DARSHAN ACADEMY

Holiday Homework (2018-19)

Class: XI (SCIENCE)

Subject: English Core

ADVANCED WRITING SKILLS

Q 1) You want to dispose off your house-hold items like washing machine, refrigerator and A.C., as you are going aboard. You are Harsh / Harshita of No 10, Kailash Ganj, Lucknow. Draft an advertisement to be published in the daily, "The Hindustan Times" under classified columns.

Q2) You have a commercial flat suitable for an office/bank. You wish to rent it out. Draft an advertisement to be published in "The Times of India", New Delhi under the classified columns.

Q3) As the Headboy / Headgirl of your school you are organizing a Career Counselling session for XI and XII Std. student of your school. Write a notice giving details of it to be displayed on your school notice board.

Q4) You are Pushpak /Pooja. As Secretary of the Social Service League of your school you have organized a cultural benefit show in aid of mentally handicapped children of your town, Vijaywada. Write a notice in not more than 50 words for your school notice board, giving necessary information about the programme.

Q5) The recent Board paper leak cases of classes X & XII have resulted in retest of some subjects. This has caused panic and trauma among students and their parents. As a concerned citizen, write a letter to the Editor of national daily expressing your concern in this regard.

Q6) You are perturbed as regards to the nation-wide agitation for reservation. The violence and protests in the nation have forced you to think over the issue whether to favour or oppose it. Write a speech on the topic 'Reservation – a serious issue' to be delivered in the morning assembly.

LITERATURE (HORNBILL & SNAPSHOTS)

THE PORTRAIT OF A LADY

Q1) What image of the Grandfather emerges in your mind after reading the prose text "The Portrait of a Lady"?

Q2) The grandmother herself was not formally educated but was serious about the author's education. How does the text support this?

Q3) The lesson 'The Portrait of a Lady' suggests a growing distance between the younger and older generation. Comment.

SUMMER OF THE BEAUTIFUL WHITE HORSE

Q1) What impression do you form of Mourad, the cousin of Aram?

Q2) Describe the character of Aram, the narrator in the story. How did he justify Mourad's act of stealing a horse? Why was he not ready to return the horse?

Q3) Why was uncle Khosrove considered a crazy streak of the family?

THE ADDRESS

Q1) How did the narrator come to know about Mrs Dorling and the address where she lived?

Q2) What made Mrs. Dorling carry away the belonging of narrator's mother's ? Justify your answer with suitable reasons.

Q3) What family values prompted the narrator to visit 46, Marconi Street? What light does it reflect on her character and her relationship with her mother?

Q.4) How was her second visit different from the first one? Did she really succeed in her mission? Give a reason for your answer.

A PHOTOGRAPH

Q1) How does the poet's past differ from her mother? What hidden truth does the poet wishe to highlight through this aspect?

Q2) Explain: (i) 'terribly transient feet (ii) 'both wry with the laboured ease of loss'

Q3) What does the silence of the poet indicate in the poem 'A photograph'? What kind of feelings does it evoke in the reader's heart?

GRAMMAR

Q1) Rearrane the following jumbled words to make meaningful sentences:

(i) So/to/itchy/is/that/I/wait/my/off/uniform/can't/take/it
(ii) Is/good/both/for/and/early/rising/old/adults
(iii) The/weekend/I/can/love/down/be/I/myself/because/and/dress
(iv) Finish / work / early/ one / can / go / and / a / for walk / one's.
(v) its / urbanisation / in India / everywhere / has / tentacles /spread

If there is any guarantee on it.
What the price of this watch is
Which one have you chosen?

Q2) Fill in the blanks with determiners:

(a) _____ entire polling station seemed to be (b) _____ huge mass of humanity. It was (c) ____ public holiday. (d) ____ old man insisted on talking to (e) ____ polling officer. He also refused to show (f) _____ identity slip.

Q3) Complete the following paragraph by filling in the correct MODALS.

"It is a good book. You (a) _____ read it. I want to but I (b) ____ (not) as I am leaving the town tonight. I (c) _____ he gone for a few days. But I (d) _____ get it issued as soon as I return."

