

Set - II

1. The value of

$$\frac{1}{1+\sqrt{2}} + \frac{1}{\sqrt{2}+\sqrt{3}} + \frac{1}{\sqrt{3}+\sqrt{4}} + \frac{1}{\sqrt{4}+\sqrt{5}} + \frac{1}{\sqrt{5}+\sqrt{6}} + \frac{1}{\sqrt{6}+\sqrt{7}} + \frac{1}{\sqrt{7}+\sqrt{8}} + \frac{1}{\sqrt{8}+\sqrt{9}}$$
 is

- (a) 0 (b) 1
(c) 2 (d) 4

2. If $\sqrt{5} = 2.236$ and $\sqrt{10} = 3.162$, then the value of

$$\frac{15}{\sqrt{10} + \sqrt{20} + \sqrt{40} - \sqrt{5} - \sqrt{80}}$$
 is

- (a) 5.398 (b) 4.398
(c) 3.398 (d) 6.398

3. If $x = \frac{\sqrt{3}+1}{2}$, then $x^3 + \frac{1}{x^3} =$

- (a) 216 (b) 198
(c) 192 (d) 261

4. If $4^{44} + 4^{44} + 4^{44} + 4^{44} = 4^x$, then x is

- (a) 45 (b) 44
(c) 176 (d) 11

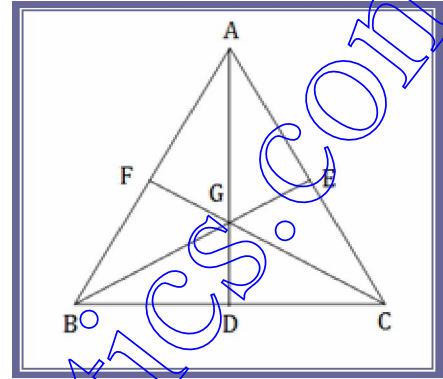
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5. If $2x = t + \sqrt{t^2 + 4}$ and $3y = t - \sqrt{t^2 + 4}$, then value of y when $x = 2/3$, is
- (A) - 2 (b) 1
(c) - 1 (d) 2
6. If $x + y = 5$ and $x^2 + y^2 = 111$, then value of $x^3 + y^3$ is
- (a) 770 (b) 227
(c) 555 (d) 115
7. The remainder when the polynomial $p(x) = x^{100} - x^{97} + x^3$ is divided by $x + 1$ is
- (a) 1 (b) 22
(c) 3 (d) 4

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8. In $\triangle ABC$, the medians AD, BE and CF meet at G, then

- (a) $4(AD + BE + CF) > 3(AB + BC + AC)$
 (b) $3(AD + BE + CF) > 2(AB + BC + AC)$
 (c) $3(AD + BE + CF) > 4(AB + BC + AC)$
 (d) $2(AD + BE + CF) > 3(AB + BC + AC)$

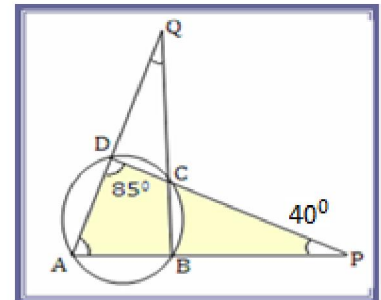


9. The point of concurrency of the perpendicular bisectors of a triangle is called

- (a) Incentre
 (b) Orthocentre
 (c) Circumcentre
 (d) Centroid

10. Two sides AB and CD of a cyclic quadrilateral ABCD are produced to meet at P. The sides AD and BC are produced to meet at Q. If $\angle ADC = 85^\circ$ and $\angle BPC = 40^\circ$ then $\angle BAD$ and $\angle CQD$ are

- (a) $55^\circ, 30^\circ$
 (b) $50^\circ, 40^\circ$
 (c) $40^\circ, 30^\circ$
 (d) $45^\circ, 30^\circ$



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11. The mean of first five prime numbers is
- (a) 3.0 (b) 3.6
(c) 5.6 (d) 7
12. A man is three years elder than his wife and four times as old as his son. If the son shall attain an age of fifteen years after three years, what is the present age of his mother ?
- (a) 60 years (b) 51 years
(c) 48 years (d) 45 years
13. If seventh day of a month is three days earlier than Friday, what day will it be on nineteenth day of the month?
- (a) Sunday (b) Monday
(c) Wednesday (d) Friday

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14. Some friends are sitting on a bench. Vijay is sitting next to Anita and Sanjay is next to Geeta. Geeta is not sitting with Ajay. Ajay is on the left end of the bench and Sanjay is in second position from right hand side. Vijay is on the right side of Anita and to the right side of Ajay, Vijay and Sanjay are sitting together. Who is sitting in the centre?

