

SSLC PREPARATORY EXAM - 2014

MATHEMATICS

For each <u>multiple choice question</u> four answers are given. Choose the correct answer and write it in the space provided.				
01. Which of the following	is a null set ?			
a) A = {x : x < 1 & x \in	W}	b) $A = \{x : x \text{ is a prime, } 1\}$	8 < x < 22}	
c) A = {x : $x \in N$ and x < 7 and x > 8}		d) {set of even prime numbers}		
02. How many terms are t	here in the A.P. 3, 7, 11,	407 ?		
a) 100	b) 99	c) 101	d) 102	
03. If the matrix A is both	symmetric and skew symme	tric, then it is a		
a) diagonal matrix	b) null matrix	c) square matrix	d) identity matrix	
04. The G. M. between -9	and -16 is			
a) 12	c) -12	c) -13	d) 13	
05. Number of permutation	ns of 10 things taken 'r' at a	time is 5040. Then r is		
a) 7	b) 6	c) 5	d) 4	
05. H.C.F of $(2x^2 + 4x - 6)$) and (4x ² – 36) is			
a) (x - 3)	b) 2(x - 3)	c) 4(x - 3)	d) 8(x - 3)	
06. (8 ⊗ ₃ 7) ⊕ ₅ (11 ⊗ ₃ 4) i	S			
a) 4	b) 3	c) 2	d) 1	
07. If $\sum x^2 = 4$ & $\sum xy =$	4 then $\sum (x-y)^2$ is			
a) 16	b) 0	c) 4	d) 8	
08. If $2a + 3b + 4c = 0$ th	en (2a + 3b)(6b + 8c) is			
а) бас	b) - 16ac	c) 16ac	d) -6ac	
09. The value of $(3\sqrt{3}-4\sqrt{3})$	$\sqrt{3}$ ² is			
a) $\sqrt{3}$	b) -√3	c) – 3	d) 3	
10. If m & n are the roots	$2x^2 - 15x + 4 = 0$ then the e	equation. Whose roots are $\frac{1}{m}$	$and \frac{1}{n}$ is	
a) $x^2 - x + 4 = 0$	b) $4x^2 - 15x + 2 = 0$	c) $4x^2 + 15x + 2 = 0$	d) $4x^2 - 15x - 2 = 0$	
11. The value of K if one re	bot of the equation x^2 - Kx +	K – 2 = 0 is zero		
a) 1	b) – 1	c) 2	d) – 2	
12. The roots of the equat	ion $x^2 + 3x - 4 = 0$ are			
a) Real & equal	b) real & distinct	c) imaginary	d) real & irrational	
13. Example for pure quad	ratic equation is			
a) $3x^2 - 5 = 4$	b) 3x - 5 = 4	c) $3x^2 - 5x = 4$	d) 3x - 5x = 4	
14. Number of common ta	ngents that can be drawn to	two circles which do not inte	rsect is	
a) 1, 2 or 3	b) 1, 3 or 4	c) 1, 2 or 4	d) 2, 3 or 4	
15. A 6 mts pole casts a sh	nadow of 8 mts at a certain ti	ime of the day. The length of	the shadow cast by a	
4.5 mts pole at the same t	ime is mts.			
a) 4	b) 6	c) 3	d) 2	
16. A tangent of length 12	cm is draw to a circle from a	an external point 8 cm from i	ts circumference. The	
radius of the circle is	cm.			
a) 13	b) 10	c) 5	d) 6	
17. The length of the direc	t common tangent drawn to	two congruent circles of radi	i 3 cm whose centres	
are 10 cm apart is				
a) 10 cm	b) 9 cm	c) 8 cm	d) 6 cm	

