BCM SCHOOL
Chandigarh Road, Ludhiana
Summer Holidays Homework (2019-20)
Class XI- Science

English

1. You are Suresh Rawat, the school counselor of Sunshine Public School, Agra. A workshop on Good Parenting is being organized in the school for parents. Children should be asked to bring consent slips from their parents promptly. Write the notice in about 50 words for your school notice board.

2. You are Krishna / Tisha, Secretary Greenland Enterprises Ltd. Delhi. Your Chairman has asked you to draft an advertisement for a local daily under the classified columns for the vacant posts of one accountant and two office assistants. Draft an advertisement in not more than 50 words.

3. Some people fear there is going to be acute water shortage, especially of clean water, in times to come. Do you agree? Support your views with reasons. What do you think should be done to avoid such a crisis? Present your views in the form of an article of about 150-200 words for your school magazine.

4. After passing the secondary school examination, a candidate has to make a very difficult choice from a number of streams available to him for further study at the senior school level. There is no valid mechanism to assess the suitability of a candidate for a particular stream. Write a letter to the Editor of a national daily emphasizing the need of educational counselors for guidance in this matter in each school. You are Vinita/ Vinay of 48, Agra Fort, Agra.

5. Answer the following questions in about 150 words each:
   (i) " The author and his grandmother shared a deep bond of mutual love, trust and friendship" . Discuss their relationship in view of this statement.
   (ii) What views on life after death did the ancient Egyptians have? How does Tut's tomb bring out the futility of any such beliefs?
   (iii) The society in the story " The Summer Of The Beautiful White Horse" runs successfully on the two fundamental values of trust and truth? Do you agree? Why/ why not? How important are these values to you?
   (iv) Past whether good or bad is dead and gone. We must never worry about it. All we need to do is to make the best of the present moment. Discuss with reference to the story, "The Address" .

Holidays home work must be done in English Classwork Notebook

BIOLOGY

- *Prepare a Herbarium as a project for practical.*
- *Solve the following questions on separate notebook:*

1. How is classical taxonomy different from modem taxonomy?
2. Give two examples of organisms that reproduce by fragmentation.
3. What is the technical term given to the family of cats?
4. Mention any four different ways in which specimens are kept in a museum.
5. Differentiate between botanical garden and museum.
6. How is a monograph different from a flora?
7. Name the family and order to which each of the following belongs :
   (i) Mango (ii) Housefly (iii) Wheat

8. Enumerate the steps involved in the classification of an organism.
9. What is the cell wall of Monerans made of?
10. Name the most common method of reproduction in bacteria.
11. Name any two methods by which genetic recombination is affected in bacteria.
12. Name the part of filament/trichome of cyanobacteria where nitrogen fixation takes place.