Q4) Complete the dialogue using the clauses given in the box.

Customer : Will you tell me (a) _____ ?
Shopkeeper : The price of this watch (b) _____ is Rs. 750/-, Sir.
Customer : I also want know (c) _____.
Shopkeeper : Yes, Sir. The guarantee is of one year.

Q5) The following passage has not been edited. Write the error and the correction in your answer sheets.

The process of borrowing a book from the school
library is very simple. Each student is issuing a
a. _____
library card. The library maintains the record of all
b. _____
books in catalogues. The student which wants to borrow
c._____
a book have to fill up a requisition slip bearing
d. _____
the name of the book and it's author. If it is available
e. _____

it is at once issued for the student against his borrower's
f. _____
card. In case it has been issued to another card holder, the
g. _____
student is asking to contact on a particular date
h. _____
when the book is due.

CHEMISTRY

Unit 1 Some basic Concepts of Chemistry

1. Define law of multiple proportions with example.
2. Calculate the molecular mass of $C_{12}H_{22}O_{11}$
3. Calculate the no. of atoms present in 11.5 litres of H_2 at N.T.P.
4. Calculate the no. of moles of 5.68 gm. of iron.
5. What is the effect of temp. on molality and molarity?
6. An atom of an element is 10.1 times heavier than the mass of a carbon atom. What is its mass ina.m.u.?
7. Explain with example, limiting reagent.
8. Differentiate between molarity and molality.
9. 1.82 g. of glucose (molar mass-180) is dissolved in 25g of water. Calculate (a) the molality (b) mole fraction of glucose and water.
10. The molecular mass of an organic compound is 90 and its %age composition is C-26.6%; O=71.1% and H=2.2%. Determine the molecular formula of the compound.
11. How chemical equations are made more informative?
12. How Avogadro's hypothesis used to deduce atomicity of elementary gases?
13. Verify law of Reciprocal proportions or law of equivalent proportions, with example.
14. Define formula mass and how does it differs from molecular mass?
15. Discuss Dalton's Atomic theory and its limitations?
16. Discuss Modern Atomic theory. Why it is better than Dalton's Atomic theory?
17. Commercially available sulphuric acid contains 91% acid by mass and has a density of 1.83g mL^{-1} (i) Calculate the molarity of the solution (ii) volume of concentrated acid required to prepare 3.5L of 0.50 M H_2SO_4

Some More Questions :

18. A compound contains 4.07% hydrogen, 24.27% carbon and 71.65% of chlorine. Its molar mass is 98.96g. What are its empirical and molecular formulas?
19. How much copper can be obtained from 110gm of $CuSO_4$?
20. What is Gay Lussac's law? Explain with two examples.

21. What are empirical and molecular formulae? How are they related to each other?
22. Differentiate between normality and molarity?
23. Why molality is preferred over molarity in expressing the concentration of a solution?
24. Explain with the help of an example law of conservation of mass and energy and also the law of constant proportions.
25. Discuss Avogadro's hypothesis.

Unit 2 Structure of Atom

1. From the following nuclei select the isotopes and isobars.

   $^{238}_{92}U$, $^{234}_{90}Th$, $^{234}_{92}U$, $^{234}_{91}Pa$, $^{238}_{93}Np$

2. What is Zeeman effect and Stark effect?
3. Write electronic configurations, of Cr, Cu, Zn?
4. Define Aufbau's Principle. Which of the following orbitals are possible.

   1 s, 1 p, 2 s, 3 d, 3 f
5. Explain Hund's rule of maximum multiplicity by taking an example of phosphorous.
6. Why are Bohr's orbits called Stationary States?
7. What is the difference between atomic mass and mass number?
8. Explain why the uncertainty principle is significant only for the microscopic particles and not for the macroscopic particles?
9. Why half-filled and fully filled orbitals are extra stable?
10. Why config of 'Cr' is $3d^5\ 4s^1$ and not $3d^4\ 4s^2$ and 'Cu' is $3d^{10}\ 4s^1$ and not $3d^9\ 4s^2$?
11. Give differences between orbit and orbital.
12. What is photoelectric effect? What is the effect of frequency and intensity on photoelectric effect?
13. Why large no. of lines appear in the spectrum of hydrogen although it contains only one electron?
14. Derive de Broglie relationship and give its significance.
15. Give important postulates of Bohr's model of an atom.
16. Discuss Planck's Quantum theory of Radiation.
17. Using the s, p, d, f, notations describe the following quantum

    no. (a) n=1, l=0 (c) n=4; l=3 (d) n=4; l=2

    (b) n=3, l=2 (d) n=5; l=4 (e) n=6; l=4

Some more questions.

