fire.
   2. Goods worth Rs.18,000 were distributed as free samples and Rs.20,000 were given away as charity in cash.
   3. Goods worth Rs.25,000 and cash Rs.40,000 were taken away by the proprietor for his personal use.
   4. Goods worth Rs.20,000 and cash Rs.5,000 were given away as charity.
   5. Cash Rs.1,00,000 were stolen from the Iron Safe of the trader.

LEDGER

7. **Pass journal entries and prepare Furniture Account.**
   2015
   Jan.5. Furniture purchased for cash rs.20,000
   "   5 . Furniture sold for cash Rs.2,000
   "   12 further furniture purchased Rs.8,000
   "   14 Bought Equipments for cash Rs.1,000.
   "   18 Furniture withdrawn for domestic use Rs.2,500
   "   25 Furniture bought for personal use Rs.3,000
   "   31 Depreciation on furniture Rs.500

8. **Prepare Jassi's Account in the ledger of Swati:**
   2015
   March 1 Goods sold to jassi on credit Rs.50,000
   "   7 Jassi returned goods Rs. 11,000
   "   9 Cash received from Jassi Rs.9,800 and discount allowed Rs.200
   "   14 Goods sold to jassi for cash Rs.15,000
   "   16 Jassi deposited directly in Swati's business bank Account Rs.16,000

9. **Record the following transactions in the jounrnal of Sunil Mittal and prepare the ledger accounts;**
   2017
   April 1 Commenced business with cash Rs.35,000
   ''   6 Purchased goods for cash Rs. 18,500
   ''   12 Sold goods for cash Rs.21,000 and on credit to Shaina Rs.19,000
   ''   18 Salary paid to Razzia Rs.15,000
   ''   21 Cash paid by shaina Rs.18,600 in full settlement of her account.

TRIAL BALANCE

10. **Prepare Trial Balance from the following balances of Mrs. Sonia as on March 31st 2016**

Name of Accounts	Amount(Rs.)	Name of Accounts	Amount(Rs.)
Debtors	10,000	Purchases	29,000
Cash in Hand	15,000	Sales	29,000
Investments	6,000	Loose Tools	8,000
Capital	28,000	Bills Receivables	9,000
Creditors	7,000	Bills Payables	2,300
Sales Return	1,000	Machinery	5,000
Discount received	500	Loans from Bank	8,500
Lighting and heating	1,800	Opening Stock	3,500

Closing Stock Valued Rs.70,000 not adjusted.

1. **Complete your project -1.**
2. **Revise all chapters which we have done thoroughly.**
3. **Attempt all the following questions in your business studies notebook.**

Q1. Why does every business enterprise aim at greater productivity? How can this objective be achieved.

Q2. The structure of business is composed of both industries and commerce. Explain this statement?

Q3. Which form of organisation is only in India? Write its features.

Q4. Explain the important documents used in the formation of a company?

Q5. Give 3 differences between a private company and public company?

Q6. Write differences between joint stock company and partnership firm.

Q7. What is a company? What are its characteristics?

Q8. Discuss the characteristics, merits and limitations of cooperative form of organization?

Q9. What is Memorandum of association? Briefly explain its clauses?

Q10. Write a short note on the following-

1. **Business**
2. **Profit**
3. **Risk**
4. **Industry**
5. **Commerce**
6. **Red herring prospectus**
7. **Company act**
8. **Capital subscription**
9. **Promoter**
10. **Certificate of commencement**

Value based questions

Q1. The manager of petrol pump sells adulterated petrol and diesel to the customers. This has lead to defect in the working of engines of the vehicles of the customers and also it has created excessive pollution in the air. Is the manager's conduct ethical? Why?

Q2. A factory emits a lot of smoke and pollutants while manufacturing plastic toys. It is overlooking the impact of its activities on the environment and is engaged in profit maximization?

i) What values are being overlooked by the factory owner?

ii) What steps should be taken by the factory owner to check pollution.

Q3. A company is disposing of water containing chemical in nearby canal. What values are violated by the company? What are the harmful effects of its action?