(a) Ajay

(b) Vijay

(c) Geeta

(d) Sanjay

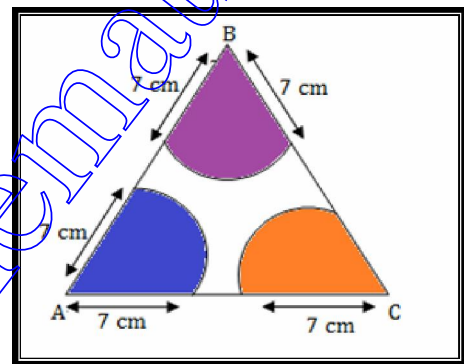
15. The area of shaded region if each region is a sector of radius 7cm is

(a) 77m^2

(b) 49 cm^2

(c) 60 cm^2

(d) none of these



16. If the sum of the zeros of the polynomial $f(x) = 2x^3 - 3kx^2 + 4x - 5$ is 6, then the value of k is

(a) 2

(b) 4

(c) -2

(d) -4

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17. If $y = x + \frac{1}{x}$, then $x^4 + x^3 - 4x^2 + x + 1 = 0$ becomes

(a) $(y^2 + y - 6) = 0$

(b) $(y^2 + y - 2) = 0$

(c) $(y^2 + y - 3) = 0$

(d) $(y^2 + y - 4) = 0$

18. A convex polygon has 44 diagonals. The number of its sides is

(a) 10

(b) 11

(c) 12

(d) 13

19. If $x - k$ divides $x^3 - 6x^2 + 11x - 6 = 0$, then k can't be equal to

(a) 1

(b) 2

(c) 3

(d) 4

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20. The sum of n term of the series

$$\frac{1}{\sqrt{3}+\sqrt{5}} + \frac{1}{\sqrt{5}+\sqrt{7}} + \frac{1}{\sqrt{7}+\sqrt{9}} + \dots \text{ is}$$

(a) $\sqrt{2n+3}$

(b) $\frac{\sqrt{2n+3}}{2}$

(c) $\sqrt{2n+3} - \sqrt{3}$

(d) $\frac{\sqrt{2n+3} - \sqrt{3}}{2}$

21. If $\frac{(9^n)(3^2)\left(3^{\frac{n}{2}}\right)^{-7} - (\sqrt[3]{177147})^n}{3^{3m}(2)^3} = \frac{1}{27}$ then

(a) $m - n + 2 = 0$

(b) $6m + 11n - 6 = 0$

(c) $6m - 11n - 6 = 0$

(d) $m - n - 2 = 0$

22. Which of the following correctly shows 185367249 according to International place value chart?

(a) 1, 853, 672, 49

(b) 18, 536, 724, 9

(c) 185, 367, 249

(d) None of these

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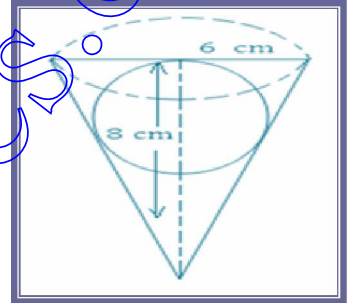
23. Roman numeral for the greatest three digit number is
- (a) IXIXIX (b) CMXCIX
(c) CMIXIX (d) CMIIC
24. Who is the father of Geometry?
- (a) Pythagoras (b) Thales
(c) Archimedes (d) Euclid.
25. In the new budget, the price of a petrol rose by 10%, the percent by which one must reduce the consumption so that the expenditure does not increase is :
- (a) $6\frac{1}{9}\%$ (b) $6\frac{1}{4}\%$
(c) $9\frac{1}{11}\%$ (d) 10%