18. Discuss important facts about photoelectric effect.

19. Discuss black body radiation. Also explain its reason.

20. What are emission and absorption spectra? Why dark lines appear in the absorption spectra?

21. What is the frequency and wavelength of a photon emitted during a transition from n=5 state to n=2 state in the hydrogen atom.

22. Discuss drawbacks of Rutherford's Model.

23. Explain Heisenberg's uncertainty Principle.

24. What do you understand by an atomic orbital? Briefly describe the shapes of s, p & 'd' orbitals?

25. State and explain Aufbau's principle, Pauli's exclusion principle.

26. Explain the properties of cathode rays.

27. How are anode rays produced?

28. Write down the quantum numbers 'n', 'l' and 'm' for the following orbitals.

(i) $3d_{x^2-y^2}$ (ii) $4d_z^2$ (iii) $3d_{xy}$ (iv) $4d_{xz}$ (v) $2p_z$

(vi) $3p_x$ *(vii)* $5f$ *(viii)* $2p_y$ *(ix)* $4s$

29. Which of the following sets of quantum numbers are not possible?

(i) $n = 3, l = 2, m = 0, s = -\frac{1}{2}$

(ii) $n = 3, l = 2, m = -2, s = -\frac{1}{2}$

(iii) $n = 3, l = 3, m = -3, s = +\frac{1}{2}$

(iv) $n = 3, l = 1, m = 0, s = +\frac{1}{2}$

30. Which of the following orbitals are not possible? 1p, 2s, 2p, 3f, 3d, 4f, 4d

PHYSICS

Q1. Test the dimensional consistency of the following equations :

- v=u+at
- s=ut+1/2at2
- 2as=v2+u2

Q2.The distance by a particle in time t ig given by x=a+bt+ct2+dt3;find the dimension of a,b,c,d.

Q3. Find the dimensions of(a/b) in the equation:
p=a-t2/bx where p is pressure , x is distance and t is time.

Q4. Find the dimensions of (a*b) in the equation:
E=b-x2/at; where E is energy, x is distance and t is time.

Q5. Out of formulae

- y=asin2πt/T
- y=asin vt for the displacement y of particle undergoing a certain periodic motion,rule out the wrong formula on dimnsional grouds. (where a= maximum displacement of the particle , v=speed of the particle , T= time period of motion.

Q6.Find the dimension of a/b in the equations:
F=a√x+bt2,Where F is force ,x is distance and t is time.

Q7. Find the dimensions of axb in the relation :
P=b-x2/at

Q8.A race car accelerates on straight road from rest to a speed of 180 kmh-1 in 25 sec.Assuming unifrom accleration of car throughout ,find the distance covered in this time.

Q9.A bullet travelling with a velocity of 16ms-1 penetrates a tree trunk and comes to rest in 0.4 m. Find the time taken during the retardation.

Q10.A body covers a distance of 20m in the 7th second and 24 m in the 9^{th} second.how much shall it cover in 15th in second?

Q11.A body covers a distance of 4m is 3rd second and 12m in 5th second . If the motion is uniformly accelerated , how far will it travel in the next 3 seconds?

Q12.A particle moves with a velocity v(t) = (1/2)kt2 along a straight line. Find the average speed of the particle in time T.

Q13.A particle having initial velocity is moving with a constant acceleration 'a' for a time t.
(a)Find the displacement of the particle in the last 1 second.
(b)Evaluate it for u = 2 m/s, a = 1 m/s2 and t = 5 sec.