13. Name the ckaracteristic blue-green pigment of cyanobacteria.
14. Name the phylum of Protista, that includes decomposer - consumer protists.
15. Mention one feature each, in which Myxomycota (slime moulds) resemble (i) plants and (ii) animals respectively.
16. How are archaebacteria able to live in extreme environmental conditions? Mention two such conditions in which they live.
17. Differentiate between oxygenic and anoxygenic photosynthesis.
18. How are mycoplasma different from other prokaryotes? Name two diseases they cause in animals.
19. Differentiate between zoospores and aplanospores of fungi.
20. Name the fungus called as 'Drosophila' of this kingdom. Why?
21. Mention the criteria used for classifying Kingdom Fungi into classes.
22. Name two members of Deuteromycetes and mention the disease they cause in plants.
23. What do the terms phycobiont and mycobiont signify? Mention any four symptoms of viral diseases in plants.
24. How are viroids different from viruses?
25. What is meant by isogamy? Give an example of an alga that shows isogamy.
26. Name two algae from which agar is obtained. Name the class to which they belong.
27. What are phycocolloids? What advantage do algae get from them?
28. Mention four characters in which red algae resemble cyanobacteria.
29. What are gemmae? Name two plants that produce gemmae.
30. Mention two economic importance of Sphagnum.
31. What are tracheophytes? Name two groups of plants belonging to this type.
32. Bring out the differences between homosporous and heterosporouspteridophytes. What are coralloid roots? Name the plant that has it.
33. Bring out four differences between the gametophyte of gymnosperms and that of bryophytes
34. Define phyllotaxy. Differentiate between alternate phyllotaxy and opposite phyllotaxy
35. How is a stolon different from a sucker in plants? Give an example of each.
36. Why is the leaf of*Bombax*categorised as palmately compound leaf and multifoliate leaf?
37. How is a phylloclade different from a cladode?   [
38. What are the stilt roots? Give two examples.
39. Name two plants with stem thorn. What is the advantage of thorn to the plants?
40. Differentiate between racemose and cymose inflorescence.
41. How is valvate aestivation different from twisted aertivation?
42. Differentiate between apocarpous and syncarpous ovary.
43. When are stamens described as epipetalous ? Give an example.
44. Differentiate between the androecium of Fabaceae and Solanaceae
45. Name the plant and its family, from which colchicine is obtained.
46. Differentiate between axile placentation and free-central placentation. Give an example of each.
47. Draw an L.S of a mango fruit. What is it technically called as ? What common between the fruits of mango and coconut ? Describe.
48. Draw the floral diagram of Fabaceaeandwritethe floral formula. Mentiontheimportantaspects in which it differs from atypicaldicot flower.
49. Draw the floral diagram of Solanaceae and write its floral formula. How are the whorls of calyx and corolla of this different from those of Fabaceae ?
50. Draw the floral diagram of Liliaceae and write its floral formula. Write two major differences between the flowers of this family and those of Solanaiftae.

Chemistry

1. How could Bohr's theory of atomic structure account for the hydrogen spectrum?
2. How many nodal planes does a 5s and $3dz^2$ electron charge cloud have?
3. State Hund's rule and uncertainty principle.
4. Write the electronic configuration of the following : Cu^{2+} Cr^{3+}
5. What are the possible values of m l for an electron with l=3
6. Which shell would be the first to have g subshell?
7. Why are half filled and fully filled orbital more stable?
8. What do you mean by noble gas core and pseudo noble gas core?
9. Calculate the uncertainty in velocity of an electron if uncertainty in its position is 10^{-11} m
10. Show that the circumference of Bohr orbit for hydrogen atom is an integral multiple of de Broglie wavelength associated with an electron.
11. Why 3d orbital is of higher energy than 4s?
12. How many lines obtained in Lymen series if electron jump to n= 6 state
13. How is atmosphere related to kilopascal?
14. What is the difference between 5g and 5.00 g?
15. Differentiate between orbit and orbital.
16. State Gay Lussac's law of gaseous volume with an example.
17. Define Avogadro law. How can we determine atomicity of nitrogen gas molecules by using this law?
18. . Ultra-violet photon of 300 nm is absorbed by a gas and then re-emitted as two photon one photon is red having wavelength 760 nm what would be the wavelength of second photon?
19. When a light of wavelength 417nm fall on the surface of potassium metal , electron are emitted with a velocity of 6.4×10^4 m/ s^2 what is the minimum energy required per mole to remove an electron from potassium metal
20. A sample of sodium nitrate weighing 0.83 is placed in 50 ml volumetric flask the flask is then filled with water up to the mark on the neck. What is the molarity of the solution?
21. What would be the no. of atom in 5.6 ltr of a monoatomic gas at STP?
22. How many atom of each type is present in 0.6 mol of calcium carbonate?
23. A hydrated calcium phosphate contains 7.14 % water of crystallization the molecular mass of phosphate is 252. The percentage composition is 15.18 % Ca, 24.6% P, 4% H and 57.11 % Oxygen what is the molecular formula of the compound?
24. 5g potassium sulphate is dissolved in 250 ml solution. What volume of this solution will be sufficient to precipitate 1.2 g barium sulphate from barium chloride solution (Ba=137)
25. 1.42 g of a mixture of calcium carbonate and magnesium carbonate was heated to a constant weight. The constant weight of the residue was found to be 0.76 g find out the % of magnesium carbonate in the mixture.
26. Sample of potassium chloride which contains some sodium chloride is dissolved in water. 20 ml of this solution on evaporation gives 1.73g dry mixture. On treatment with silver nitrate it gave 3.73 g silver chloride. calculate mass of sodium chloride present in 10 ml of above solution
27. A mixture of cuprous oxide and cupric oxide on analysis was found to contain 88% copper. Calculate the % amount of cuprous oxide and cupric oxide in the given mixture.
28. Calculate the molarity of the resulting solution if 30 ml of 0.5 M Sulphuric acid is diluted to 500 ml
29. The solubility of $Ba(OH)_2.8H_2O$ in water at 298K is 5.6g per 10 g of water. What is the molality of hydroxide ion in saturated solution of Barium hydroxide at 298K
30. Mole fraction of glucose is 0.85 in aqueous glucose solution. Find out its molality.

