

NEW STANDARD ACADEMY

Exam

NEET - JEE

Marks: 60

Date : 03-07-23

CLASS : 10TH

Time: 90:MIN

PHYSICS

1. To a fish under water. Viewing obliquely a fisherman standing on the bank of a lake, does the man look taller or shorter than what he actually is ?
2. Does short-sightedness (myopia) or long-sightedness (hypermetropia) imply necessarily that the eye has partially lost its ability of accommodation? If not What might cause these defects of vision?
3. An object is placed in front of convex mirror of radius of curvature 20 cm. Its image is formed 8 cm behind the mirror. Find the distance of the object from the mirror.
4. A tank is filled with water to a height of 12.5 cm. The apparent depth of a needle lying at the bottom of the tank is measured by a microscope to be 9.4 cm. What is the refractive index of water?
5. Explain the formation of mirage.
6. Eye is more sensitive to yellow colour, while danger signals are red. Why ?
7. Define magnification. Derive expressions for the magnification produced by a concave mirror.

CHEMISTRY

8. Explain the following in terms of gain or loss of oxygen with two examples each:
 - a. Oxidation
 - b. Reduction
9. Give three examples to indicate the role of decomposition reactions in metal industries.
10. Balance the following chemical equations and identify the type of chemical reaction:
 - a. $\text{Mg(s)} + \text{Cl}_2\text{(g)} \rightarrow \text{MgCl}_2\text{(s)}$
 - b. $\text{HgO(s)} \xrightarrow{\text{Heat}} \text{Hg(l)} + \text{O}_2\text{(g)}$
 - c. $\text{TiCl}_4\text{(l)} + \text{Mg(s)} \rightarrow \text{Ti(s)} + \text{MgCl}_2\text{(s)}$
 - d. $\text{H}_2\text{O}_2\text{(l)} \xrightarrow{\text{UV}} \text{H}_2\text{O(l)} + \text{O}_2\text{(g)}$
11. Under what soil condition do you think a farmer would treat the soil of his fields with quick lime(calcium oxide) or slaked lime (calcium hydroxide) or chalk (calcium carbonate) ?
12. Compounds such as alcohols and glucose also contain hydrogen but are not categorized as acids. Describe an activity to prove it.
13. Five solutions A,B,C,D and E when tested with universal indicator showed pH as 4,1,11,7 and 9 respectively. Which solution is :

- a. Neutral ?
- b. Strongly alkaline ?
- c. Strongly acidic ?
- d. Weakly acidic ?
- e. Weakly alkaline ?