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26. $a \times (b + c) = a \times b + a \times c$, the property is
- (a) associative (b) commutative
(c) distributive (d) anti-commutative
27. Like dozen is 12 articles, What is "score" equals to
- (a) 20 (b) 30
(c) 24 (d) 36
28. Three traffic lights at three different road crossing change after 48 seconds, 72 seconds and 100 seconds respectively, If they all change simultaneously at 8 a. m., at what time will they again change simultaneously?
- (a) 10 a.m. (b) 9 a.m.
(c) 11 a.m. (d) 10.30 a.m.
29. P, Q, R and S are playing carom game. P, R and S, Q are partners. S is to the right of R who is facing West. Then Q is facing what direction?
- (a) North (b) south
(c) East (d) West

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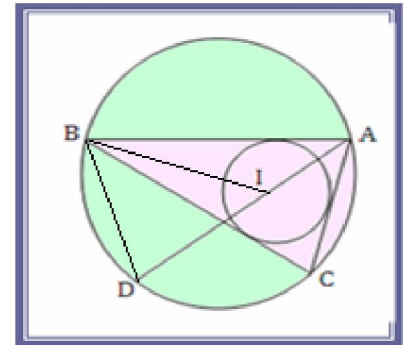
30. A conical vessel of radius 6 cm and height 8 cm is completely filled with water. A sphere is lowered into the water and its size is such that when it touches the sides, it is just immersed. What fraction of the water overflows?



- (a) $\frac{2}{5}$ (b) $\frac{3}{8}$
 (c) $\frac{3}{5}$ (d) $\frac{3}{4}$

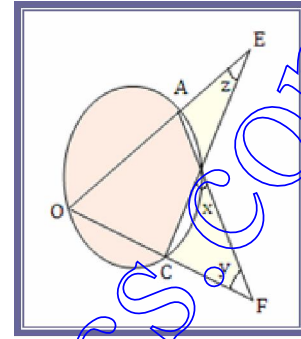
31. In the given Figure "I" is the Incentre of $\triangle ABC$. AI when produced meets the circumcircle of $\triangle ABC$ in D. If $\angle BAC = 66^\circ$ and $\angle ACB = 80^\circ$, then $\angle DBC$, $\angle IBC$ & $\angle BID$ respectively is :

- (a) $17^\circ, 33^\circ$ & 50° (b) $33^\circ, 50^\circ$ & 17°
 (c) $33^\circ, 17^\circ$ & 50° (d) $50^\circ, 33^\circ$ & 17°



32. In the given figure if $y = 32^\circ$ and $z = 40^\circ$, then x is

- (a) 54° (b) 108°
 (c) 50° (d) 58°

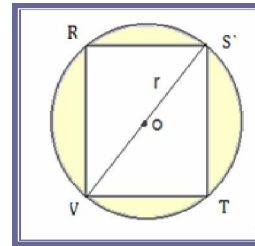


33. The factors of $x^4 + y^4 + x^2y^2$ are

- (a) $(x^2 + y^2)(x^2 + y^2 - xy)$ (b) $(x^2 + y^2)(x^2 - y^2)$
 (c) $(x^2 + y^2 + xy)(x^2 + y^2 - xy)$ (d) Factorization is not possible

34. In the given figure, RSTV is square inscribed in a circle with centre O and radius r. The total area of shaded region is _____.

- (a) $r^2 (\pi - 2)$ (b) $2r^2(2 - \pi)$
 (c) $\pi (r^2 - 2)$ (d) $8r^2 - 8r$



35. $(x\% \text{ of } y + y\% \text{ of } x) =$

- (a) $x\% \text{ of } y$ (b) $y\% \text{ of } x$
 (c) $2\% \text{ of } xy$ (d) $x\% \text{ of } xy$

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36. A is the father of C and D is the son of B. E is the brother of A. If C is the sister of D, how is B related to E?
- (a) Daughter (b) Brother-in-law
(c) Husband (d) Sister-in-law
37. Ravi is not wearing white and Ajay is not wearing blue. Ravi and sohan wear different colour. Sachin alone wear red. What is sohan coloured, if all four them are wearing different colour.
- (a) red (b) blue
(c) white (d) can't say
38. How many times in a day, that of two hands of a clock coincide?
- (a) 11 (b) 12
(c) 22 (d) 24

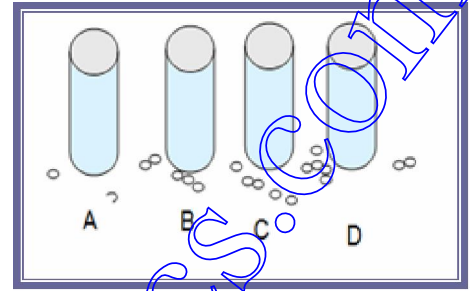
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39. Consider the following steps regarding the beans.