Q14.Two trains take 3 sec to pass one another when going in the opposite direction but only 2.5 sec if the speed of the one is increased by 50%. The time one would take to pass the other when going in the same direction at their original speed is

(a) 10 sec (b) 12 sec

(c) 15 sec (d) 18 sec

Q15.A uniformly moving cricket ball is turned back by hitting it with a bat for a very short time interval. Show the variation of its acceleration with time. (Take acceleration in the backward direction as positive).

Q16.An object falling through a fluid is observed to have acceleration given by a = g – bv where g = gravitational acceleration and b is constant. After a long time of release, it is observed to fall with constant speed. What must be the value of constant speed?

Q17.A bird is tossing (flying to and fro) between two cars moving towards each other on a straight road. One car has a speed of 18 m/h while the other has the speed of 27km/h. The bird starts moving from first car towards the other and is moving with the speed of 36km/h and when the two cars were separted by 36 km. What is the total distance covered by the bird? What is the total displacement of the bird?

Q18.A man runs across the roof-top of a tall building and jumps horizontally with the hope of landing on the roof of the next building which is of a lower height than the first. If his speed is 9 m/s, the (horizontal) distance between the two buildings is 10 m and the height difference is 9 m, will he be able to land on the next building? (take g = 10 m/s2)

Q19.A ball is dropped from a building of height 45 m. Simultaneously another ball is thrown up with a speed 40 m/s. Calculate the relative speed of the balls as a function of time.

Q20. A motor car moving at a speed of 72km/h can not come to a stop in less than 3.0 s while for a truck this time interval is 5.0 s. On a higway the car is behind the truck both moving at 72km/h. The truck gives a signal that it is going to stop at emergency. At what distance the car should be from the truck so that it does not bump onto (collide with) the truck. Human response time is 0.5s.

Q21.A man is standing on top of a building 100 m high. He throws two balls vertically, one at t = 0 and other after a time interval (less than 2 seconds). The later ball is thrown at a velocity of half the first. The vertical gap between first and second ball is +15 m at t = 2 s. The gap is found to remain constant. Calculate the velocity with which the balls were thrown and the exact time interval between their throw.

Q22. A boy travelling in an open car moving on a levelled road with constant speed tosses a ball vertically up in the air and catches it back. Sketch the motion of the ball as observed by a boy standing on the footpath. Give explanation to support your diagram.

Q23. A boy throws a ball in air at 60°to the horizontal along a road with a speed of 10 m/s (36km/h). Another boy sitting in a passing by car observes the ball. Sketch the motion of the ball as observed by the boy in the car, if car has a speed of (18km/h). Give explanation to support your diagram.

Q24. In dealing with motion of projectile in air, we ignore effect of air resistance on motion. This gives trajectory as a parabola as you have studied. What would the trajectory look like if air resistance is included? Sketch such a trajectory and explain why you have drawn it that way.

Q25. A fighter plane is flying horizontally at an altitude of 1.5 km with speed 720 km/h. At what angle of sight (w.r.t. horizontal) when the target is seen, should the pilot drop the bomb in order to attack the target?

Q26. (a) Earth can be thought of as a sphere of radius 6400 km. Any object (or a person) is performing circular motion around the axis of earth due to earth's rotation (period 1 day). What is acceleration of object on the surface of the earth (at equator) towards its centre? what is it at latitude θ ?

How does these accelerations compare with g = 9.8 m/s2?

(b) Earth also moves in circular orbit around sun once every year with on orbital radius of 11 1.5 ×10 m . What is the acceleration of earth (or any object on the surface of the earth) towards the centre of the sun? How does this acceleration compare with g = 9.8 m/s2?

Q27.A hill is 500 m high. Supplies are to be sent across the hill using a canon that can hurl packets at a speed of 125 m/s over the hill. The canon is located at a distance of 800m from the foot of hill and can be moved on the ground at a speed of 2 m/s; so that its distance from the hill can be adjusted. What is the shortest time in which a packet can reach on the ground across the hill ? Take g =10 m/s 2 .