BIOLOGY

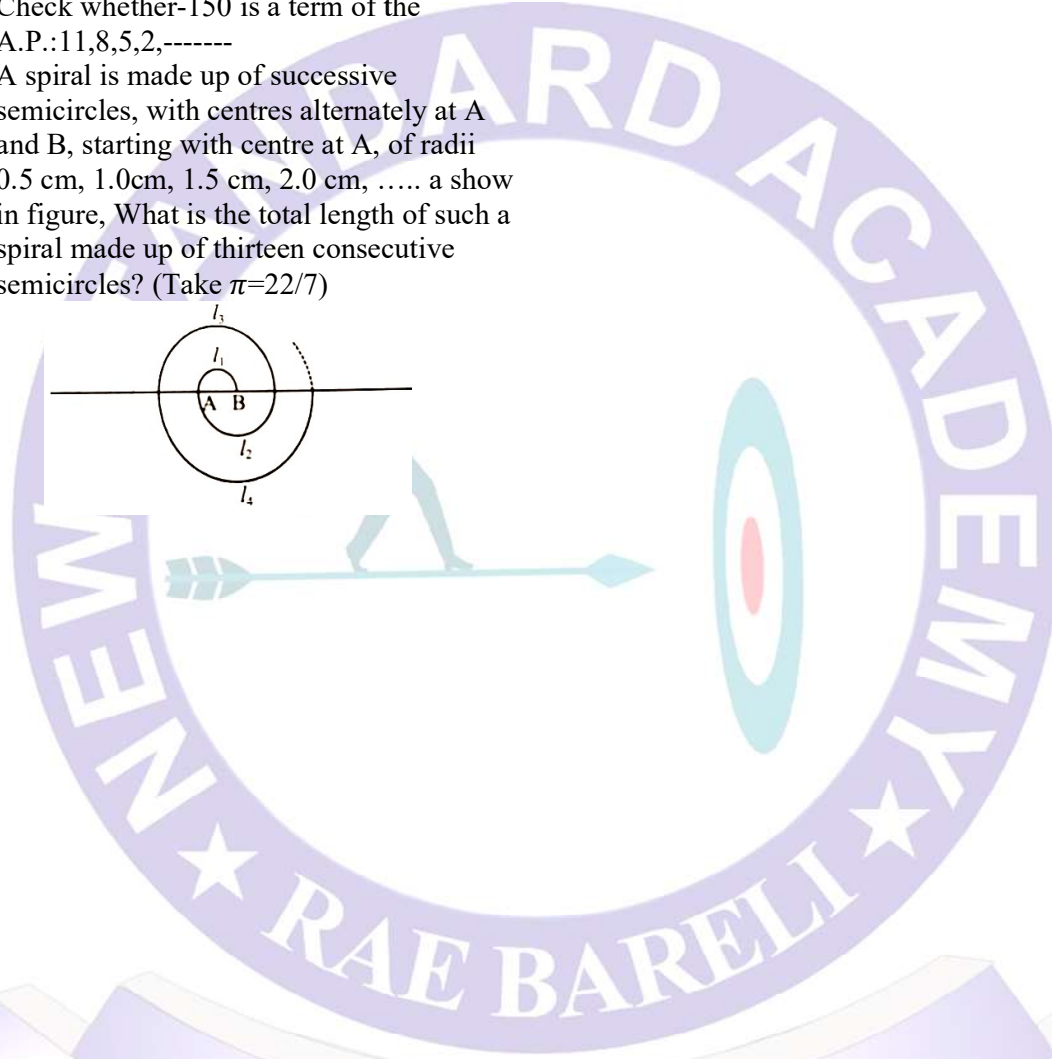
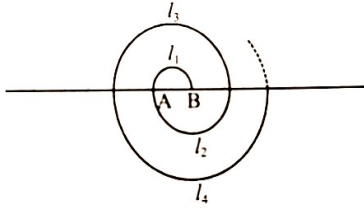
14. What are the differences between autotrophic nutrition and heterotrophic nutrition?
15. What is the role of the acid in our stomach?
16. How are water and minerals transported in plants?
17. Describe double circulation in human beings. Why is it necessary?
18. Give functions of all four chambers of human heart.
19. What are stomata? What functions do they perform? With the help of diagram explain opening and closing of stomata.
20. Draw the structure of a neuron and explain its function.

MATHS

21. Prove that $\sqrt{3} - \sqrt{2}$ is an irrational number.
22. Check whether 6^n can end with the digit 0 for any natural number n.
23. Find the square root of $x^4 + 4x^3 + 10x^2 + 12x + 9$
24. If α, β are zeros of quadratic polynomial $kx^2 + 4x + 4$, find the value of k such that $(\alpha + \beta)^2 - 2\alpha\beta = 24$.
25. For what value of k do the equations $3(k-1)x + 4y = 24$ and $15x + 20y = 8(k+13)$ have infinite solutions?
26. Draw the graphs of the equations $x - y + 1 = 0$ and $3x + 2y - 12 = 0$. Determine the coordinates of the vertices of the triangle formed by these lines and the x-axis, and shade the triangular region.
27. A cottage industry produces a certain number of pottery articles in a day. It was observed on a particular day that the cost of production of each article (in rupees) was 3 more than twice the number of

articles produced on that day. If the total cost of production on that day was Rs 90, Find the number of articles produced and the cost of each article.

28. The sum of the reciprocals of Rehman's ages, (in years) 3 years ago and 5 years from now is $\frac{1}{3}$. Find his present age.
29. Check whether -150 is a term of the A.P.: 11, 8, 5, 2, -----
30. A spiral is made up of successive semicircles, with centres alternately at A and B, starting with centre at A, of radii 0.5 cm, 1.0 cm, 1.5 cm, 2.0 cm, a show in figure, What is the total length of such a spiral made up of thirteen consecutive semicircles? (Take $\pi = \frac{22}{7}$)



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