Number System Test

Instruction: In the following questions, select the correct choice among the alternatives given below the question.

1. **Simplify:** $\frac{8.73\times8.73\times8.73+4.27\times4.27\times4.27}{8.73\times8.73-8.73\times4.27+4.27\times4.27}$
   (a) 0 (b) 1 (c) 12 (d) 13
2. $\frac{(842+123)^2+(842-123)^2}{842\times842+123\times123}$ **is equal to:**
   (a) 1 (b) 719 (c) 2 (d) 965
3. $\left(\frac{147\times147+147\times143+143\times143}{147\times147\times147-143\times143\ \ 143}\right)$ **is equal to:**
   (a) 4 (b) $\frac{1}{4}$ (c) $\frac{1}{290}$ (d) 290
4. **The value of the expression** $\left[1-\frac{1}{3}\right]\left[1-\frac{1}{4}\right]\ldots\ldots\ldots\left[1-\frac{1}{n}\right]$ **is equal to:**
   (a) n (b) $\frac{2}{n}$ (c) $\frac{n\,(n-1)}{n}$ (d) 1
5. **The value of the expression** $\left[2-\frac{1}{3}\right]\left[2-\frac{3}{5}\right]\left[2-\frac{5}{7}\right]\ldots\ldots\ldots\left[2-\frac{997}{999}\right]$ **is equal to:**
   (a) $\frac{1001}{3}$ (b) $\frac{1}{999}$ (c) 0 (d) $\frac{1}{3}$
6. **The expression** $\left[\frac{1}{1.2}+\frac{1}{2.3}+\frac{1}{3.4}+\ldots\ldots+\frac{1}{n\,(n+1)}\right]$ **for any natural number is :**
   (a) always greater than 1 (b) always less than 1
   (c) always equal to 0 (d) always a negative integer
7. **The value of** $\left(1+\frac{1}{1\times2}+\frac{1}{1\times2\times4}+\frac{1}{1\times2\times4\times8}+\frac{1}{1\times2\times4\times8\times16}\right)$ **upto four places of decimal is:**
   (a) 1.6416 (b) 1.2937 (c) 1.6414 (d) 1.6415
8. **The unit digit in the product of** $(2157)^{173}$ **is :**
   (a) 3 (b) 7 (c) 9 (d) 1
9. **If the unit digit in the product (459 × 46 × 28* × 484) is 2, the digit in place of * is:**
   (a) 3 (b) 5 (c) 7 (d) 5
10. **The unit digit in the expression** $(25^{6251}+36^{528}+73^{54})$ **is :**
    (a) 4 (b) 0 (c) 6 (d) 5
11. **The unit digit in the expression** $(55^{725}+73^{5810}+22^{853})$ **is:**

(a) 4 (b) 0 (c) 6 (d) 5

12. The unit digit in the expression ($11^1 + 12^2 + 13^3 + 14^4 + 15^5 + 16^6$) is :

(a) 1 (b) 9 (c) 7 (d) 0

13. The value of $\sqrt{2\sqrt{2\sqrt{2} \ldots \ldots \ldots \infty}}$ is:

(a) 0 (b) 1 (c) $2\sqrt{2}$ (d) 2

14. If $x = \sqrt{\sqrt{7} + 7 + \sqrt{(8 + 2\sqrt{7}) - \sqrt{7}}}$, the value of x, will be:

(a) $\sqrt{7-1}$ (b) $2\sqrt{7}$ (c) 1 (d) $1 - \sqrt{7}$

15. The sum of first 45 natural number is:

(a) 2070 (b) 1035 (c) 1280 (d) 2140

16. For any natural number, $n, n^4 + n^2 + 1$ is always

(a) odd (b) even

(c) either even or odd (d) none of these

17. The sum of first 20 odd counting numbers is :

(a) 20 (b) 100 (c) 400 (d) 313

18. The number of factors of a number $N = 2^3 \times 3^2 \times 5^3$ is :

(a) 18 (b) 45 (c) 48 (d) 9

19. A number when divided by 119 leaves 19 as remainder. If the same number is divided by 17, the remainder obtained is:

(a) 10 (b) 7 (c) 3 (d) 2

20. A number when divided by 296 leaves 75 as remainder. If the same number is divided by 37, the remainder obtained is:

(a) 2 (b) 1 (c) 11 (d) 8

Answers to the above questions

Questions no.	Answers
1.	(d)
2.	(c)
3.	(b)
4.	(b)

5.	(a)
6.	(b)
7.	(a)
8.	(b)
9.	(c)
10.	(b)
11.	(c)
12.	(b)
13.	(d)
14.	(c)
15.	(b)
16.	(a)
17.	(c)
18.	(c)
19.	(d)
20.	(b)