Q1. The value of $\left(1+\frac{1}{x}\right)\left(1+\frac{1}{x+1}\right)\left(1+\frac{1}{x+2}\right)\left(1+\frac{1}{x+3}\right)$ is :

(a) $1+\frac{1}{x+4}$

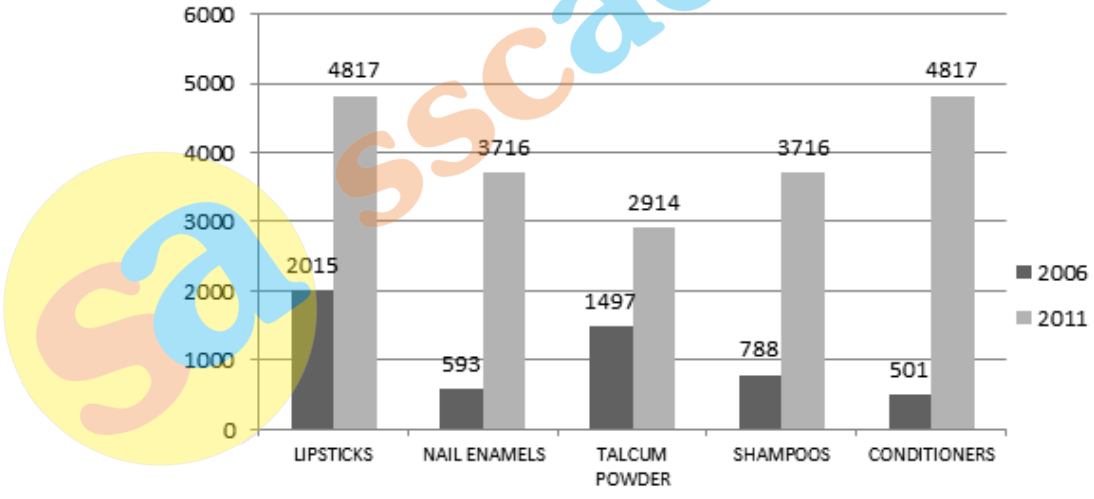
(b) $x+4$

(c) $\frac{1}{x}$

(d) $\frac{x+4}{x}$

Directions (2-6): Study the following graph carefully to answer these questions .

A cosmetic company provides five different products. The sales of these five products (in thousand number of packs) during 2006 and 2011 are shown in the following bar graph.



Q2. The sales of lipsticks in 2011 was by what percent more than the sales of nail enamels in 2011? (rounded off to nearest integer)

(a) 33%

(b) 31%

(c) 30%

(d) 22%

Q3. During the period 2006-2011, the minimum rate of increase in sales is in the case of?
(a) Shampoos
(b) Nail enamels
(c) Talcum powders
(d) Lipsticks

Q4. What is the approximate ratio of the sales of nail enamels in 2011 to the sales of Talcum powders in 2006?
(a) 7:2
(b) 5:2
(c) 4:3
(d) 2:1

Q5. The sales have increased by nearly 95% from 2006 to 2011 in the case of?
(a) Lipsticks
(b) Nail enamels
(c) Talcum powders
(d) Shampoos

Q6. The sales of Nail enamels in 2006 was by what percent less than the sales of shampoos in 2006?
(a) 24.746%
(b) 23.643%
(c) 24.844%
(d) 23.845%

Directions (7-10): Study the following table and answer the questions based on it. Expenditures of a Company (in Lakh Rupees) per Annum Over the given Years

Year	Item of Expenditure				
	Salary	Fuel and Transport	Bonus	Interest on Loans	Taxes
1998	288	98	3.00	23.4	83
1999	342	112	2.52	32.5	108
2000	324	101	3.84	41.6	74
2001	336	133	3.68	36.4	88
2002	420	142	3.96	49.4	98

Q7. What is the average amount of interest per year which the company had to pay during this period?