18. The ratio of TSA to LSA of cone is d) $\frac{r}{1} - 1$ b) 1 + c) 1 - $\frac{r}{l}$ a) 1 + $\frac{7}{7}$ 19. If the height of the cylinder is 4 times its base radius then its total surface area is c) 10 πr^2 a) $4\pi r^{2}$ h b) $5\pi r^{2}$ d) $8\pi r^2$ 20. A single arc which connects a node to itself is called d) line segment a) Curve b) arc c) loop 21. In a GP if S_{∞} is twice the first term then the common ratio is ------22. If sum of two numbers is 3 & product of the numbers is 6, then the H.M between the numbers is------23. If A = $\begin{bmatrix} 1 & 2 \end{bmatrix}$, B = $\begin{vmatrix} 3 \\ 4 \end{vmatrix}$ then find A + B¹ 24. Find the variance of the data 2, 4, 6, 8, 10 25. Give example for an expression which is cyclically symmetrical 26. If K = $\frac{1}{2}$ my² find v if K = 100 and m = 2 27. Find the roots of $x^2 - 3x - 2 = 0$ 28. Verify Euler's formula for octahedron 29. Find the length of longest chord that can be drawn in a circle of radius 11 cm 30. If radius of a cylinder is doubled then what happens to its volume? 2 Marks 31. In a city out of 2500 people 500 people travels by car, 1250 people travels by bus & 250 people travels by both bus & car. Then find the number of people who neither travel by bus nor by car. 32. If $U = \{x \mid x \in N \& x \le 10\}$ $A = \{x \mid x \in N \text{ and } x \text{ is a multiple of } 3 \le 10\}$ $\mathsf{B} = \{x \mid x \in \mathsf{N} \text{ and } x \text{ is a prime number } \leq 10\} \text{ then find } (\mathsf{A} \cup \mathsf{B})^{\mathsf{I}} \cap (\mathsf{A} \cap \mathsf{B})^{\mathsf{I}}$ 33. If $S_8 : S_4 = 17 : 1$, find r. 34. The 7th term of a HP is $\frac{3}{2}$ and 10th term is $\frac{12}{17}$ then find 10th term 35. If A = $\begin{vmatrix} 2 & 1 \\ 3 & 2 \end{vmatrix}$ then prove that A² - 4A + I = 0 36. In how many ways 4 girls and 6 boys be arranged in a row so that no two girls sit together. 37. Find the product of $\sqrt{3}$ & $\sqrt[3]{6}$ 38. The base of a triangle is 4cm longer than its altitude. If the area of the Δ is 48 sq.cm. Find the base and altitude. 39. Find p if $(3p + 1) c^2 + 2(p + 1) c + p = 0$ have equal roots. 40. If m, n are the roots of the equation $x^2 - 2x - 3 = 0$ find the equation whose roots m + n and mn 41. Form Caley's table for the set {1, 3, 4, 5, 9} under multiplication modulo 11

42. \triangle ABC is right angled at B and D is any point on AB. DE perpendicular to AC. If AD = 4cm, AB = 16, AC = 24cm find AE.

43. In a circle of radius, 4.5cm draw two radii such that the angle between them is 70° . Draw two

tangents at the end of the radii.

44. The height of a conical tent is 28m & the diameter of the base is 42m. Find the cost of canvas used at

Rs. 20 /- per sq. meter.

45. Draw a plan using the information given below

	Meters to C	
	220	
To D 120	210	
	120	200 to B
To E 180	80	
	From A	

 $\lceil 4 \rceil$

		-	- 7
46. Draw the graph for the matrix	1	2	2
	1	2	0

47. Verify Euler's formula for the graph

48. Find the capacity of hemisphere water tank if its depth is 2.1 m at the centre.

А

3 MARKS

49. A box contains 5 different red and 6 different white balls. In how many ways can 6 balls be selected so that there are at least two balls of each colour ?

В

50. Find the S.D of the distribution

x	10	15	20	25	30	35
f	3	8	5	9	4	1

51. Find the LCM of $x^3 - 2x^2 - 13x - 10 & x^3 - x^2 - 10x - 8$

52. If $a + b + c = 2S P.T (2bc + a^2 - b^2 - c^2) (2bc - a^2 + b^2 + c^2) = 16S (S - a) (S - b) (S - c)$

53. Two concentric circles are of radii 13cm and 5cm. Find the length of the chord of the outer circle which touches the inner circle.

54. An insect 8m away from the foot of a lamp post which is 6m tall, crawls towards it. After moving through a distance, it distance from the top of the lamp post is equal to the distance it has moved. How far is the insect away from the foot of the Lamp post ?

4 Marks

55. The 3rd element of an A.P is 7 and 7th element is two more than three times its 3rd element. Find the sum of 20 elements.

56. Draw the graph of $y = x^2 \& y = 2 - x \&$ hence solve the equation $x^2 + x - 2 = 0$

- 57. If two triangles are equiangular then prove that their corresponding sides are proportional
- 58. Draw traverse common tangents to two circles radii 3 cm & 4cm, whose centers are 10 cm apart.