Q4. A cloth manufacturer distributes its defective product at free of cost (after getting them repaired from Nari Nike tan at lower cost) to orphanage. Which values are being attested in this solution?

Q5. A factory established in a residential locality, uses machines creating heavy noise while running. Due to noise pollution students can't study properly &residents can't sleep/work properly. Which values are affected here?

Q6. X, Y and Z are partners of a business of manufacturing shoes. The profit for year ending March 31st, 2013 was Rs 720000. Before distributing profits they donated 10% of profits to a 'non-govt. organization' as charity for welfare of educationally backward section of the society. They also decided to allow a discount of 30% on shoes for school going children. Identify the values involve by the partnership firm of X, Y and Z.

ECONOMICS
HOLIDAY HOMEWORK
CLASS XI
SUBMISSION OF PROJECT- 9TH JULY 2018

- **Students will complete their 20 marks project work in holidays as per the given instructions and guidelines in the class.**
- **Students are supposed to pick any topic from the general economic topics. The suggested list is given below:**
  - **Poverty in India**
  - **Unemployment in India**
  - **Agricultural debt-suicidal issues**
  - **Demonetization-pros &cons**
  - **Industrial development in India**
  - **Indian economy –comparison to China & Pakistan**
  - **Development of a nation & global warming**
  - **Agricultural diversification in India**
  - **Organic farming- perspectives in India**
  - **Any other topic of your choice**
- **The project should be of 30-40 pages (approx), preferably hand-written.**
- **Students will prepare project report also which will include primary research methodology, conducting survey related to your project topic with the help of questionnaire, analysis of the data and presentation through pie chart and bar diagram etc.**
- **Revise the whole syllabus completed in the class.**

POLITICAL SCIENCE
CLASS XI
HOLIDAY HOMEWORK WORKSHEET

NOTE: DO ALL THE GIVEN QUESTIONS IN YOUR NOTEBOOK ONLY.

1. What were the three challenges that India faced just after independence? (6)
2. When was state reorganization commission set up? What were their major recommendations? (6)
3. What were the major reasons for congress dominance in first three general elections? (6)
4. Write a note on Bhartiya Jana sangha and its ideology. (4)
5. What was the Green revolution? Mention its positive and negative impact.(6)
6. What were the major key controversies during the initial years of planning in India? (6)
7. What was NAM? What was India's stand for the policy of Non Alignment?(6)
8. Write a detailed note on Indo China relationship. (6)
9. Write a detailed note on Indo Pakistan relationship from independence till to date.
10. Write a note on nuclear policy of India. (6)
11. What is constitution? Mention its major functions.
12. Write the major points of the objective resolution. (6)
13. What provisions we have adopted from different countries of the world?
14. Write a detailed note on fundamental rights given in Indian constitution.
15. Write any six fundamental duties given in Indian Constitution.
16. What are the various writs that can be issued by courts?
17. Write a comparison between FPTP and PR system in India.
18. Write the composition of election commission and its major functions.
19. Give some suggestions for electoral reforms in India.
20. Write a note on Discretionary powers of the president of India.

PAINTING
HOLIDAY HOMEWORK
CLASS XI

- Prepare your portfolio (art file). It must have more than 5 paintings (2 still life paintings, 3 landscapes & other work)

- Revise 1 to 4 chapters from panoramic Indian painting book.

PHYSICAL EDUCATION
HOLIDAY HOMEWORK
XI

- COMPLETE YOUR PHYSICAL EDUCATION RECORD FILE DURING HOLIDAYS.

*Record File shall include:

Practical-1: Modified AAHPER administration for all items.

*Athletics, Basketball, Football, Handball, Hockey, Kho Kho, Rifle Shooting, Unified Basketball & Volleyball

Practical-2: Any one game of your choice out of the list above. Labelled diagram of field & equipment Rules, Terminologies & Skills).

NOTE :- ATHLETICS IS COMPULSORY .

