



SSLC MODEL EXAMINATION

MATHEMATICS

Time : 2½ Hour

Total Score: 80

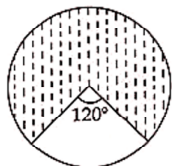
Instructions

- Read each question carefully before answering.
- Give explanations wherever necessary.
- First 15 minutes is cool-off time. You may use this time to read the questions and plan your answers.
- No need to simplify irrationals like $\sqrt{2}$, $\sqrt{3}$, π etc. using approximations unless you are asked to do so.

Answer all questions from 1 to 3. Each question carries 2 scores.

Scores
3 x 2 = 6

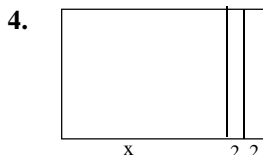
1. 5,8, 11, ... is an arithmetic sequence.
 - a. What is 20th term? 1
 - b. What is the algebraic expression for this sequence? 1
2. Weights of 11 players of a football team are given in kilograms:
55, 65, 56, 70, 62, 54, 64, 58, 68, 65, 60
Find the median of the weights of players. 2
3. A dot is put inside the circle without looking it.



- (a) What is the probability that the dot to be within the unshaded part?
- (b) What is the probability that the dot to be within the shaded part? 2

Answer all questions from 4 to 7. Each question carries 2 scores.

3 x 2 = 6



A square and two rectangles of the same height are kept together as in the picture. The width of the rectangles are 2 centimetres. Total area of the picture is 96 square centimetres.

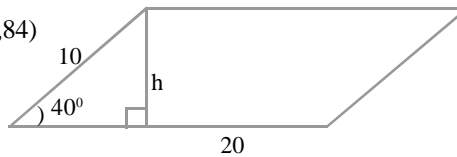
- (a) Taking the side of the square as x centimetres, write an equation representing the given details.

- (b) Find the length of one side of the square.
5. A sequence is written by adding 3 to the multiples of 4.
- (a) Write the algebraic form of the sequence.
- (b) Find the tenth term of the sequence.
- (c) Is 100 a term of this sequence? Why?
6. Draw a circle of radius 3 centimetres. Mark a point 7 centimetres away from the centre. Draw tangents from this point to the circle.
7. (4, 5) and (8, 11) are coordinates of two points on a line.
- (a) Find the slope of the line.
- (b) Find the equation of the line.

Answer all questions from 8 to 15. Each question carries 4 scores.

8 x 4 = 32

8. A box contains four slips numbered 1, 2, 3, 4 and another box contains five slips numbered 5, 6, 7, 8, 9. If one slip is taken from each box.
- a. How many number pairs are possible? **1**
- b. What is the probability of both being odd? **1**
- c. What is the probability of getting the sum of the numbers 10? **2**
9. $P(x) = x^2 - 4x + 4$
- (a) What is $P(1)$?
- (b) Write a first degree factor of $P(x) - P(1)$
- (c) Write the polynomial $P(x) - P(1)$ as the product of two first degree polynomials.
10. Two sides of a parallelogram are 20 centimetres and 10 centimetres. If the angle between them is 40° ,
- a. What is the height of the parallelogram? **2**
- b. Find the area of the parallelogram. **2**
- (sin $40^\circ = 0.64$; cos $40^\circ = 0.77$; tan $40^\circ = 0.84$)



11. A cone is made by rolling up a semicircle of radius 20 centimetres.
- (a) What is the slant height of the cone?
- (b) Find the radius of the cone.
- (c) Calculate the curved surface area of the cone.
12. A box contains 4 slips numbered 1, 2, 3, 4 and another contains 5 slips numbered 1, 2, 3, 4, 5. One slip is taken from each box without looking it.
- (a) In how many different ways we can choose the slips?
- (b) What is the probability of both numbers being odd?
- (c) What is the probability of both numbers being the same?
13. In a right triangle, one of the perpendicular sides is 2 centimetres more than that of the other.

Area of the triangle is 24 square centimetres.

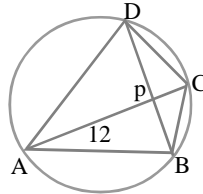
Find the lengths of the perpendicular sides of the right triangle.

14. Perimeter of a rectangle is 80 centimetres. Its area is 384 square centimetres. Find the length and breadth of the rectangle.

15. Diagonals AC and BD of the cyclic quadrilateral ABCD cuts at P. PA=12 centimetres; PC=2 centimetres; BD=11 centimetres.

(a) If $PB = x$, then write PD in terms of x .

(b) Find the lengths of PB and PD.



4

Answer all questions from 16 to 21. Each question carries 5 scores.

6 x 5 = 30

16. The daily wages of 99 workers in a factory is shown in the table.

Daily wages	Number of Workers
500-600	8
600-700	13
700-800	20
800-900	25
900-1000	19
1000 - 1100	14

(a) If the workers are arranged on the basis of their daily wages, at what position does the median wage fall?

(b) What is the median class?

(c) Find the median of the wages.

17. Consider the second degree polynomial $p(x) = x^2 - 3x + 5$.

a. Find $p(1)$.

1

b. Write one first degree factor of the polynomial $p(x) - p(1)$

1

c. Write $p(x) - p(1)$ as the product of two first degree factors and find the solutions of the equation $p(x) - p(1) = 0$.

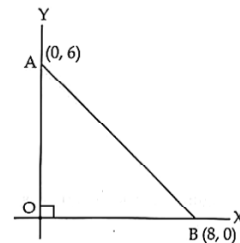
18. In the figure, (0, 6) and (8, 0) are coordinates of the points A and B.

A circle of diameter AB is to be drawn.

(a) Find the coordinates of the centre of the circle.

(b) Find the radius of the circle.

(c) What is the equation of the circle?



19. Consider the circle with centre at the origin and radius 10 units.

(a) Find the coordinates of the points where this circle cuts the x and y axes.

(b) Check whether P(6, 8) is a point on this circle.

(c) Write the equation of this circle.

20. There are two cylindrical wooden blocks with diameter 60 centimetres and height 60 centimetres. A largest cone is carved out from one block and a largest sphere from the other..

(a) What is the volume of the cylinder?

(b) Find the volume of the cone.

(c) Find the radius of the sphere.

(d) Calculate the volume of the spehre.

(e) Find the ratio of the volumes of the cone and the sphere

21. 6, 10, 14, ..is an arithmetic sequence.

5

a. Find the sum of the first 15 terms of this arithmetic sequence

b. What is the difference between the first term and the 16 term?

c. Find the difference between the sum of first 15 terms and sum of the next 15 terms.