1. Fill cup A with beans.
2. Pour half of the beans from cup A into cup B.
3. Pour half of the beans from cup B into cup C.
4. Pour half of the beans from cup A into cup C.
5. Pour all of the beans from cup A into cup D.
6. Pour half of the beans from cup C into cup A.

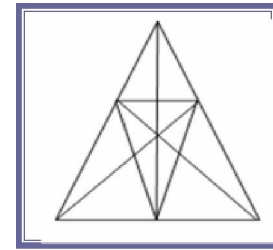
Which cup contains the most beans now?

- (a) cup C (b) cup B
(c) cup D (d) All cups have equal



40. Tell the number of triangles in the following figures

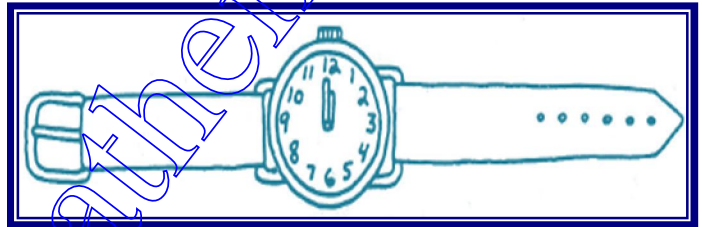
- (a) 40 (b) 45
(c) 47 (d) 50



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41. A school bus travels from Delhi to Chandigarh. There are 4 children, 1 teacher and 1 driver in the bus. Each child has 4 backpacks with him. There are 4 dogs sitting in each backpack and every dog has 4 puppies. What is the total number of eyes in the bus.
- (a) 256 (b) 128
(c) 657 (d) 652

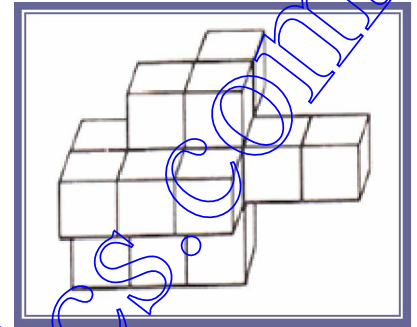
42. Watch out for this wristwatch. It's all wound up – but it's headed in the wrong direction! At 12:00 it always shows the correct time. Then its hands move to the left instead of the right. See if you can figure out what time it is when the watch shows the times 8:30



- (a) 8.30 (b) 3.30
(c) 5.30 (d) 4.30

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43. The solid below is made up of cubes. How many cubes required making the given solid?



(a) 14

(b) 16

(c) 18

(d) 19

44. The direction in which you reach, if you move from South and take one and a half revolution clockwise

(a) West

(b) East

(c) South

(d) North

45. If Monday is coded as 123456 and Belt is coded as 0789, how would you encode the word TOMBAY?

(a) 921056

(b) 460528

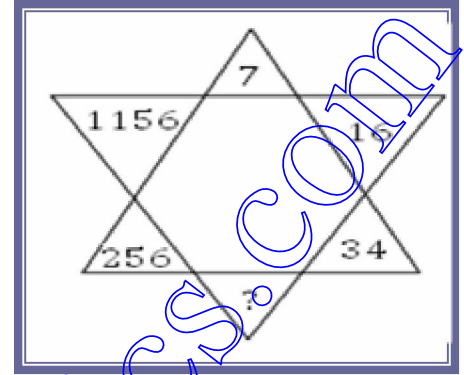
(c) 290165

(d) 258702

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46. The missing number (?) is

- (a) 72 (b) 49
(c) 68 (d) 66



47. Fill the vacant box:

7	8	9
343	64	729
	81	49

- (a) 216 (b) 324
(c) 464 (d) 512

48. B is the husband of P. Q is the only grandson of E, who is wife of D and mother-in-law of P. How is B related to D

- (a) Nephew (b) Cousin
(c) Son-in-law (d) Son

49. Choose the pair in which the words are differently related

- (a) Sheep : Bleat (b) Horse : Neigh
(c) Ass : Grunt (d) Owl : Hoot

50. If 'paper' is called 'wood', 'wood' is called 'straw', 'straw' is called 'grass', 'grass' is called 'rubber' and 'rubber' is called 'cloth', what is the furniture made up of?

- (a) Paper (b) Wood
(c) Straw (d) Grass