Computer Science (083)
Summer Assignment 2018-19
Grade: 11

Create a **Report file** containing **20 Python programs**, covering the following topics:

- Introduce the notion of a variable, and methods to manipulate it (concept of L-value and R-value even if not taught explicitly)
- Knowledge of data types and operators: accepting input from the console, assignment statement, expressions, operators and their precedence.
- Conditional statements: if, if-else, if-elif-else; simple programs: e.g.: absolute value, sort 3 numbers, and divisibility.
- Notion of iterative computation and control flow: for, while, flowcharts, decision trees and pseudo code; write a lot of programs: interest calculation, primarily testing, and factorials.

Please note the following points:

- Use a spiral file (So you can add or remove pages later on)
- Write the code on right side (Hand written or print)
- Print or draw the output on the left page
- Create
    - a front page
    - Index page, with page numbers
    - Acknowledgement
    - Introduction to Python
- Cover your file neatly

HISTORY NOTE: PLEASE DO AS PER GUIDELINES GIVEN IN CLASS

PROJECT WORK
Book 1
THEMES IN INDIAN HISTORY-PART I

TOPIC: Town planning and Artifacts of the Harappan civilization.

Objectives: The purpose of this study is as follows:

- It will help students to understand the importance of artifacts as a source for studying ancient civilizations.

- Students will appreciate the town planning of Harappan Civilization and can compare it with the modern towns and cities.

- It will create awareness on the kind of life people led then.

Methodology:

(1) This project could be introduced to the students, by the teacher in the following ways-

- ➢ Visiting the Harappan section of the National Museum in Delhi (If one lives in Delhi or close to it)

- ➢ Reading a story called 'Foot loose in the City' from the collection of stories called 'The Forbidden Temple' (Refer to sources) and list out the features and characteristics of the protagonist's lifestyle and city

- ➢ Having a general discussion about the Harappan civilization (This should be done only after the first chapter has already been taught in class).

- ➢ They can surf the net and can get the details about the Harappan civilization.

(2) After introducing the topic an activity to be organized, in order to help the students to know how artifacts are used to gauge information about a civilization. Each person should bring an object to class. This could be an object of daily use or even something like a vase, sculpture, artificial jewelry, accessory etc. The objects should be put together and the class may be divided into groups of four or five. Each group to discuss about at least five objects on the basis of questions-[sample questions given below.

- What is the material out of which the object is made?

- What are the different ways in which these objects could be used?

- How did one find out about the uses of the object? (Was it by comparing it with other objects, or by asking people etc?)

- What does the object tell about the lifestyle of the person who uses it?

One member from each group may tell the class about the inferences drawn and a general class discussion could follow. This activity would help the students to realize how archeologists and historians look at objects in different ways to extract information from them.

(3) After this, the study becomes more focused as information about different artifacts is collected. One way to do this would be to divide students into groups of four or five and asking each group to choose one of the following artifacts given in the text book,

- Beads and jewelry
- Sculptures and figurines
- Tools and equipments
- Seals and weights
- Pottery and utensils

The information could be collected from the section on 'Sources' of the text book, visit to a museum or visit the site if living close by. It can be analyzed keeping the following points in mind-

- The description of the artifact
- Where the materials have come from?
- What might have they been used for ?
- How could experts have found out information about its utility?
- What specific details does it give about the Harappan culture?

Presentation

(1) In the form of an exhibition, the students could create 'An ancient Harappan market'. Stalls could be set up in the site of the exhibition and the artifacts that the students have collected\studied could be displayed as things that are sold in the market. The market could include a workshop for the production of seals too. The students could also dress up like the Harappans and pretend to be shopkeepers, merchants, traders, artisans, musicians, peasants (who have come to sell their grains) and town dwellers. A barter system could be shown. This exhibition could also be put up around the model of the miniature city made by the students using cardboards, wooden planks, sand etc.

(2) The students can make presentation in the form of a report, based on the research work done.

Assessment

The total marks allotted for the project will be 20 marks. The following are the methods and criteria for evaluation:

- **Research contribution**:

  These marks are to be entered by the teacher when the activities and the research are being conducted. Each student will get marks individually according to his/her involvement.

