**JNV**

**PERIODIC WRITTEN TEST : 3 SESSION 2019-20**

**MATHEMATICS**

**Class : X**

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| Roll No:X | Time: |
| Date : | MM :50 |

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| 1 | If cos (40° + x) = sin 30°, find the value of x. | 1 |
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| 2 | The angle of elevation of the top of a tower from a point 20 metres away from the base is 45°. Find the height of the tower. | 1 |
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| 3 | What is the perimeter of a sector of angle 45° of a circle with radius 7 cm? C:\fake\image1.png | 1 |
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| 4 | Find the radius of a sphere whose surface area is 154 cm2. | 1 |
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| 5 | Two cylindrical cans have equal base areas. If one of the can is 15 cm high and other is 20 cm high, find the ratio of their volumes. | 1 |
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| 6 | Find the class marks of classes 10 – 25 and 35 – 55. | 1 |
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| 7 | Without using the trigonometric tables, evaluate C:\fake\image2.png | 2 |
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| 8 | Prove the following identity : C:\fake\image3.png= sec θ . cosec θ + cot θ | 2 |
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| 9 | A paper is in the form of a rectangle ABCD in which AB = 20 cm and BC = 14 cm. A semicircular portion with BC as diameter is cut off. Find the area of the remaining part. [Use C:\fake\image4.png = 22/7]  C:\fake\image5.png | 2 |
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| 10 | Given that the mean of five numbers is 27. If one of the numbers is excluded, the mean gets reduced by 2. Determine the excluded number. | 2 |
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| 11 | Evaluate without using trigonometric tables :  C:\fake\image6.png | 3 |
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| 12 | A man rowing a boat away from a lighthouse 150 m high takes 2 minutes to change the angle of elevation of the top of lighthouse from 45° to 30°. Find the speed of the boat. (Use C:\fake\image7.png= 1.732) | 3 |
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| 13 | The angle of elevation of the top of a vertical tower from a point on the ground is 60°. From another point 10 m vertically above the first, its angle of elevation is 30°. Find the height of the tower. | 3 |
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| 14 | Find the area of the segment of a circle of radius 14 cm, if the length of the corresponding arc APB is 22 cm. [Use C:\fake\image8.png= C:\fake\image9.png] | 3 |
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| 15 | In fig., the shape of the top of a table in restaurant is that of a sector of a circle with centre O and C:\fake\image10.pngBOD = 90°, if BO = OD = 60 cm find: (i) the area of the top of the table (ii) the perimeter of the table top. [Take C:\fake\image11.png= 3.14]  C:\fake\image12.png | 3 |
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| 16 | A solid iron rectangular block of dimensions 4.4 m, 2.6 m and 1 m is cast into a hollow cylindrical pipe of internal radius 30 cm and thickness 5 cm. Find the length of the pipe. | 3 |
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| 17 | Find the mode of the following distribution: C:\fake\image13.png | 3 |
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| 18 | Cards numbered 1 to 30 are put in a bag. A card is drawn at random from this bag. Find the probability that the number on the drawn card is (i) not divisible by 3. (ii) a prime number greater than 7. (iii) not a perfect square number. | 3 |
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| 19 | A rectangular water reservoir is 10.8 m by 3.75 m at the base. Water flows into it at the rate of 18 m/s through a pipe having the cross section 7.5 cm × 4.5 cm. Find the height to which the water will rise in the reservoir in 30 minutes. | 4 |
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| 20 | Draw ‘less than ogive’ and ‘more than ogive’ for the following distribution and hence find its median. C:\fake\image14.png | 4 |
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| 21 | A card is drawn at random from a well-shuffled deck of playing cards. Find the probability that the card drawn is (i) a card of spade or an ace (ii) a red king (iii) neither a king nor a queen (iv) either a king or queen. | 4 |
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