Q28.A girl riding a bicycle with a speed of 5 m/s towards north direction, observes rain falling vertically down. If she increases her speed to 10 m/s, rain appears to meet her at 45° to the vertical. What is the speed of the rain? In what direction does rain fall as observed by a ground based observer?

Q29.A man wants to reach from A to the opposite corner of the square C (Fig. 4.10). The sides of the square are 100 m. A central square of 50m × 50m is filled with sand. Outside this square, he can walk at a speed 1 m/s. In the central square, he can walk only at a speed of v m/s (v < 1). What is smallest value of v for which he can reach faster via a straight path through the sand than any path in the square outside the sand?

Q30.A woman starts from her home at 9.00 am, walks with a speed of 5 km h road up to her office 2.5 km away, stays at the office up to 5.00 pm, and returns home by an auto with a speed of 25 km h motion.

Q31.A drunkard walking in a narrow lane takes 5 steps forward and 3 steps backward, followed again by 5 steps forward and 3 steps backward, and so on. Each step is 1 m long and requires 1 s. Plot the x-t graph of his motion. Determine graphically and otherwise how long the drunkard takes to fall in a pit 13 m away from the start.

Q32.A jet airplane travelling at the speed of 500 km h the speed of 1500 km h–1 relative to the jet plane. What is the speed of the latter with respect to an observer on ground?

Q33.On a two-lane road, car A is travelling with a speed of 36 km h–1. Two cars B and C approach car A in opposite directions with a speed of 54 km h–1 each. At a certain instant, when the distance AB is equal to AC, both being 1 km, B decides to overtake A before C does. What minimum acceleration of car B is required to avoid an accident?

Q34.A man walks on a straight road from his home to a market 2.5 km away with a speed of 5 Finding the market closed, he instantly turns and walks back home with a speed magnitude of average velocity, and average speed of the man over the interval of time (i) 0 to 30 min, (ii) 0 to 50 min,(iii) 0 will appreciate from this exercise why it is better to define average speed as total path length divided by time, and not as magnitude of average velocity. You would not like to tell the tired man on his return home that
his average speed was zero!]

Q35.An old woman crossing the road was holding a money purse. She was not able to walk .A pick pocket snatches away her purse. A school student of class X having seen this incident tries to help that old lady. He informs the police Inspector who stands nearby. The Inspector collects the money purse from the pickpocket and hand it over to the old lady. (a)What values do you find in the school student? (b)Also the police inspector in a jeep is chasing the pickpocket on a straight road. The jeep is going at its maximum speed ‘v’. The pickpocket rides on the motorcycle of a waiting friend when the jeep is at a distance ‘d’ away. and the motorcycle starts with a constant acceleration ‘a’. Show that the pickpocket will be caught if

$v \geq \sqrt{2ad}$.

BIOLOGY

Kindly note: Do the given holiday homework in assignment notebook

I Attempt the following questions-

Chapter 1 The Living World

1. What is meant by living? Give any four defining features of a living.
2. Amoeba multiplies by mitotic cell division. Is this phenomenon growth or reproduction? Explain
3. Properties of cell organelles are not always found in the molecular constituents of cell organelles. Justify.
4. Do you consider a person in coma, living or dead? Justify giving reasons

5. Why are the species considered dynamic groups?
6. Who is regarded as father of taxonomy and Why?
7. Differentiate between botanical garden and herbarium.
8. Name two animals which do not reproduce at all
9. Name a chemical used as a fungicide for preserving herbaria
10. Give the scientific name of mango, housefly, human beings, potato, wheat, tiger, brinjal, lion
11. Describe binomial nomenclature
12. How are specimens preserved and pasted on a herbarium sheet?
13. How does a manual serve as a taxonomical aid?
14. Why is it significant to use scientific names of an organism?
15. Give one distinct characteristic which separates human beings from all other living organisms.
16. Name a chemical used as a fungicide for preserving herbaria
17. What are zoological parks? What is the scientific purpose of them
18. Draw a flow chat of taxonomic categories showing hierarchical arrangement in ascending order.
19. Write examples of two species each belonging to same genera?
20. How are plants kept in museums?