Physics

1. The sun's angular diameter is measured to be 1920''. The distance of the sun from the earth is 1.496×10^{11}m. What is the diameter of sun?
2. If an atom of size 10^{-10}m were enlarged to the size of the earth($\approx 10^7$m) how large would its nucleus be? Take size of nucleus = 10^{-14} m.

3. In Vander Waal's equation $(P + a/V^2)(V - b) = RT$, where the symbol P is pressure, V is volume, R is universal gas constant and T is temperature. What are the dimensions of constants a and b?

4. Convert a power of one megawatt on a system whose fundamental units are 10 kg, 1 dm and 1 minute.

5. The rate of flow (V) of a liquid through a pipe of radius under a pressure gradient (P/l) is given by V $= P\, r^4/8\pi\eta l$ where is coefficient of viscosity of the liquid. Check if the relation is correct dimensionally.

6. Consider a simple pendulum having a bob attached to a string that oscillate under the action of a force of gravity. Suppose that the period of oscillation of the simple pendulum depends on its length(l), mass of the bob(m) and acceleration due to gravity(g). Derive the expression for its time period using method of dimension.

7. Experiments shows that the frequency (n) of a tuning fork depends on length (l) of a prong, density(d) and the Young's modulus (Y) of its material. On the basis of dimensional analysis, calculate the formula for frequency.

8. The velocity (v) of transverse waves on a string may depend on length(I) of string, tension T in the string and mass per unit length (m) of the string. Derive the formula dimensionally.

9. The diameter of a wire as measured by a screw gauge was found to be 1.328,1.330,1.325,1.326,1.334 and 1.336 cm. Calculate (i) mean value of diameter(ii) absolute error in each measurement (iii) mean absolute error (iv) fractional error (v) percentage error. Also express the result in terms of absolute error and percentage error.

10. A body travels uniformly a distance of (13.8 ± 0.2) m in a time (4.0 ± 0.3) s. Calculate its velocity with error limit. What is the percentage error in velocity?

11. A physical quantity x is calculated from the relation $x = a^2 b^3/c$. If percentage error in a,b,c and d are 2%, 1%,3% and 4% respectively. What is the percentage error in x?

12. The radius of a sphere is measured to be (2.1 ± 0.5) cm. Calculate its surface area with error limits.

13. The radius of sphere is measured with an error of 2%. What would be the error in volume of the sphere?

14. The period of oscillation of a simple pendulum is $T = 2\pi\, (l/g)^{1/2}$. Measured value of l is 20.0 cm known to 1mm accuracy & time for 100 oscillations of the pendulum is found to be 90 sec. Using a wrist watch of 1 sec resolution. What is the accuracy in the determination of g?

15. A train 500 m long crosses a bridge of 1000 m in 10 s. Find the average speed of the train when it just crosses the bridge.

16. The position x of a particle varies with t as $x = a\, t^2 - b\, t^3$. Calculate the acceleration after 2 seconds.

17. A car accelerates from rest at constant rate α for some time and after which decelerates at a constant rate β to come to rest. If the time elapsed is t seconds, calculate
   i. The maximum velocity reached and
   ii. The total distance travelled.

18. A body covers 200 cm in first 2 seconds and 220 cm in next 4 seconds. What is the velocity of the body at the end of seventh second?

19. A ball is thrown vertically upward from the ground with a speed of 24.5 m/s. After what time intervals, the ball will be at a height of 29.4 m from the ground?

20. The displacement x of the particle moving in one dimension under the action of constant force is related to time t by the relation $t = x^2 + 2$, *where x is in meter and t is in seconds.* Find the displacement of the particle when its velocity is zero.

