Brilliant Public School

Seepat Road, Bahatarai, Bilaspur (C.G.)
Final Term Exam – 2017-18
Subject – Mathematics
CLASS-IX

Time: 3:00 Hrs. M.M. 80
Date: 05.03.2018 Monday

General Instructions:

i) All questions are **compulsory**
ii) The question paper consists of **30** questions divided into four **sections-A, B, C and D**. **Section-A** comprises of **6** questions of **1mark** each, **section-B** comprises of **6** questions of **2** marks each, **Section-C** comprises of **10** questions of **3 marks** each, **Section-D** comprises of **8**questions of **4** marks each.
iii) There is no overall choice in this question paper
iv) Use of calculator is not permitted.

SECTION-A (1 mark each)

Q.1 Simplify $(3+\sqrt{3})(2+\sqrt{2})$.

Q.2 Find the zero of the polynomial $p(x)=3x-2$.

Q.3 Find the volume of a sphere whose radius is 0.21cm.

Q.4 where the points (-4,0) and (7,0) will lie?

Q.5 Write the formula for length of diagonal of a cuboid.

Q.6 Write the probability of a certain event.

SECTION-B (2 mark each)

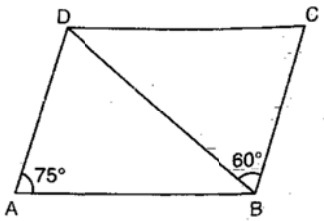
Q.7 The taxi fare in a city is as follows. For the first kilometre, the fare is Rs 8, for the subsequent distance it is Rs 5 per km. Taking the distance covered as x km and the total fare as Rs y, write a linear equation for this information.

Q.8 If a point C lies between two points A and B such that AC=BC, then prove that AC= $\frac{1}{2}$ AB. Explain by drawing the figure.

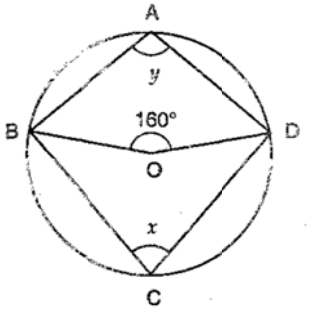
Q.9 Find the area of a triangle two sides of which are 18cm and 10cm and the perimeter is 42cm.

Q.10 The mean of 40 observations was 160. It was detected on rechecking that the value of 165 was wrongly copied as 125 for computation of mean. Find the correct mean.

Q.11 ABCD is a parallelogram in which $\angle DAB=75^0$ and $\angle DBC=60^0$. Compute $\angle CDB$ and $\angle ADB$.



Q.12 In the given figure, O is the centre of the circle. If $\angle BOD = 160^0$, find the values of x and y.



SECTION-C (3 mark each)

Q.13 Visualise $4.\overline{26}$ on the number line, up to 4 decimals places

Q.14 Factorise the expression by splitting the middle term:

$9(x-2y)^2 - 4(x-2y) - 13.$

Q.15 If the polynomials $2x^3 + ax^2 + 3x - 5$ and $x^3 + x^2 - 4x + a$ leaves the same remainder when divided by $x-2$, find the value of a.

Q.16 A conical tent is 10m high and the radius of its base is 24m. Find

i. slant height of the cone.

ii. cost of the canvas required to make the tent, if the cost of 1 m^2 canvas is ` 70.

Q.17 Plot the points (2, 0), (2, 3), (0, 6), (-2, 3) and (-2, 0) and join them in order. Find the type of figure thus formed.

Q.18 Sanya has a piece of land which is in the shape of a rhombus. She wants her one daughter and one son to work on the land and produce different crops to donate to an old age home. She divided the land in two equal parts. If the perimeter of the land is 400 m and one of the diagonals is 160 m, how much area each of them will get for their crops? What values of Sanya are shown here?

Q.19 Three coins are tossed simultaneously 200 times with the following frequencies of different outcomes:

Outcome	3 heads	2 heads	1 head	No head
Frequency	23	72	77	28

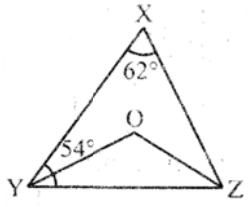
If the three coins are simultaneously tossed again, compute the probability of

i. 2 heads coming up.

ii. Atleast 2 heads coming up.

iii. 2 tails coming up.

Q.20 In the given figure $\angle X = 62^o, \angle XYZ = 54^o$. If YO and ZO are the bisectors of $\angle XYZ$ and $\angle XZY$ respectively of ΔXYZ, find $\angle OZY$ and $\angle YOZ$.

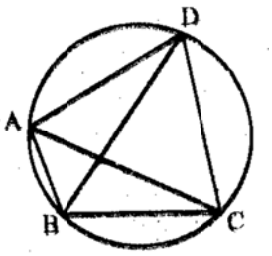


Q.21 Diagonals AC and BD of a trapezium ABCD with AB is parallel to DC intersect each other at O. Prove that ar (AOD) = ar(BOC).

Q.22 A circular park of radius 20m in situated in a colony. Three boys ankur, syed and david are sitting at equal distance on its boundary each having a toy telephone in his hands to talk to each other. Find the length of string of each phone.

OR

In the given figure ABCD is a cyclic quadrilateral in which AC and BD are its diagonals. If $\angle DBC = 55^0$ and $\angle BAC = 45^0$, find $\angle BCD$.



SECTION-D (4 mark each)

Q.23 If $x = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ and $y = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$, find $x^2 + y^2$.

OR

If $x^4 + \frac{1}{x^4} = 47$. Find the value of $x^3 + \frac{1}{x^3}$.

Q.24 Expand using suitable identity:

(a) $(x + 4)(x + 10)$ (b) $(2x - y + z)^2$

Q.25 Draw the graph of the equation $x + 2y - 3 = 0$, from the graph, find:

(a) The value of x, when $y = 3$
(b) The value of y, when $x = 2$

Q.26 Find

i. The lateral or curved surface area of a closed cylindrical petrol storage tank that is 4.2m in diameter and 4.5m high.

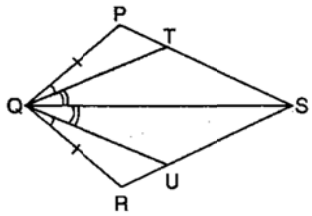
ii. How much steel was actually used, if $\frac{1}{12}$ of the steel actually used was wasted in making the tank.

Q.27 100 surnames were randomly picked from a local telephone directory and a frequency distribution of the number of letters in the English alphabet in the surnames was found as follows:

Number of letters	Number of surnames
1 - 4	6
4 – 6	30
6 – 8	44
8 – 12	16
12 – 20	4

i. Draw a histogram to depict the given information.
ii. Write the class interval in which the maximum number of surnames lie.

Q.28 In the given figure, PQRS is a quadrilateral and T and U are respectively points on PS and RS such that PQ = RQ. $\angle PQT = \angle RQU$ and $\angle TQS = \angle UQS$. Prove that QT = QU.



Q.29 Prove that the line segment joining the mid points of any two sides of a triangle is parallel to the third side and equal to half of it.

Q.30 Construct a triangle XYZ in which $\angle Y = 30^{o}, \angle Z = 90^{o}$ and $XY + YZ + ZX = 11$cm.

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