Chapter 2 Biological Classification

1. What makes species a basic taxonomic category?
2. What observable features in Trypanosoma would make you classify it under Protista?
3. Differentiate between pilli and fimbriae
4. Neurospora an Ascomycetes fungus has been used a s abiological tool to understand the mechanism of plant genetics. List the features that make it a genetic tool.
5. Give a brief account of reproduction in fungi?
6. Give the name of causative agent of red rot and early blight.
7. Give one reason to support the statement that deuteromycetes are considered as imperfect fungi.
8. One basic difference between bacteria and archaebacteria has led the later to survive under extreme conditions. State the difference.
9. What is the cell wall of Monerans made up of?
10. Give an example of mycelia form of bacteria.
11. Give technical term for the following-
    a. Elongated rod like unicellular cells
    b. Comma like cells
    c. One flagella at each of the two ends of a cell
12. Name the pioneer colonizers of bare rocks.
13. Highlight the criteria used for the five kingdom system of classification.
14. Why are viruses termed ad nucleoproteins?
15. Diatoms are called as pearls of ocean, why? Also write what is diatomaceous earth?
16. Name the causative agent of the following-
    a. Amoebic dysentery
    b. Kala azar
    c. Sleeping sickness
    d. Malaria
    e. AIDS
    f. Typhoid

17. Differentiate between gram+ve and gram-ve bacteria
18. Expand PPLO
19. Give an example of nematophagus fungus? Why is it called so.
20. Name the infectious agent which causepotato spindle tuber disease.

Chapter 3 Plant Kingdom

1. Natural system of classification is considered better than artificial system of classification? Explain.
2. Vascular tissues are absent in bryophytes, then how does the conduction of water and food takes place?
3. Write the difference between antheridia and archegonia.
4. Give one example of a marine angiosperm.
5. What is heterospory? Briefly comment on its significance.
6. What is the reserve form of food in Phaeophyceae, Chlorophyceae, Rhodophyceae?
7. Name a monocarpic perennial plant.
8. What is the characteristic pigment of red, brown and green algae?
9. Name one gymnosperm with following characteristics-
    a. Unbranched stem b. Leaves are pinately compound.
    c. Megasporphylls are not organized into a female cone
    d. Tallest tree species
10. Name the first cell of sporophyte in the life cycle of liverwort.
11. Write the scientific name of Giant Redwood tree.
12. Where does the endosperm develop from an angiosperm?
13. Which class of algae do not have any motile stage?
14. Give reason for dominance of angiosperms on earth's surface.
15. Explain why gymnosperms fail to produce fruits?
16. Name one unicellular green alga.
17. What is the reserve form of food in Phaeophyceae, Chlorophyceae, Rhodophyceae?
18. What are phycocolloids?
19. What is the characteristic pigment of red, brown and green algae?

Chapter 4 Animal Kingdom

1. How useful is the study of the nature of body cavity and coelom in classification of animals?
2. What are the difficulties that you would face in classification of animals, if common fundamental features are not taken into account,
3. Why Limulus is called a living fossil?
4. Which features makes mammals as most successful and dominant animals?
5. What is hypnotoxin?
6. What is the fate of notochord in higher chordates?
7. Name two phyla of animals that show radial symmetry.
8. Write the scientific name of flying fish
9. Why are aschelminthes called roundworms?
10. Differentiate between direct and indirect development.
11. Describe the canal system of Porifera.
12. Represent diagrammatically the pseudocoelomate condition in animals.

13. What type of nutrition is shown by dinoflagellates?
14. How is spirillum different from vibrio among bacteria? Give an example of each.
15. Name the sub phyla called as Protochordates. Differentiate between them with reference to notochord. Give the scientific name of an example of each.
16. Draw a well labeled diagram of TMV.
17. Define the following terms-
    a. Ovipary b. vivipary c. ovovivipary
18. Name an animal that is oviparous and shows internal fertilization.
19. Name two phyla of animals that show radial symmetry.
20. Name the larvae of cyclostomate.

