Class : XI   *SCIENCE*

ENGLISH (301)

1. Story of my life:
   Prepare one video on the journey of your life. Use your pictures from your childhood till teenage. You can include your achievements and best of your memories. Add a voice over in the video describing every photo. Maximum length of video should be 1 minute.

2. Tracing the roots:
   Prepare a PPT tracing your family's ancestry and take a trip down the memory lane. Talk to your grandparents and find out about their roots and whereabouts. After returning from the vacation, a live presentation has to be done in the classroom.

PHYSICS (042)

Topic – Motion (AIL enabled Project cum assignment).

Kindly opt a single topic, out of the following five and do the assignment as per the instruction given below.

a) Kinetic sculpture creation – designing and building kinetic sculptures.

b) Interactive art Installation

c) Dance Choreography

d) Shadow puppetry

e) Experimental film

Description / instruction of the assignment: -

a) Kinetic sculpture creation – designing and building kinetic sculptures using material like wire, wood, or recycled materials. Students must incorporate principles of motion.

FORMAT – 3D working model / video / pictures in album format

b) Interactive art Installations – Design interactive art installations respond to motion. This could involve incorporating sensors and actuators to create art works that change / react based on the movement of viewers.

FORMAT – 3D working model + report on the concerned topic

c) Dance Choreography – Choreograph Dance routines that express specific themes or emotions. They can explore concepts such as rhythm, space and movement dynamics while also developing into the artistic interpretation of their movements.

FORMAT – Video + PPT (explanation)

d) Shadow puppetry – Explore the art of shadow puppetry by having students create intricate puppets and perform shadow plays. They can experiment with different puppet movement to tell stories and convey messages through visuals motion.

FORMAT – (video + Pictures)

e) Experimental film projects – Create a movie plot and form a group of students to create experimental short films that explore the relationship between motion and visual art. They can experiment with technique such as time lapse, slow motion and message to convey artistic concepts and narratives.

FORMAT – Video (Explanation)

CHEMISTRY (043)

Instructions:

Prepare an activity record of the following activities in a shoe lace file with interleaf pages.

ACTIVITIES

SECTION A (Project based: AIL)

1. To draw analogy of different real life substances with similar structure/formula in Chemistry along with their properties (at least 10). For example: a ring can be compared with rings in Organic chemistry, boat can be compared to boat structures of organic compounds. (Draw diagram of the analogies made and describe the properties of the chemistry analog terms.)

2. To draw and explain the Laws of Chemical Combinations.

SECTION B (Model based: AIL + Learning By Doing)

1. To draw a 3D model of Modern Periodic Table.

- Use cardboard sheets, straw pipes and a wooden base.
- Make small cubes for each element and hinge those using straw pipes.
- Make deep impressions on the wooden base to support the straw pipes.

SECTION C (Memory Based Questions)

1. How is matter classified? Explain the basis of classification along with each classification explained in detail.

2. Learn and write Atomic masses of elements from Atomic number 1 to 50.

3. Explain the following terms with examples:

I) Average Atomic Mass

II) Gram Atomic Mass

III) Stoichiometry and stoichiometric calculations.

BIOLOGY (044)

1. Brassica campestris Linn

A) Give the common name of the plant.

B) What do the first two parts of the name denote?

C) Why are they written in italics?

D) What is the the meaning of Linn written at the end of the name?

2. Define the following terms

A) phylum.

B) Class.

C) Family.

D) Order.

E) Genus

3. Distinguish between Kingdom Plantae and Animalia on the following basis:

   A) Locomotion.

   C) Growth.

   B) Nutrition.

   D) Response to stimuli

4. Draw a labelled diagram of bacterial cell.

5. A) How do dinoflagellates differ from euglenoids?

   B) What do the terms phycobiont and mycobiont signify?

   C) Why the members of class- Deuteromycetes are considered as fungi imperfecti?

6. Identify the following diagrams (a) and (b) and write down three characteristics for each:

(a)

