

I. Choose the correct answer: 5x1=5

- $P^2-2P-8=$ _____.
a) (P+4) (P-2) b) (P-4) (P+2) c) (P-4) (P-2) d) (P+4) (P+2)
- Solution of quadratic equation $3x^2-13x+12=0$ is _____.
a) $x=-3, \frac{-4}{3}$ b) $x=3, \frac{-4}{3}$ c) $x=3, \frac{4}{3}$ d) $x=3, \frac{3}{4}$
- The value of x if $x^2+9x=-20$ is _____.
a) -4, -5 b) 4, 5 c) -4, 5 d) 4, -5
- The solution of $2x^2-8x=0$ is equal to _____.
a) $x=2, -2$ b) $x=2$ c) $x = -2$ d) $x=4$
- $(a-7)(a+2)=0$ is equal to _____.
a) $a^2+5a-14=0$ b) $a^2-5a-14=0$ c) $a^2-5a+14=0$ d) $a^2+5a+14=0$

II. Answer the following: 4x5=20

- A girl is twice as old as her sister. Five years hence, the product of their ages (in years) will be 375. Find their present ages.
- A flock of swans contained x^2 members. As the clouds gathered, $10x$ went to a lake and one-eighth of the members flew away to a garden. The remaining three pairs played about in the water. How many swans were there in total?
- There is a square field whose side is 10m. A square flower bed is prepared in its center leaving a gravel path all around the flower bed. The total cost of laying the flower bed and gravelling the path at ₹3 and ₹4 per square metre is ₹364 respectively. Find the width of the gravel path.
- If the difference between a number and its reciprocal is $\frac{24}{5}$, find the number.

I. Answer the following: 5x1=5

- Convert 50°C into Kelvin.
- Solutions which contain three components are called _____.
- Each neuron can make as many as _____ of synaptic contacts with other neurons.
- _____ neurons are found in the cerebral cortex of the brain.
- _____ is the controlling centre of all the body activities.

II. Answer in short: 5x2=10

- Part - A (any one)
- Define thermodynamic temperature.
 - What are the features of heat energy?
Part - B (any one)
 - Define the term: Solution.
 - Give an example each (i) gas in liquid ii) solid in liquid
Part - C (any three)
 - Define stimulus.
 - What is neuroplasm?
 - Name the three types of nervous system.
 - What is the function of meningeal membranes?
- III. Answer in detail: 2x5=10
- Part - A (any one)
- Find the final temperature of a copper rod whose area of cross section changes from 10m^2 to 11m^2 due to heating. The copper rod is initially kept at 90K . (coefficient of superficial expansion is $0.0021/\text{k}$)
 - Explain about superficial expansion with diagram.
Part - B (any one)
 - Write notes on (i) Aqueous Solution ii) Non-Aqueous Solution
(or)
 - Write notes on various factors affecting solubility.

