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Class X – Mathematics (Real Numbers)

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1. The smallest composite number is:-  
(a) 1                      (b) 2                      (c) 3                      (d) 4
2.  $1.23\overline{48}$  is  
(a) an integer                      (b) an irrational number  
(c) a rational number                      (d) none of these
3.  $\pi$  is  
(a) rational                      (b) irrational  
(c) both (a) and (b)                      (d) neither (a) nor (b)
4.  $(2 + \sqrt{5})$  is  
(a) rational                      (b) irrational  
(c) an integer                      (d) not real
5. Prove that the square of any positive integer of the form  $5g+1$  is of the same form.
6. Find the largest number which divides 245 and 1029 leaving remainder 5 in each case.
7. A shop keeper has 120 litres of petrol, 180 litres of diesel and 240 litres of kerosene. He wants to sell oil by filling the three kinds of oils in tins of equal capacity. What should be the greatest capacity of such a tin?
8. Prove that  $\sqrt{n}$  is not a rational number, if  $n$  is not perfect square.
9. Prove that the difference and quotient of  $(3+ 2\sqrt{3})$  and  $(3- 2\sqrt{3})$  are irrational.
10. Show that  $(n^2-1)$  is divisible by 4, if  $n$  is an odd positive integer.