

S S L C Model Examination- 2020

KP(r)

Time: 2½ hrs

Std : 10

Mathematics

Score : 80

Instructions:

- The first 15 minutes are cool-off time.
- Time is spent for reading the question paper you are not suppose to write any thing during cool-off time.
- Read the instructions carefully and attempt this questions.

Answer any three from question 1 to 4. Each carries 2 marks. [3×2=6]

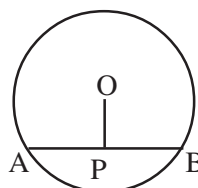
1. 8, 15, 22, is an arithmetic sequence.
 - a) Find the algebraic form.
 - b) What is the remainder when each form is divided by 7.
2. In triangle ABC, $\angle B = 90^\circ$.
 - a) If a circle is drawn with diameter AC, what is the position of B with respect to the circle.
 - b) If a circle is drawn with diameter AB. What is the position of C. Give reason for each answer.
3. If $(x-1)$ is a factor of the polynomial $2x^3 - 5x^2 + Kx + 1$, then find the value of K.
4. A line is passing through the points (4, 5), (7, 8).
 - a) Find the slope of the line.
 - b) Find the coordinates of another point on this line.

Answer any five questions from 5 to 11. Each carries 3 marks. [5×3=15]

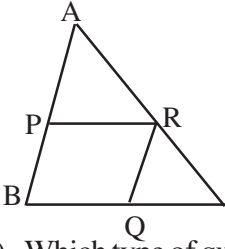
5. A cone with base radius 6cm and height 24cm is melted and recasted into 8 sphere of equal size.
 - a) Find the volume of the cone.
 - b) Find the radius of one sphere.
6. Draw x and y axis and mark the point (3,5), (9, 5), (5, 7).
 - a) Join the points to form a triangle and find the length of the side parallel to x axis and height from the opposite vertex.
 - b) Find the area of the triangle.
7. Draw a circle of radius 4cm. Construct a triangle with angles 40° , 60° and 80° such that its vertices are points on the circle.
- 8.a) Write the sequence by adding 5 to the multiples of 7.

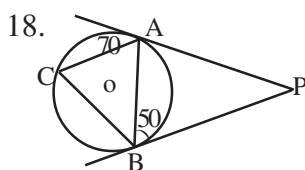
[P.T.O]

- b) Write the algebraic form of the sequence.
 c) Is 670 a term in the sequence. If yes what is its position? If not why.
9. Difference of a positive number and its reciprocal is $7\frac{7}{8}$.
- a) If the number is x what is the reciprocal.
 b) Find the number.
10. Hypotenuse of a right triangle is 10cm and radius of its incircle is 3cm. Draw the figure. Find the area of the triangle.
11. O is the centre of the circle with radius 6cm.
 $PA=4$ cm, $PB=5$ cm. Find the length of OP .



Answer any seven questions from 12 to 21. Each carries 4 marks.[7×4=28]

12. Consider the line $4x-3y-10=0$.
- a) Prove that $(4, 2)$ is a point on this line. Find another point on this line.
 b) Find the slope of this line.
 c) What is the point of intersection of this line with x axis.
13. $P(x)=4x^2-Kx+9$ can be written as the product of two first degree polynomials.
- a) Find the least value of K .
 b) Using this value of K , find the solution of $P(x)=0$.
14. Base perimeter of a square pyramid is 72cm and its volume is 1296cm^3 .
- a) Find its base edge.
 b) Find its height.
 c) Find the lateral surface area of the pyramid.
15.  Co-ordinates of the vertices of triangle ABC are $A(2, 2)$, $B(12, 6)$, $C(4, 16)$. Midpoints of the sides are P, Q, R .
- a) Write the coordinates of the points P, Q, R .
 b) Find the coordinates of the midpoints of the diagonals PQ and BR of the quadrilateral $PBQR$.
 c) Which type of quadrilateral is $PBQR$.
16. Draw a circle of radius 3.5cm and mark a point P , 9cm away from the centre. Draw tangents to the circle from P to the circle. Measure and write the length of the tangents.
17. In triangle ABC , $AB=8$ cm, $BC=10$ cm $\angle B=130^\circ$ Find the area of the triangle.
 ($\sin 50=0.76$, $\cos 50=0.64$, $\tan 50=1.19$)



O is the centre of the circle. PA and PB are tangents. C is a point on the circle.