Involvement in activity	2 marks
Understanding of concepts discussed	3 marks
Research contribution (Total)	5 marks

- **Report Writing:**

Content and Presentation	2 marks
Analysis, interpretation and inferences drawn	4 marks
Written Report Assessment (total))	6 marks

- **Thus evaluation would include :**

Research contribution (Total)	5 marks
Written Report Assessment (Total)	6 marks
Individual presentation /explanation (Total)	5 marks
Viva	4 marks
Total	20 marks

Sources:

Books:

1. *Raymond and Bridget Allchin.1997. Origins of Civilization. Viking, New Delhi*
2. *G.LPossehl. 2003. The Indus Civilization.Vistaar, New Delhi.*
3. *ShereenRatnagar. 2001. Understanding Harappa.Tulika, New Delhi.*
4. *T.V Padma. 2004. The Forbidden Temple.Tulika, New Delhi.*
5. *A.L Basham. 2004. The Wonder that was India, Third Revised Edition.Picador India, London.*
6. *Upinder Singh. 2002. Mysteries of the Past-Archaeological Sites in India. National Book Trust,India, New Delhi*

Internet:

1. *www.harappa.com/har/harreso.html*
2. *www.ancientcivilizations.co.uk/home_set.html*
3. *http://en.wikipedia.org/wiki/Indus_Valley_Civilization*
4. *www.thenagain.info/webchron/india/harappa.html*

Topic: -Sets

1. Write the set of all vowels in the English alphabet which precede k.   [1]

2. Is pair of sets equal? Give reasons.   [1]

    A = {2, 3} B = x : x is solution of $x^2 + 5x + 6 = 0$}

3. Write the following intervals in set builder form: [1]

    (-3, 0) and [6, 12]

4. If X = {a, b, c, d}   [1]

    Y = {f, b, d, g}

    Find X – Y and Y - X

5. If A and B are two given sets, Then represent the set $(A – B)'$, using Venn   [1]

    diagram.

6. A and B are two sets such that n (A – B) = 20 + x, n (B – A) = 3x and n (A ∩ B) = x   [4]

    + 1. Draw a Venn diagram to illustrate this information. If n (A) = n (B), Find (i)

    the value of x (ii) n (A ∪ B)

7. If A and B are two sets such that A ∪ B= A ∩ B, then prove that A = B   [4]

8. Prove that if A ∪ B = C and A ∩ B = ϕ then A = C – B   [4]

9. In a survey of 100 students, the no. of students studying the various languages   [6]

    were found to be English only 18, English but not Hindi 23, English and Sanskrit

    8, English 26, Sanskrit 48, Sanskrit and Hindi 8, no language 24. Find

    (i) How many students were studying Hindi?

    (ii) How many students were studying English and Hindi?

10. In a class of 50 students, 30 students like Hindi, 25 like science and 16 like both.   [6]

    Find the no. of students who like

    (i) Either Hindi or science

    (ii) Neither Hindi nor science.

CLASS - XI MATHEMATICS (Complex Numbers and Quadratic Equation)

Topic: - Quadratic Equation

1. Express in the form of a + ib. $(1+3i)^{-1}$ [1]

2. Explain the fallacy in $-1 = i.\,i. = \sqrt{-1}.\sqrt{-1} = \sqrt{(-1)(-1)} = \sqrt{1} = 1$ [1]

3. Find the conjugate of $\dfrac{1}{2-3i}$ [1]

4. Find the conjugate of $-3i - 5$. [1]

5. Let $z_1 = 2 - i$, $z_2 = -2+i$ Find Re $\left(\dfrac{z_1 \bar{z_2}}{\bar{z_1}} \right)$ [1]

6. If $x - iy = \sqrt{\dfrac{a-ib}{c-id}}$ Prove that $\left(x^2 + y^2 \right)^2 = \dfrac{a^2 + b^2}{c^2 + d^2}$ [4]

7. If $a+ib = \dfrac{c+i}{c-i}$, where a, b, c are real prove that $a^2+b^2 = 1$ and $\dfrac{b}{a} = \dfrac{2c}{c^2 - 1}$ [4]