(a) Rs. 32.43 lakhs
(b) Rs. 33. 72 Lakhs
(c) Rs. 34 . 18 lakhs
(d) Rs. 36.66 lakhs

Q8. The total amount of taxes paid by the company during 1998 to 2001 is approximately what percent of the total amount of salary paid during 1999 to 2002?

(a) 25.634%
(b)24.824%
(c) 24.696%
(d) 24.834%

Q9. Total expenditure on all these items in 1998 was approximately what percent of the total expenditure in 2002?

(a) 62%
(b) 66%
(c) 69 %
(d) 71 %

Q10. The total expenditure of the company over these items during the year 2000 is?

(a) Rs. 544.44 lakhs
(b) Rs. 501.11 lakhs
(c) Rs. 446.46 lakhs
(d) Rs.478.87lakhs

Q11. Two concentric circles having common centre 'O' and chord AB of the outer circle intersect the inner circle at points C and D. If distance of chord from the centre is 3 cm, outer radius is 13 cm and inner radius is 7 cm, then length of AC is cm is

(a) $8\sqrt{10}$
(b) $6\sqrt{10}$
(c) $4\sqrt{10}$
(d) $2\sqrt{10}$

Q12. In $\Delta ABC, DE||BC$ where DE intersects AB and AC at the points D and E respectively. If AD = 6 cm, DB = 12x–6 cm, AE = 2x cm and CE = 16–2x, then the value of x is

(a) 6 cm
(b) 4 cm
(c) 2 cm
(d) 8 cm

Q13. If the sides of a quadrilateral ABCD touch a circle and AB = 6 cm, CD = 5 cm, BC = 7 cm, then the length of AD in cm is

(a) 4

(b) 6

(c) 8

(d) 9

Q14. The area of the region bounded by $y = |x| - 5$ with the coordinate axis is-

(a) 25 sq units

(b) 52 sq units

(c) 50 sq units

(d) 20 sq units

Q15.

Number of integral values of x for which $\sin\theta = \frac{4x-3}{9}$, where $0° \leq \theta \leq 90°$, is

(a) 5

(b) 4

(c) 3

(d) 2

Q16.

If $\frac{1-x^4}{1+x} \div \frac{1+x^2}{x} \times \frac{1}{x(1-x)} = A$, then the value of A will be-

(a) $\frac{1}{x}$

(b) $1 + x$

(c) $1 - x^2$

(d) 1

Q17. The height of a tower is h and the angle of elevation of the top of the tower from a point on the plane is α. On moving a distance h/2 towards the tower, the angle of elevation becomes β. The value of $(\cot\alpha - \cot\beta)$ is

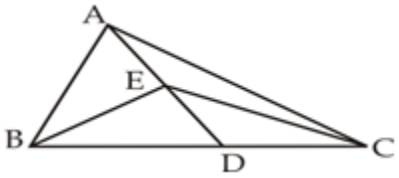
(a) 1

(b) 2

(c) $\frac{1}{2}$

(d) $\frac{2}{3}$

Q18. The vertex A of ΔABC is joined to a point D on BC. If E is the midpoint of AD, then area (ΔBEC) = ?



(a) 1/2 area (ΔABC)
(b) 1/3 area (ΔABC)
(c) 1/4 area (ΔABC)
(d) 1/6 area (ΔABC)

Q19. In a quadrilateral ABCD, with unequal sides if the diagonals AC and BD intersect at right angles, then

(a) $AB^2 + BC^2 = CD^2 + DA^2$
(b) $AB^2 + CD^2 = BC^2 + DA^2$
(c) $AB^2 + AD^2 = BC^2 + CD^2$
(d) $AB^2 + BC^2 = 2(CD^2 + DA^2)$

Q20. If $\tan A = 1$ and $\tan B = \sqrt{3}$, then $\cos A . \cos B + \sin A . \sin B$ is equal to

(a) $\frac{1+\sqrt{3}}{2\sqrt{2}}$
(b) $\frac{1-\sqrt{3}}{2\sqrt{2}}$
(c) $\frac{2\sqrt{2}}{3}$
(d) 1

Q21. The compound interest on a certain sum for 2 years at 10% per annum is Rs 525. The simple interest on the same sum for triple the time at double the rate percent per annum is:

(a) Rs 3000
(b) Rs 6000
(c) Rs 3500
(d) Rs 2000

Q22. The price of 2 Jeans and 4 Cap is Rs 1600. With the same money one can buy 1 Jeans and 6 Cap. If one wants to buy 12 Cap, how much shall one have to pay?