- a) Find $\angle P$.
 - b) Find the measure of all angles in the triangle ABC.
19. There are two taps to fill water in a tank. If both of them are opened it would take 18 minutes to fill the tank completely. The time taken to fill the tank with only large tap open is 15 minutes less than the time to fill it with only the small tap open. Find the time taken to fill the tank if the small tap only is open.
20. A bag contains 6 red beads and 4 green beads. Another bag contains 2 red and 2 green beads more. The probability of getting red bead from which bag is more.
21. a) Write a sequence of odd numbers greater than 5
 b) Find its algebraic term.
 c) Write the algebraic form of the sequence $\frac{7}{6}, \frac{9}{6}, \frac{11}{6}, \dots$
 d) Prove that there will be no natural numbers in this sequence.

Answer any five from 22 to 28. Each carries 5 marks.

[5×5=25]

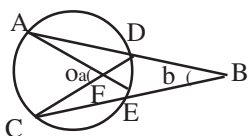
22. Electricity consumption of some houses are given find the median consumption.

Electricity consumption (units)	No. of houses
80-90	3
90-100	6
100-110	5
110-120	10
120-130	9
130-140	4

23. A sphere of radius 6 cm is melted and recasted into 24 cones of radius 3cm each and height equal.
- a) Find the volume of the sphere.
 - b) Find the volume of the cone is h, write the volume of one cone.
 - c) Find the height of one cone.
24. Draw a triangle with sides 6cm, 7 cm and angle between these sides as 50° . Construct the incircle of this triangle.
25. There is a flag post on one shore of a river. A child is watching the top of the flag post from the opposite side of the shore at an angle of elevation 55° . When he observed the top after moving 15mts backward, it was seen at an angle of elevation 40° . [$\tan 55= 1.4$, $\tan 40=0.84$]
- a) Draw the figure.
 - b) Find the height of the flag post.

c) Find the width of the river.

26.



A, C, D, E are points on the circle with centre O. CD and AE meet at F.

$\angle ABC = b$, $\angle AFC = a$

a) If $\angle AOC = x$ then $\angle ADC = \dots\dots\dots$, $\angle AEC = \dots\dots\dots$

b) $\angle CDB = \angle AEB = \dots\dots\dots$

c) $\angle EFD = \dots\dots\dots$

d) $\angle EFD + \angle CDB + \angle AEB + b = \dots\dots\dots$

e) Prove that $a + b = x$.

27. In an arithmetic sequence 6th term is 40 and 9th term is 58.

a) Find its common difference and its first term.

b) Find its 25th term.

c) Find the sum of first 25 terms.

d) Find the sum of first n terms of this sequence.

28. Equation of a line is $y = 2x$.

a) If A is a point on this line with x co-ordinate -2 then find its y co-ordinate.

b) Verify whether a circle of radius 5 centered at A passes through the point B(5, 5).

c) Radius of a circle passing through B is 5 units and its centre is on the above mentioned line. Find the co-ordinates of the centre of this circle.

29. Square of counting numbers and the remainder when they are divided by 4 is given,

Square:	1	4	9	16	25	36	49
Remainder:	1	0	1	0	1	0	1

[6]

a) What are the possible remainders when a counting number is divided by 4.

b) Which numbers are not the remainders when a perfect square is divided by 4.

c) Write the algebraic form of the sequence 7, 11, 15,.....

d) Write the algebraic form of the squares of this sequence.

e) Prove that square of term is not in this sequence.