8. If z_1 = 2-i and Z_2 = 1+i Find $\left| \dfrac{z_1 + z_2 + 1}{z_1 - z_2 + i} \right|$ [4]

9. If $(p + iq)^2 = x + iy$ Prove that $(p^2 + q^2)^2 = x^2 + y^2$ [4]

10. Convert into polar form $\dfrac{-16}{1+i\sqrt{3}}$ [6]

CLASS - XI MATHEMATICS (Relations and functions)

1. If the ordered pairs $(x-2, 2y+1)$ and $(y-1, x+2)$ are equal, find x & y [1]

2. Let $A = \{-1, 2, 5, 8\}, B = \{0, 1, 3, 6, 7\}$ and R be the relation, is one less than from [1] A to B then find domain and Range of R

3. Let R be a relation from N to N define by $R = \left[(a, b) : a, b \in N \text{ and } a = b^2\right]$.   [1]
    Is the following true $a, b \in R$ implies $(b, a) \in R$

4. Let N be the set of natural numbers and the relation R be define in N by [1] $R = \left[(x, y) : y = 2x, x, y \in N\right]$. what is the domain, co domain and range of R? Is this relation a function?

5. Let $A = \{1, 2\}$ and $b = \{3, 4\}$ write $A \times B$ how many subsets will $A \times B$ have? List [4] them.

6. Let $A = \{1, 2\}, B = \{1, 2, 3, 4\}, C = \{5, 6\}$ and $D = \{5, 6, 7, 8\}$ verify   that [4]
    $(i) A \times (B \cap C) = (A \times B) \cap (A \times C)$ $(ii) A \times C$ is subset of $B \times D$

7. Find the domain and the range of the relation R defined by [4] $R = \left[(x+1, x+3) : x \in (0, 1, 2, 3, 4, 5)\right]$

8. Find the linear relation between the components of the ordered pairs of the [4] relation R where $R = \{(2, 1), (4, 7), (1, -2), \ldots\ldots\}$

9. Let $A = \{1, 2, 3, 4, 5, 6\}$ define a relation R from A to A by [4]
    $R = \{(x, y) : y = x + 1, x, y \in A\}$
    (i) write R in the roaster form
    (ii) write down the domain co domain and range of R
    (iii) Represent R by an arrow diagram

10. A relation $'f'$ is defined by $f : x \to x^2 - 2$ where $x \in \{-1, -2, 0, 2\}$ [4]
    (i) list the elements of f
    (ii) is f a function?

11. Find the domain and the range of the following functions: [6]
    $(i) f(x) = \sqrt{x^2 - 4}$ $(ii) f(x) = \sqrt{16 - x^2}$ (iii) $f(x) = \dfrac{1}{\sqrt{9 - x^2}}$

12. Draw the graphs of the following real functions and hence find range: [6] $f(x) = x^2$

CLASS - XI MATHEMATICS (Trigonometric Functions)

1. Convert into radian measures. $-47^0\,30'$ [1]

2. Evaluate $\tan 75^0$.   [1]

3. Prove that $\sin(40+\theta).\cos(10+\theta) - \cos(40+\theta).\sin(10+\theta) = \dfrac{1}{2}$ [1]

4. Find the principal solution of the eq. $\sin x = \dfrac{\sqrt{3}}{2}$ [1]

5. Prove that $\cos\left(\dfrac{\pi}{4}+x\right) + \cos\left(\dfrac{\pi}{4}-x\right) = \sqrt{2}\,\cos x$ [1]

6. The minute hand of a watch is 1.5 cm long. How far does it tip move in 40 minute?   [4]

7. Show that $\tan 3x.\tan 2x.\tan x = \tan 3x - \tan 2x - \tan x$ [4]

8. Find the value of $\tan\dfrac{\pi}{8}$.   [4]

9. If $\sin\alpha + \sin\beta = a$ and $\cos\alpha + \cos\beta = b$ show that $\cos(\alpha+\beta) = \dfrac{b^2 - a^2}{b^2 + a^2}$ [6]