21. A particle having initial velocity 10 m/s moves with constant acceleration 5 m/s^2 for time 10 second. Find the displacement of the particle in the last 1 second.

22. A balloon rising vertically up with uniform velocity 15 m/s releases a ball at a height of 100 m. Calculate the time taken by the ball to hit the ground. Take g = 10 m/s^2.

23. A body moving with uniform acceleration describes 20 m in 2nd second and 30 m in 4th second of its motion. Calculate the distance moved by it in 6th second.

24. Can a body have acceleration, without velocity?

25. A car accelerates from rest at constant rate of 2 m/s^2 for some time. Then retards at constant rate of 4 m/s^2 and comes to rest. Calculate the maximum speed attained by the car if it remains in motion for 3 seconds.

26. A stone falls from a tower and travels 100 m in the last second before it reaches the ground. Find the height of tower.
27. A parachutist drops freely from an aero plane for 10 seconds before the parachute open out. Then he descends with a net retardation of 2 m/s². His velocity, when he reaches the ground is 8 m/s. find the height at which he gets out of the plane.
28. A bus is moving with a velocity 10 m/s. A motorcyclist wishes to overtake the bus in 60 sec. With what velocity the motor cyclist should chase the bus which is 1 km ahead of him?
29. A thief is running in a jeep with a speed of 10m/s. A police van chases him with a speed of 12 m/s. If the instantaneous separation of the jeep from the police van is 80 m, how long will it take for the police to catch the thief?

Mathematics
Chapter – Trigonometry

1. If $\cos(\alpha - \beta) + \cos(\beta - \gamma) + \cos(\gamma - \alpha) = \frac{-3}{2}$,

prove that $\cos\alpha + \cos\beta + \cos\gamma$ = $\sin\alpha + \sin\beta + \sin\gamma$ = 0

2. if $\tan\beta = \dfrac{n\,\sin\alpha\cos\alpha}{1 - n\,\sin^2\alpha}$, Show that : $\tan(\alpha - \beta) = (1 - n)\tan\alpha$.

3. If A +B = $\dfrac{\pi}{4}$, Prove that (i) (1+ tanA) (1+tanB) = 2   (ii) (cot A -1) (cot B -1) = 2 .

4. If $\tan(\alpha + \theta) = n\tan(\alpha - \theta)$, show that : (n+1)sin2θ = (n-1) sin2α.

5. If $\tan(\pi\cos\theta) = \cot(\pi\sin\theta), prove\,that$: $\cos\left(\theta - \frac{\pi}{4}\right) = \pm\frac{1}{2\sqrt{2}}$.

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

(ii) $\sin(\alpha + \beta) = \dfrac{2ab}{a^2 + b^2}$.

If $\alpha\ and\ \beta$ are the solutions of $a\cos\theta + \sin\theta = c$ then(i) $\cos(\alpha + \beta) = \dfrac{a^2 - b^2}{b^2 + a^2}$

(ii) $\cos(\alpha - \beta) = \dfrac{2c^2 - (a^2 + b^2)}{a^2 + b^2}$.

8. Prove that : tan8A –tan6A –tan2A = tan8A tan6Atan2A .

9. If tanx + tan $(x + \frac{\pi}{4})$ + tan $(x + \frac{2\pi}{4})$ = 3 then prove that $\dfrac{3\tan x - \tan^3 x}{1 - 3\tan^2 x} = 1$

10. If $\sin(\alpha + \beta) = 1\ and\ \sin(\alpha - \beta) = \frac{1}{2}$ where 0≤ $\alpha, \beta \leq \frac{\pi}{2}$ then find the value of tan(α + 2β) and tan($2\alpha + \beta$).

11. Prove that : $\sin20^0\,\sin40^0\sin60^0\sin80^0 = \frac{3}{16}$

12. Prove that :$\cos10^0\cos30^0\cos50^0\cos70^0 = \frac{3}{16}$

13. if $\dfrac{\sin(\theta + \alpha)}{\cos(\theta - \alpha)} = \dfrac{1 - m}{1 + m}$ Prove that ; $\tan\left(\frac{\pi}{4} - \theta\right)\tan\left(\frac{\pi}{4} - \alpha\right) = m$

14. if$\cos A + \cos B = \frac{1}{2}$ and $\sin A + \sin B = \frac{1}{4}$;Prove that $\tan(\frac{A+B}{2}) = \frac{1}{2}$.

