

UDUPI ZONE

SSLC MODEL QUESTION PAPER - 2015 - (1)

Time: 2 hr 45 min

MATHEMATICS

TOTAL: 80

I. Choose the correct answer

1. If A and B are two disjoint sets, $n(A) = 15$ and $n(B) = 6$, then $n(A \cup B)$ is

- a) 21 b) 9 c) 15 d) 15

2. The value of n_p^n is

- a) 0 b) n c) $n!$ d) n^n

3. The rationalising factor for the surd $4\sqrt{p+q}$ is

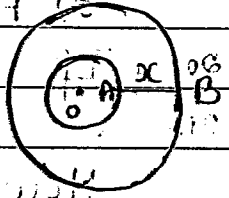
- a) $4\sqrt{p+q}$ b) $\sqrt{p-q}$ c) $\sqrt{p+q}$ d) $4\sqrt{p-q}$

4. If $f(x) = x^3 + 2x^2 + 3x + 4$ then $f(0)$ is

- a) 4 b) 3 c) 2 d) 1

5. In the adjoining figure, a sector of a circle with

radius 5 cm and 2π cm then the value of θ is



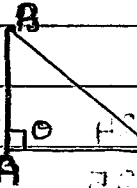
- a) $\frac{5}{12}$ b) $\frac{12}{5}$ c) $\frac{13}{5}$ d) $\frac{12}{13}$

7. If the circumference of the base of the cylinder is 24 cm and height is 10 cm respectively, then its curved surface area is

- a) 240 cm² b) 2400 cm² c) 24000 cm² d) 240000 cm²

8. In a right angled $\triangle ABC$, $\angle BAC = \theta$ then $\frac{BC}{AC} =$

- a) $\cot \theta$ b) $\cos \theta$ c) $\sin \theta$ d) $\sec \theta$



II 9. Find the value of x in the equation

$$85 = (15 \times x) + 10$$

10. A die is rolled. Find the probability of getting an even number.

11. If $\cos \theta = \frac{1}{2}$ then what is the value of θ ?

12. If radii of two spheres are in the ratio 2:3 then find the ratio of their volumes.

13. Name the shape of each face of a regular hexahedron.

14. In a network if $N = 5$, $A = 10$ then find the value of R .

28. The distance between two points $(2, 5)$ and $(x, -7)$ is 13 cm. Then find the value of x .

29. Find the equation of a line having the angle of inclination 45° and y -intercept is 2.

30. In a circle of radius 3 cm draw two radii such that the angle between them is 120° . Construct tangents at the ends of radii.

IV. The floor of a rectangular hall having perimeter 250 m is to be tiled with 30×60 cm tiles. Find the total number of tiles required.

31. Simplify by rationalising the denominator $\frac{1}{\sqrt{6} + \sqrt{3}}$.

32. Two polynomials $(2x^3 + x^2 - 6ax + 7)$ and $(x^3 + 2ax^2 - 12x + 4)$ are divided by $(x+1)$ and $(x-1)$ respectively. If R_1 and R_2 are the remainders and $2R_1 + 3R_2 = 27$. Find the value of x .

32. What must be added to $x^3 - 2x^2 - 12x - 9$ so that it is exactly divisible by $x^2 + x - 6$?

33. If one root of the equation $ax^2 + px + q = 0$ is three times of the other, then $3p^2 = 16q$.

33. Rashmi bought some books for Rs 60. Had she bought 5 more books for the same amount, each book would have cost one rupee less. Find the number of books bought by Rashmi and the price of each book.

34. If $2 \sin^2 \theta + 5 \cos \theta = 4$, show that $\cos \theta = \frac{1}{2}$.

A tree is broken over by the wind forming a right angled triangle with the ground. If the broken part makes an angle of 60° with the ground and the top of the tree is now 20 metre from its base, how tall was the tree.

35. Prove that if two circles touch each other externally, the centres and the point of contact are collinear.

III. PART MATHEMATICS

15. Express 6762 as product of prime factors.

16. If $U = \{a, b, c, d, e, f, g, h\}$, $A = \{b, c, d, f, g\}$, $B = \{a, b, c, e, h\}$.

Verify De Morgan's Law $(A \cup B)^c = A^c \cap B^c$

17. Find the sum of first six terms of the G.P. 3, 6, 12

18. Find x , if 5, 8, x are in H.P.

19. Classify the following into Permutations and combinations.

a) Five different subject books to be arranged on a shelf.

b) There are 8 chairs and 8 people to occupy them.

c) In a committee of 7 persons, a chairperson, a secretary and a treasurer are to be chosen.

d) Five keys are to be arranged in a circular keyring.

20. If $nPr = 336$ and $nCr = 56$, then find n & r or

How many diagonals can be drawn in a decagon?

21. In a 5 members committee, Shekar is one of the member.

Out of 5 members, 3 members are to be chosen.

What is the probability of Shekar?

22. Draw a pie chart for the following data.

Details: Hospital fees, college fees, others.

In Rupees: 360, 120, 160

23. The total runs scored by Ashok and Kumar in 15 matches

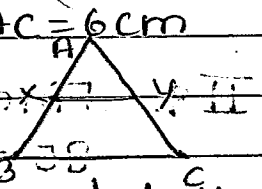
are 700 and 600 with S.D. 3.5 and 3 respectively.

Who is better run getter? Who is more consistent?

24. Solve $x^2 + 2x + 1 = 0$ by using formula method.

25. In $\triangle ABC$, $XY \parallel BC$; $XY = 3\text{cm}$, $AY = 2\text{cm}$, $AC = 6\text{cm}$

Find the length of BC or

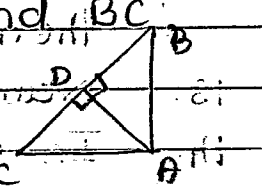


25. At a certain time of the day, a man 6 feet tall casts his shadow 8 ft long. Find the length of the shadow cast by a building 45 feet height at the same time.

26. In $\triangle ABC$, $\angle B = 90^\circ$, $AC = 17\text{cm}$, $AB = 8\text{cm}$, then find BC .

27. In the figure, $AD \perp BC$ then show that

$$AB^2 + CD^2 = BD^2 + AC^2$$



36. A conical flask is full of water. The flask has base radius 3cm and height 15cm. The water is poured into cylindrical glass tube of uniform inner radius 1.5cm placed vertically and closed at the lower end. Find the height of the water in the glass.

A hemispherical bowl of internal radius 18cm is full of fruit juice. The juice is to be filled into cylindrical shaped bottles each of radius 3cm and height 9cm. How many bottles are required to empty the bowl.

37. The sum of first 10 terms in an A.P. is 140 and the sum of next 10 terms is 340. Write the last terms of an A.P.

If m times n th term is equal to n times m th term then prove that $(m+n)$ th term is zero.

38. Solve the quadratic equation $x^2 + x - 6 = 0$ graphically.

39. Prove that the areas of similar triangles are proportional to the squares on the corresponding sides.

40. Construct a direct common tangent to two circles of radii 4.5cm and 2.5cm, whose centres are 9cm apart. Measure the length of the direct common tangent.

Let there be two circles of radii 4.5cm and 2.5cm, whose centres are 9cm apart. We have to construct a direct common tangent to these two circles.