10. Prove that $\cos\alpha + \cos\beta + \cos\gamma + \cos(\alpha+\beta+\gamma)$ [6]

$$= 4\cos\left(\frac{\alpha+\beta}{2}\right).\cos\left(\frac{\beta+\gamma}{2}\right).\cos\left(\frac{\gamma+\alpha}{2}\right)$$

1. Find the value of $\tan \dfrac{19\pi}{3}$. [1]

2. Prove $\cos 4x = 1 - 3 \sin^2 x . \cos^2 x$ [1]

3. Prove $\dfrac{\cos (\pi + x) . \cos (-x)}{\sin (\pi - x) . \cos \left(\dfrac{\pi}{2} + x \right)} = \cot^2 x$ [1]

4. Prove that $\tan 56^0 = \dfrac{\cos 11^0 + \sin 11^0}{\cos 11^0 - \sin 11^0}$ [1]

5. Prove that $\cos 105^0 + \cos 15^0 = \sin 75^0 - \sin 15^0$ [1]

6. If $\cot x = - \dfrac{5}{12}$, x lies in second quadrant find the values of other five trigonometric [4]

   functions.

7. Prove that $\dfrac{\sin 5x - 2\sin 3x + \sin x}{\cos 5x - \cos x} = \tan x$ [4]

8. Prove that $\sin x + \sin 3x + \sin 5x + \sin 7x = 4 \cos x . \cos 2x . \sin 4x$ [4]

9. Prove that $\cos^2 x + \cos^2 \left(x + \dfrac{\pi}{3} \right) + \cos^2 \left(x - \dfrac{\pi}{3} \right) = \dfrac{3}{2}$ [6]

10. Prove that $\cos 2x . \cos \dfrac{x}{2} - \cos 3x . \cos \dfrac{9x}{2} = \sin 5x \sin \dfrac{5x}{2}$ [6]

CLASS - XI MATHEMATICS (Linear inequalities)

1. If $4x > -16$ then $x \,\square\, -4$. [1]

2. Solve $5x - 3 < 3x + 1$ when x is an integer. [1]

3. Solve the inequality $\dfrac{1}{2}\left(\dfrac{3x}{5} + 4\right) \geq \dfrac{1}{3}(x - 6)$ [4]

4. Solve $3x + 2y > 6$ graphically [4]

5. Find all pairs of consecutive odd natural no. both of which are larger than 10 [4]

   such that their sum is less than 40.

6. A company manufactures cassettes and its cost equation for a week is [4]

   C=300+1.5 x and its revenue equation is R=2 x, where x is the no. of cassettes

   sold in a week. How many cassettes must be sold by the company to get some

   profit?

7. A manufacturer has 600 litre of a 12% sol. Of acid. How many litres of a 30% [6]

   acid sol. Must be added to it so that acid content in the resulting mixture will

   be more than 15% but less than 18%.

8. Solve graphically $x - 2y \leq 3$ $\quad 3x + 4y \geq 12$ $\quad x \geq 0$ $\quad y \geq 1$ [6]

CLASS - XI MATHEMATICS (Principle of mathematical Induction)

1. For every integer n, prove that $7^n - 3^n$ is divisible by 4. [4]

2. Prove that $n(n+1)(n+5)$ is multiple of 3. [4]

3. Prove that $10^{2n-1} + 1$ is divisible by 11 [4]

4. Prove $\left(1+\frac{1}{1}\right)\left(1+\frac{1}{2}\right)\left(1+\frac{1}{3}\right)\cdots\left(1+\frac{1}{n}\right) = (n+1)$ [4]

5. Prove $1.2+2.3+3.4+\cdots+n(n+1) = \frac{n(n+1)(n+2)}{3}$ [4]

6. Prove $(2n+7)<(n+3)^2$ [4]

7. Prove $\frac{1}{1.4}+\frac{1}{4.7}+\frac{1}{7.10}+..+\frac{1}{(3n-2)(3n+1)} = \frac{n}{(3n+1)}$ [4]

8. Prove $1.2+2.2^2+3.2^3+\ldots+n.2^n = (n-1)2^{n+1}+2$ [4]