II Project work:

Prepare a project file on any topic related to the syllabus. The project should be based on any one of the following-

- Case Study
- Field Survey
- Experimentation

III Practical file:

Complete the work in the practical file

PHYSICAL EDUCATION

UNIT-1 CHANGING TRENDS & CAREER IN PHYSICAL EDUCATION

Q.1 Define Physical Education.
Q.2 What is sports Journalism.
Q.3 Enlist the career options in Physical Education. Explain any two of them.
Q.4 Explain the objectives of Physical Education in detail.

UNIT-2 OLYMPIC MOVEMENT

Q.1 What is Olympic movement?
Q.2 Write about the symbols of Modern Olympic Games?
Q.3 Explain briefly about Indian Olympic Committee.
Q.4 Write in detail about Arjuna Award and Dronacharya Sports Award.
Q.5 Discuss the organizational setup of CBSE sports.
Q.6 Write a note on Chacha Nehru Award.

Project Work: Project file on any one Games or Sports given below:-
(Badminton, Judo, Gymnastic, Table Tennis etc.)

PAINTING

Q1. What is art? Write down any five definations of art.

Q2. Write down the type of colours with examples.

Q3. write a note on the origin & development of the Pre-Historic rock Paintings.

Q4. Describe the painting “Roaring animal” & “Wizard’s dance”.

Practical:

Draw & Shade (Pencil)

LANDSCAPE - 5

STILL LIFE - 5

MATHEMATICS

SETS

Q1 A survey shows that 63% of the people watch a News Channel whereas 76% watch another channel, then find value of x.

Q2 Let S={ x/x is a positive multiple of 3 less than 100} P= { Prime number less than 20}. Then write n(S) +n(P).

Q3. Two finite sets have m and n elements, the total number of subsets of first set is 112 more than the total number of subsets of second set .find the value s of m and n.

Q4 .For any two sets A and B, prove that A∩(A’UB’) = A∩B.

Q5. For any two sets A and B, prove that A∩ (AuB)’ = Ø.

Q6 . For two sets A and B , prove that :

(1)(A-B)UB= AUB. (2)(A-B)∩B=Ø .

Q7.For any three sets A,B and C ,Prove that :

(1)(A-B)U(A-C) =A-(B∩C) (2)(A-B)∩(A-C)= A-(BUC).

Q8. In a group of 50 persons, 14drink fruit juice but not cold drink, 30 drink fruit juice and each person likes at least one of the two drinks. Find:

(1)how many drink/drinks both fruit juice and cold drink .

(2) how many drink/drinks cold drink but not fruit juice .

Which drink out of the two is healthier?

Q9.In a group of 84 persons, each plays at least one game out of three viz. tennis ,badminton and cricket .28 of them play cricket ,40 play tennis and 48 play badminton .if 6 play both cricket and badminton and 4 play tennis and badminton and no one plays all the three games ,find the number of persons who play cricket but not tennis.

Q10. From 50 students taking examinations in mathematics ,physics and chemistry ,each of the student has passed in at least one of the subject ,37 passed mathematics ,24 physics and 43 chemistry .at most 19 passed mathematics and physics ,at most 29 mathematics and chemistry and at most 20 physics and chemistry . What is the largest possible number that could have passed ‘all three examinations?

RELATION AND FUNCTION

Q1 Is g= { (1,1) (2,3) (3,5) (4,7)} a function! Justify if this is described by the relation, g(x) =αx + β, then what value should be assigned to α and β?.

Q2 If f(x) = y = ax-b/cx-a, then prove that f(y) = x.

Q3. Write total number of functions from set A to B ,where

A ={1,2,3,4},B={a,b,c}.

Q4.If $f(x)=x^3-\frac{1}{x^3}$, then find the value of f(x) + f $\frac{1}{x}$.

Q5.Redefine the function which is give by

F(x) = |x-1| + |1+x|, -2 ≤ x≤ 2.

Q6. Find the range of the following real function

(i). $F(x)=\frac{x+1}{x-1}$. (ii).$f(x)=\frac{1}{4-x^2}$. (iii).$f(x)=\frac{|x-1|}{x-1}$

Q7.Find the value of x for which the function $f(x)=3x^2-1$ and g(x) =3+x are equal .

