CBSE

ANNUAL EXAMINATION (2019-20)

SUBJECT: MATHEMATICS (SET-1)

CLASS: IX **MAXIMUM MARKS: 80**

DATE: 27/01/2020 **TIME ALLOWED : 3 HOURS**

General Instructions :

(i) The question paper comprises of four sections, A, B, C, and D.
(ii) All questions are compulsory.
(iii) Internal choices are given in Section B, C &D .
(iv) Question 1 to 20 in Section-A carry 1marks each. Question 21 to 26 in section B carry 2 marks. Question 27 to 34 in Section-C carry 3 marks. Question 35 to 40 in Section-D carry 4 marks.
(v) Use of calculator or any other electronic device is not allowed.

SECTION :A (Each question carries 1 mark)

Q1.Which of the following is an irrational number :-

a) $\sqrt{\frac{9}{16}}$ b) $\frac{\sqrt{20}}{\sqrt{5}}$ c) $\sqrt{3}$ d) $\sqrt{49}$

Q2. One of the factors of $(25x^2 - 1) + (1 + 5x)^2$

a) $5+x$ b) $5-x$ c) $5x-1$ d) None

Q3. Which of the following points lie on negative side of x axis

a) (-4,0), b) (-3,2) c) (0, -4) d) None

Q4. Lines are parallel if they do not intersect is stated in the form of

a) An axiom b) A definition c) A postulate d) a proof .

Q5. An exterior angle of a triangle is 105° and it's two interior opposite angles are equal . Each of equal angle is

a) 37.5° b) 52.5° c) 72.5° d) 75°

Q6. D is a point on the side BC of Δ ABC such that AD bisects ∠BAC then

a) BD = CD b) BA > BD c) BD > BA d) CD > CA

Q7. Area of an isosceles triangle having base 2 Cm and length of equal sides 4 Cm is

a) $\sqrt{15}\ cm^2$ b) $\sqrt{\frac{15}{2}}\ cm^2$ c) $2\sqrt{15}\ cm^2$ d) $4\sqrt{15}\ cm^2$

Q8. A chord of a circle is equal to radius of circle . Then angle subtended at circumference on major arc is

a) 60° b) 120 ° c) 150 ° and d) 30°

Q9. The height of a right circular cone is 12 Cm . If its volume be 100π Cu.Cm. Then slant height is

a) 10Cm b) 11Cm c) 13 Cm d) 12 Cm

Q10. If the mean of the data 6,8,10,3,7 and m is 7 then the value of m is

a) 7 b) 8 c) 6 d) 9

Fill up :-

Q11.In Δ ABC ∠ A= 100° , AB = AC , then ∠B = ___ and ∠C = _____

Q12. Given two distinct points there is a _____ line that passes through them.

Q13. 3.77... when expressed in $\frac{p}{q}$ is _____

Q14. The value of K so that (x^2 -2x + K) leaves remainder 3 when divided by (x + 1) is _____

Q15. Area of triangle , two sides of which are 18 Cm and 10 Cm and perimeter is 42 Cm is _____

Solve

Q16. The sides of a triangle are in the rate 5: 4 : 3 if perimeter is 96 Cm , using Heron's formula , find area of triangle .

Q17. Insert a rational number and an irrational number between $\frac{-2}{5}$ and $\frac{1}{2}$.

Q18. Simplify $\frac{\sqrt{7}+\sqrt{2}}{3+2\sqrt{14}}$.

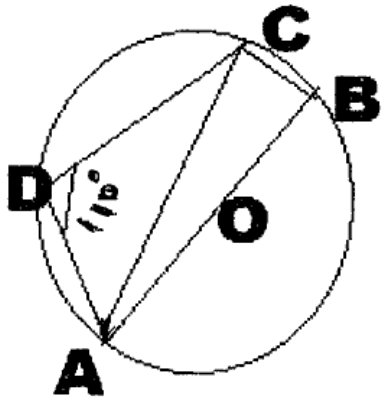
Q19. Mean of 11 numbers is 23. If 5 is added in every number find new mean .

Q20. The lateral surface area of cube is $256m^2$, what is the volume of the cube .

SECTION B(Each question carries 2 marks)

Q21.Factorise $64m^3 - 343n^3$

Q22. In the given fig. AB is the diameter. Find ∠BAC.



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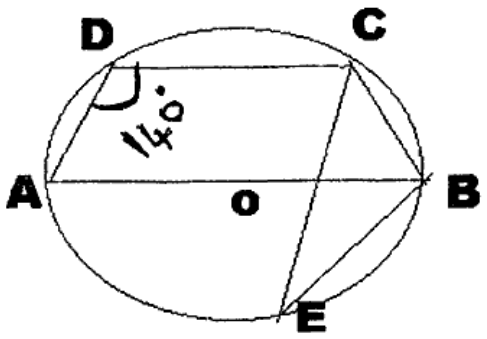
(OR)



In the given fig, ∠ADC = 140° and chord BC = chord BE. Find ∠CBE

Q23. Find the radius of a sphere whose surface area is 154cm²

(OR)

A river 3m deep and 40m wide is flowing at the rate of 2km/hr. How much water will fall into the sea in a minute?