(a) Rs 2,400
(b) Rs 4,800
(c) Rs 1,200
(d) Rs 13,500

Q23. An article is sold at discount of 18% and an additional discount of 13% is allowed on cash payment. If Namrata purchased the article by paying Rs 1023.0156 in cash, the marked price of the article was

(a) Rs 1434
(b) Rs 1464
(c) Rs 1386
(d) Rs 1394

Q24. A mixture contains wine and water in the ratio 7 : 5 and another mixture contains them in the ratio 5 : 9. How many litres of the latter must be mixed with 9 litres of the former so that the resulting mixture may contain equal quantities of wine and water?

(a) 5.25 liter
(b) 5.35 liter
(c)4.75 liter
(d) 5.75 liter

Q25. ΔABC is a right-angled triangle, where $\angle ABC = 90°$. If $AC = 2\sqrt{5}$ and AB – BC = 2, then the value of $\cos^2 A - \cos^2 C$ is

(a) $\frac{1}{\sqrt{5}}$
(b) $\sqrt{5}$
(c) $\frac{1}{2}$
(d) $\frac{3}{5}$

Q26. O is a centre of circle. AC and BD are two chords of the circle intersecting each other at P. If $\angle AOB = 15°$ and $\angle APB = 30°$, then $\tan^2 \angle APB + \cot^2 \angle COD$ is equal to

(a) 1/3
(b) 2/3
(c) 4/3
(d) 10/3

Q27. If $l\cos^2\theta + m\sin^2\theta = \frac{\cos^2\theta(\operatorname{cosec}^2\theta + 1)}{\operatorname{cosec}^2\theta - 1}$, $0° < \theta < 90°$ then $\tan\theta$ equal to

(a) $\sqrt{\frac{l-2}{1-m}}$
(b) $\sqrt{\frac{2-l}{1-m}}$
(c) $\sqrt{\frac{l-2}{m-1}}$
(d) $\sqrt{\frac{l-1}{2-m}}$

Q28. If sin (10°6′32″) = a, then value of cos (79°53′28″) + tan (10°6′32″) is

(a) $\frac{a\left(1+\sqrt{1-a^2}\right)}{\sqrt{1-a^2}}$

(b) $\frac{1+\sqrt{1-a^2}}{\sqrt{1-a^2}}$

(c) $\frac{\sqrt{1-a^2}+a}{\sqrt{1-a^2}}$

(d) $\frac{a\sqrt{1-a^2}+1}{\sqrt{1-a^2}}$

Q29. At the foot a mountain, the elevation of its summit is 45°. After ascending 2 km towards the mountain upon an inclination of 30°, the elevation changes to 60°. The height of the mountain is

(a) $\left(\sqrt{3}-1\right)$ m

(b) $\left(\sqrt{3}+1\right)$ m

(c) $\left(\sqrt{3}-2\right)$ m

(d) $\left(\sqrt{3}+2\right)$ m

Q30. Two chords of a circle, of lengths 2a and 2b are mutually perpendicular. If the distance of the point, at which the chords intersect, from the centre of the circle is c (c<radius of the circle), then the radius of the circle is

(a) a + b – c

(b) $\sqrt{\frac{a^2+b^2-c^2}{2}}$

(c) $\sqrt{\frac{a^2+b^2+c^2}{2}}$

(d) $\frac{\sqrt{ab}}{c}$