

Centum Preparation 100 Days plan class 12 Maths

Q.N o.	DAY - 72
450	<p>6. Assume that the rate at which radioactive nuclei decay is proportional to the number of such nuclei that are present in a given sample. In a certain sample 10% of the original number of radioactive nuclei have undergone disintegration in a period of 100 years. What percentage of the original radioactive nuclei will remain after 1000 years?</p>
451	<p>7. Water at temperature $100^{\circ}C$ cools in 10 minutes to $80^{\circ}C$ Find in a room temperature of $25^{\circ}C$.</p> <p>(i) The temperature of water after 20 minutes (ii) The time when the temperature is $40^{\circ}C$</p> $\left[\log_e \frac{11}{15} = -0.3101; \log_e 5 = 1.6094 \right]$
452	<p>8. At 10.00 A.M. a woman took a cup of hot instant coffee from her microwave oven and placed it on a nearby Kitchen counter to cool. At this instant the temperature of the coffee was $180^{\circ}F$, and 10 minutes later it was $160^{\circ}F$. Assume that constant temperature of the kitchen was $70^{\circ}F$.</p> <p>(i) What was the temperature of the coffee at 10.15A.M.? (ii) The woman likes to drink coffee when its temperature is between $130^{\circ}F$ and $140^{\circ}F$. between what times should she have drunk the coffee?</p>
453	<p>9. A pot of boiling water at $100^{\circ}C$ is removed from a stove at time $t = 0$ and left to cool in the kitchen. After 5 minutes, the water temperature has decreased to $80^{\circ}C$, and another 5 minutes later it has dropped to $65^{\circ}C$. Determine the temperature of the kitchen.</p>

Centum Preparation 100 Days plan class 12 Maths

454

10. A tank initially contains 50 litres of pure water. Starting at time $t = 0$ a brine containing with 2 grams of dissolved salt per litre flows into the tank at the rate of 3 litres per minute. The mixture is kept uniform by stirring and the well-stirred mixture simultaneously flows out of the tank at the same rate. Find the amount of salt present in the tank at any time $t > 0$.

End of the chapter 10