15. show that : $\sqrt{2 + \sqrt{2 + \sqrt{2 + 2\cos 8\theta}}}$ = 2 cosθ

16. Prove that :$\cos A\cos2A\cos2^2 A\cos2^3 A - - - - - \cos2^{n-1}A = \dfrac{\sin2^n A}{2^n\,\sin A}$.

17. If $\tan\beta = \dfrac{\tan\alpha + \tan\gamma}{1 + \tan\alpha\tan\gamma}$, prove that $\sin2\beta = \dfrac{\sin2\alpha + \sin2\gamma}{1 + \sin2\alpha\sin2\gamma}$.

18. Prove that : $\cot\frac{\pi}{24}$ = $\sqrt{2} + \sqrt{3} + \sqrt{4} + \sqrt{6}$.

19. Prove that : tan A + tan $(60^0$+A) –tan$(60^0$ –A) = 3 tan3A .

20. Prove that $\sin 18^0 = \frac{\sqrt{5} - 1}{4}$.

21. Prove that : $sin^3 A + sin^3 \left(\frac{2\pi}{3} + A\right) + sin^3 \left(\frac{4\pi}{3} + A\right) = -\frac{3}{4} sin3A$.

22. Prove that : $\frac{\cos 7x - \cos 8x}{1 + 2\cos x}$ = cos2x −cos3x .

23. if $tan\frac{\theta}{2} = \sqrt{\frac{1-e}{1+e}}\ tan\frac{\alpha}{2}$, Prove that $cos\alpha = \frac{\cos\theta - e}{1 - e\cos\theta}$.

24. Determine the smallest positive value of x (in degree) for which :

tan(x+100^0) = tan (x+50^0) tan x tan (x-50^0) .

25. Show that: $2(sin^6 x + cos^6 x) - 3(sin^4 x + cos^4 x) + 1 = 0$

26. Prove that: cot $22\frac{1}{2}$ = $\sqrt{2}$ + 1.

27. Prove that 1 + cos2x + cos4x + cos6x = 4 cos x cos2x cos3x.

28. If A + B =90^0 , find the maximum value of sin Asin B.

29. Find the maximum and minimum value of : 4 sinx -3 cosx +7.

30. Prove that ; tan 70^0 = tan 20^0 +2 tan50^0.

   Do the chapters -Trigonometric ratios of compound angles, Transformation formulae, Trigonometric ratios of multiple and submultiple   angles

From Book :R.D.Sharma.

Physical Education:

Project:

*To be done on coloured A 4 sheets

*Maximum number of pages 15-20

1.Computation of BMI of any 10 people from family or neighbourhood and graphical representation of the data.

2.List of all current National Awardees (Dronacharya award, Arjuna award and Rajiv Gandhi KhelRatna award.)

Practical file:

*To be done in physical education practical file

1. Athletics- Labelled diagram of 400m track and field with computation in detail.

2.Pictorial presentation along with explanation of procedure ,benefits of any five asanas for improving concentration.

3. Labelled diagram of field and equipment of Badminton with all the rules, terminologies and skills of the game.

HOME SCIENCE

- Application of traditional or contemporary techniques of home decoration on charts.
- Prepare a chart to create public awareness   and a chart related to home science.

FINE ARTS : **Complete five paintings.**

Computer Science: Class XI : Revision of Unit 1 & Unit 2

Informatics Practices: Class XI : Revision of Unit 1 & Unit 2

Music:

(1) What is the contribution of PT. Vishnu Narayan Bhatkande in the field of Indian Music?

(2) Brief study of the following: Nada, Swar, Saptak, Taal, Lay, Raag

(3) Brief history of the following: Dhrupad, Khayal

(4) Description of Raagas : RaagBihaag, RaagJaunpuri, Alankars:- 1 to 10

(5) Write in taal notation: Ekgun, dugan of prescribed Taalas

EkTaal, DadraTaal

HAPPY HOLIDAYS!