Q24. Construct an angle of 45° and bisect it

Q25. If the mean of the following distribution is 6, find the value of 'p'

x_i	2	4	6	10	P+5
f_i	3	2	3	1	2

Q26. In one day cricket match, a batsman hits the boundaries 8 times and sixes 4 times out of 60 balls he plays. Find the probability that he i) hits boundaries ii) he hits sixes.

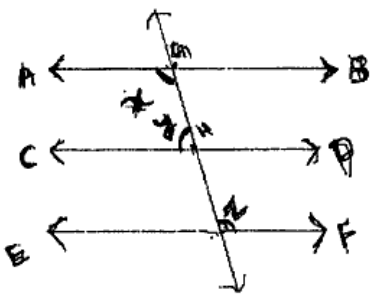
SECTION C(Each question carries 3 marks)

Q27.Factorise $x^3 + 13x^2 + 32x + 20$

Q28.Plot the points (1,1) (2, −2) and (−1, −2) on a graph paper and find the area of the figure so obtained.

Q29.A lending library has a fixed charge for the first four days and an additional charges each day there after. Manan paid Rs. 50 for a book kept for 9 days. Write a linear equation of this statement in two variables and draw a graph.

Q30.In the figure if ABIICD, CDIIEF and y:z = 3:7, find x



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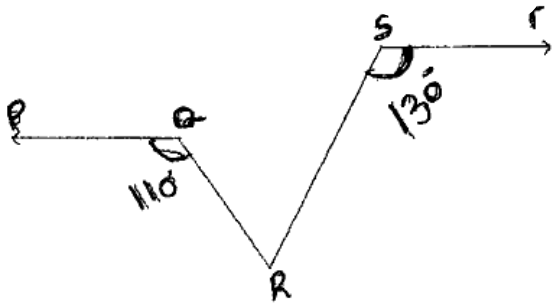
(OR)

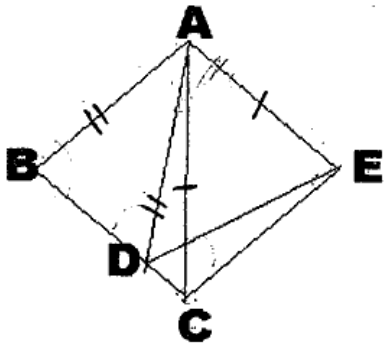


IF PQIIST, ∠PQR = 110° and ∠RST = 130° then find ∠QRS

Q31. Prove that the sum of any two sides of a triangle is greater than twice the median with respect to third side.

(OR)

In the figure AC=AE, AB=AD and ∠BAD = ∠EAC. Show that BC = DE

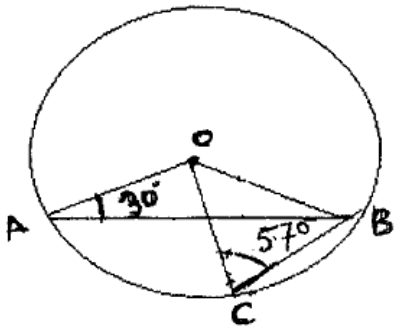


Q32.The area of a trapezium is 475cm² and the height is 19cm. Find the length of its parallel sides, if one side is 4cm greater than the other.

Q33. Prove that a cyclic parallelogram is a rectangle.

(OR)

In the given figure ∠OAB = 30° , ∠OCB = 57°, find ∠BOC, ∠AOC



Q34. Construct a triangle ABC in which $\angle B = 60°$, $\angle C = 45°$ and AB + BC + CA = 11cm.

SECTION :D (Each question carries 4 marks)

Q35. If $x = \frac{\sqrt{a+2b} + \sqrt{a-2b}}{\sqrt{a+2b} - \sqrt{a-2b}}$ prove that $bx^2 - ax + b = 0$

Q36. Prove that the angle subtended by an arc at the centre is double the angle subtended by it at any point on the remaining part of circle .

Q37.If a triangle and a parallelogram are on the same base and between the same parallels then area of the triangle is equal to half the area of parallelogram . Prove

Q38. ABCD is a trapezium in which AB is parallel to CD and AD = BC . Show that $\angle A = \angle B$, $\angle C = \angle D$, Δ ABC congruent to Δ BAD and AC = BD

(OR)

ABC is a triangle right angled at C . A line through the mid- point M of the Hypotenuse AB and parallel to BC intersect AC at D . Show that D is the mid- point of AC, MD is perpendicular to AC and CM = MA= $\frac{1}{2}$AB

Q39.A cloth having a area of 165 $m^2$is shaped into the form of conical tent of radius 5 m. How many students can sit in the tent if a student on an average occupies $\frac{5}{7}m^2$ on the ground . Also find the volume of cone .

(OR)

A factory manufactures 120000 pencils daily . Pencils are cylindrical in shape each of length 25 cm and circumference is 1.5 cm . Determine the cost of coloring the curved surfaces of pencils manufactured in one day at Rs. 0.05 per dm^2.

Q40. In a city the following weekly observations were made in a student on cost of living index of year 1970-71.

Cost of Living Index	No of weeks
140-150	5
150-160	10
160-170	20
170-180	9
180-190	6
190-200	2

Draw a histogram and frequency polygon on same scale.

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