(b)
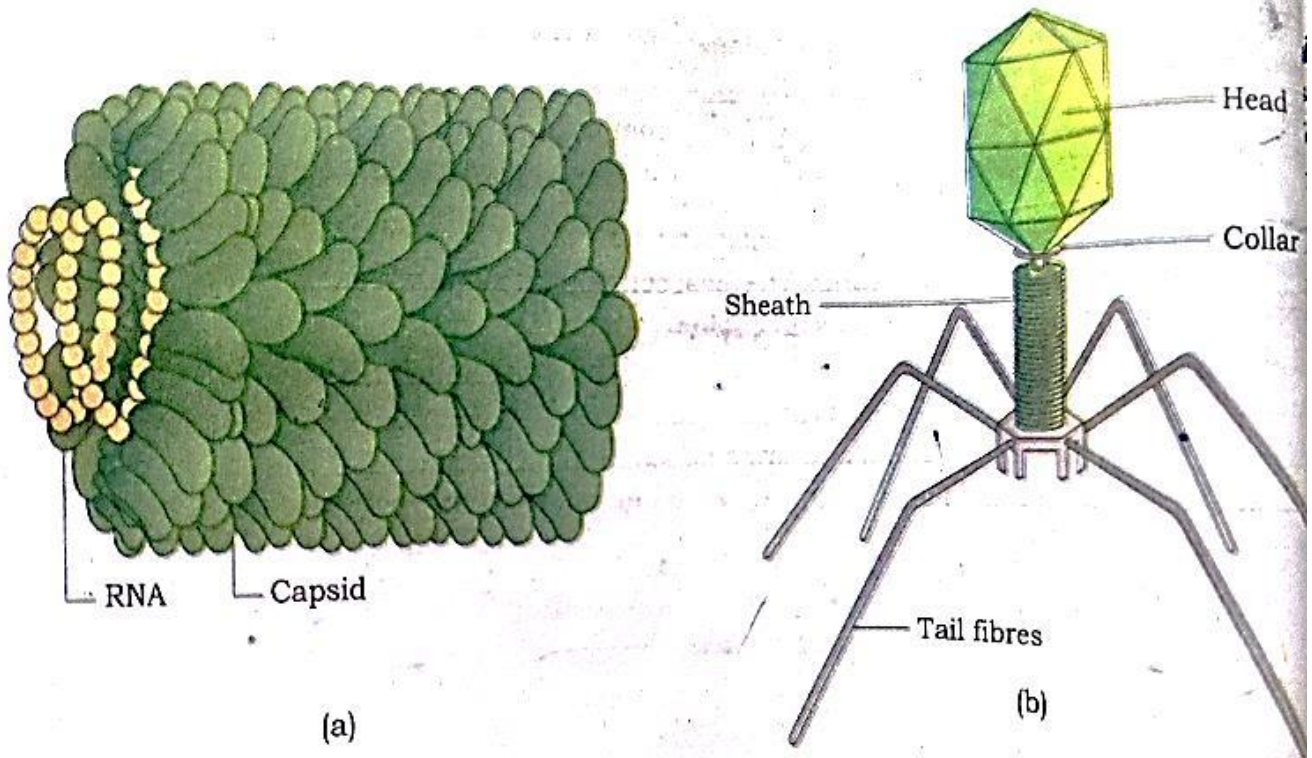
STANDARD MATHEMATICS (041)

1. Find the value of

   (a) $\sin(31\pi/3)$

   (b) $\cos(-2220°)$

   (c) $\operatorname{Cosec}(-41\pi/4)$

2. Find the value of $\dfrac{\cos 10° + \sin 10°}{\cos 10° - \sin 10°}$ & $\dfrac{\cos 15° + \sin 15°}{\cos 15° - \sin 15°}$

3. Prove that $\dfrac{\cos(\pi+x)\,\cos(-x)}{\cos(\pi-x)\cos\left(\frac{\pi}{2}+x\right)} = -\cot x$

4. Prove that $\tan\left(\dfrac{\pi}{4} + x\right) = \dfrac{1 + \tan x}{1 - \tan x}$

5. Prove that $2\sin(5\pi/12)\sin(\pi/12) = 1/2$

6. Prove that $\sin 10° \sin 50° \sin 60° \sin 70° = \sqrt{3}/16$

7. Prove that $\cos x \cos 2x \cos 4x \cos 8x = \dfrac{\sin 16x}{16 \sin x}$

8. Prove that $\dfrac{\sin 2x}{1 - \cos 2x} = \cot x$ (ii) $\dfrac{(1 - \cos x)}{1 + \cos x} = \tan^2 \dfrac{x}{2}$

9. $\cot x \cot 2x - \cot 2x \cot 3x - \cot 3x \cot x = 1$

10. Prove that $\tan 6° \tan 42° \tan 66° \tan 78° = 1$

11. Prove that $\sin^2 24° - \sin^2 6° = (\sqrt{5}-1)/8$

12. If $x \cos \theta = y \cos(\theta + 2\pi/3) = z \cos(\theta + 4\pi/3)$, then find the value of $xy + yz + zx$?

13. Prove that: $\cos 6x = 32\cos^6 x - 48\cos^4 x + 18\cos^2 x - 1$

14. Find the value of $\tan 9° - \tan 27° - \tan 63° + \tan 81°$.

15. If the arcs of the same lengths in two circles subtend angles 65° and 110° at the centre, find the ratio of their radii.