Q8. Find the domain for which the function $f(x) = 2x^2 -1$ and g(x) = 1-3x are equal .

Q9.Let f and g be two functions given by f= {(2,4),(5,6),(8,-1),(10,-3)} and g = {(2,0),(7,1),(8,4) ,(10,3),(11,-5)} . find the domain of

(i). f+g (ii).f-g (iii).fg(iv).$\frac{f}{g}$

Q10.Find the product of the identity function and the signumfunction .

TRIGONOMETRIC FUNCTIONS

Q1 If sin (θ + α) = a and sin (θ + β) = b then prove that $\cos2(\alpha-\beta)-4ab\cos(\alpha-\beta)=1-2a^2-2b^2$.

Q2 If x = sec θ – tan θ and y = cosec θ + cot θ, then show that xy + x – y + 1 =0

Q3.Prove that :$\sin20^0 \sin 40^0 \sin 60^0 \sin80^0=\frac{3}{16}$.

Q4.Prove that :$\cos10^0\cos 30^0\cos 70^0 = \frac{3}{16}$.

Q5.Prove that :$\cos\frac{\pi}{7}\cos\frac{2\pi}{7}\cos\frac{4\pi}{7} =-\frac{1}{8}$.

Q6. Prove that:$\frac{\sin A-C +2sinA+\sin(A+C)}{\sin B-C +2sinB+\sin(B+C)}=\frac{sinA}{sinB}$.

Q7. Prove that :

$\cos x+\cos y+\cos z+\cos(x+y+z) = 4\cos\frac{x+y}{2}\cos\frac{y+z}{2}\cos\frac{z+x}{2}$.

Q8.Prove that :$\sin\frac{x}{2}\sin\frac{7x}{2}+\sin\frac{3x}{2}\sin\frac{11x}{2} = \sin 5x \sin 2x$.

Q9.Prove that:$\frac{1+\sin x+\cos x}{1+sinx-\cos x} = \cot\frac{x}{2}$.

Q10.Solve :cos 3x – sin 2x =0.

Q11. In any ΔABC , prove that $\frac{b^2-c^2}{\cos B+\cos C}+\frac{c^2-a^2}{\cos C+\cos A}+\frac{a^2-b^2}{\cos A+\cos B}=0$.

Q12. . In any Δ ABC , prove that $\frac{c}{a+b}=\frac{1-\tan\frac{A}{2}\tan\frac{B}{2}}{1+\tan\frac{A}{2}\tan\frac{B}{2}}$.

Q13. . In any Δ ABC , prove that $a^2 \sin(B-C) = (B^2-C^2)\text{Sin } A$.

Q14. In any Δ ABC , prove that $\frac{\sqrt{\sin A}-\sqrt{\sin B}}{\sqrt{\sin A}+\sqrt{\sin B}}=\frac{a+b-2\sqrt{ab}}{a-b}$.

Q15 . In any Δ ABC , if $\cos A = \frac{\sin B}{2\sin C}$, prove that the triangle is isosceles.

INFORMATICS PRACTICES (065)

CLASS –XI

Q1. Arrange the following units of memory in ascending order of their capacity:

Terabyte, Petabyte, Megabyte, gigabyte

Q2.What are memory devices? Differentiate between a RAM and a ROM.

Q3.Ramesh works for Info Solutions Bangalore. He was signing in the attendance register daily till now. Recently his employers started taking attendance by registering his thumb impression on an electronic device. Name the category of these devices used for individual's recognition using physical traits like thumb impression or retina recognition?

Q4.Expand the following terms: a) PDAs b) MICR c) DVD d) TFT e) CRT f)CD-ROM g) DVD-R

Q5.What is a port? Name any two ports.

Q6.What is a virus? What is antivirus software?

Q7.What is the significance of a firewall in a computer security scheme?

Q8.What is an operating system? Explain the different types of Operating System.

Q9.What is Application software? Give example.

Q10.What is a Threat? Name some threat to computer security.

Q11.Create a presentation to depict 10 different input and output devices along with its application in real time. (Printouts to be placed in a file)

Q12.Name any four Secondary Storage Devices along with its storage capacity.