Make a schematic diagram showing the definition of trigonometric functions.

Also, state all the formulas with diagram related to trigonometry.

APPLIED MATHEMATICS (241)

1. Define Exponential form and Write all formulae of indices (at least 8 formulae).

2. Simplify:

a. $\dfrac{3x^4 y^3}{18x^3 y^5}$

b. $\dfrac{5^{n+2} - 6X5^{n+1}}{13X5^n - 2X5^{n+1}}$

c. $\left(\dfrac{x^m}{x^n}\right)^{m+n}$ X $\left(\dfrac{x^n}{x^l}\right)^{n+l}$ X $\left(\dfrac{x^l}{x^m}\right)^{l+m}$

3. If $a = b^{2x}$, $b = c^{2y}$ and $c = a^{2z}$. Prove that $xyz = \dfrac{1}{8}$.

4. If $X^4 Y^2 Z^3 = 49392$, find the values of X,Y and Z, where X,Y and Z are different positive primes.

5. If $a^x = b^y = c^z$ and $b^2 = ac$. Prove that $y = \dfrac{2xz}{z+x}$.

6. If $2^x = 3^y = 6^z$, Prove that $\dfrac{1}{x} + \dfrac{1}{y} + \dfrac{1}{z} = 0$.

7. Define Natural logarithms and Common logarithms.

8. What is Characteristic and Mantissa.

9. Find x: $\log 3x = \log 2 + \log(x+4)$

10. Find x: $\log (3+x) - \log (x-4) = \log 4$

11. If $a^2 = \log_{10}X$, $b^3 = \log_{10}Y$ and $\dfrac{a^2}{2} - \dfrac{b^3}{3} = \log_{10}Z$, express Z in terms of X and Y.

12. Solve for X: $\log X + \log 5 = 2 \log 3$

13. Given that $\log_a X = \dfrac{1}{A}$, $\log_b Y = \dfrac{1}{B}$, $\log_c Z = \dfrac{1}{C}$, find $\log_{abc} X$.

14. If $\log \dfrac{(x-y)}{2} = \dfrac{1}{2}(\log x + \log y)$, prove that $x^2 + y^2 = 6xy$.

15. AIL: Paste the paper quilling samples on a chart paper of the following:

2^8, 8^2, 3^3, 5^4

COMPUTER SCIENCE (083)

Design an attractive chart to explain about Decimal Number System, Binary Number System, Octal Number System & Hexadecimal Number System and conversion from one number system to another. The same can be used for classroom decoration as well as for information in form of tips.

INFORMATICS PRACTICES (065)

➢ Write algorithms and draw the flow chart and also write the program in python for the following:

1. To calculate area of circle. [Hint: $area = \pi r^2$]

2. To calculate area of triangl Hint: $s = \frac{(a+b+c)}{2}$

   Area= $\sqrt{s(s-a)(s-b)(s-c)}$

3. To convert temperature from Fahrenheit to Celsius

4. For calculating the conversion from rupees to dollars.

ECONOMICS (30)

1. A factory is working with 20 workers. Each worker can produce 5 units per day. On Tuesday, 5 workers remain absent. The factory also has 10 machines and each machine requires 2 workers to operate.

   A. What will be the possible production?

   B. Is there exist underutilisation of resources? If yes show it with the help of PPC .

   C. What steps may be taken in this scenario?

   D. If the production manager, plans to increase the production capacity by 10%, without having the knowledge of the present scenario, what can be the PPC in this situation?

   E. The personnel manager of the factory gives a proposal to start a cheap canteen, where the workers can get healthy diet at a subsidised rate.

   Do this proposal create any impact on PPC? Explain it with the help of PPC.

2. Identify any four features of statistics on the basis of the above graph.

   I. Explain the meaning of statistics; Singular and Plural sense separately on the basis of the statistical data shown above.

   II. Mention atleast one function of the above graph from the view point of – (a) Spectators & (b) Coach.

3. Champa likes to eat samossas. Sheconsumes 3 to 4 samossasin her school canteen to satisfy her hunger. The samossas priced Rs 10 only in the school canteen.

   But she do not prefer to consume more than 1 samossa when she go to airport, although the quality and taste of samossa is almost similar to her school canteen. The price of samossain airport is Rs 90 each.

   Why do you think Champa's consumption behaviour changes with the location?

   Explain the situation with the help of Consumer equilibrium in case of one commodity, through cardinal utility approach.

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