TARGET : CBSE-2017 (SA-2)

Full Syllabus Test-2017

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Class -10th
MATHEMATICS

SA-2

FST # 01

FOR SURE SHOT SUCCESS IN CBSE-2017
(BASED ON LATEST CBSE PATTERN)

Time: 3 Hrs.

MM. 100

General Instructions:

(i) **All** questions are compulsory.

(ii) This question paper contains **31** questions.

(iii) Question 1- 4 in **Section A** are of **1** mark each.

(iv) Question 5-10 in **Section B** are of **2** marks each.

(v) Question 11-20 in **Section C** are of **3** marks each.

(vi) Question 21-31 in **Section D** are of **4** marks each.

Questions 1-4 Carrying One Mark Each

1. A card is drawn from a pack of 52 playing cards, then find the probability of getting ' a heart' or '2'

2. If the perimeter of a circle is equal to 4-times that of a square, then find the ratio of their areas.

3. The midpoint of the line segment AB is the point (4,0). If the coordinates of point A are (3,-2). Then find the coordinates of the point B.

4. A solid sphere of the radius 6cm is melted and recast into spherical balls of 2cm radius. Find the number of the balls made.

Questions 5-10 Carrying 2 Marks Each

5. Find a point on X-axis which is equidistant from the points A(2, -2) and B (-2,- 3).

6. Solve the quadratic equation in x : $6a^2 x^2 - 7abx - 3b^2 = 0$, $(a \neq 0)$

   Or

   In an A.P. the first term is 22 , n^{th} term is -11 and S_n is 66. Find number of terms and common difference.

7. A glass cylinder with diameter 20cm has water to a height of 9cm. A metal cube of 8cm edge is immersed in it completely. Calculate the height by which water will rise in the cylinder.

8. One card is drawn from a well shuffled deck of 52 playing cards. Find the probability of getting

   (i) a face card   (ii) a black king or a red jack

9. A solid hemispherical at the bottom and conical above it. whose total height is 24cm and radii of both are 3cm each. Find the volume of solid.

10. Circumference of the edge of a hemispherical bowl is 132cm. Find the capacity of the bowl.

Questions 11-20 Carrying 3 Marks Each

11. The sum of the squares of two consecutive natural numbers is 421. Find the numbers.

OR

If the sum of all terms of the AP $-4, -1, 2, 5, \ldots\ldots, x$ is 437, find x.

12. The sum of first six terms of an A.P is 42 . The ratio of its 10th term & 30th is 1:3. Calculate the first & 13th term of the A.P.

13. From the top of a 100m high building the angles of the depression of the top and bottom of the tower are observed to be 45° and 60°. Calculate the height of the tower.

14. A toy is in the form of hemisphere surmounted by a right circular cone of same radius as that of hemisphere .If the radius of the cone is 21cm and its volume is $\frac{2}{3}$ of the volume of the hemisphere, calculate the height of the cone and surface area of the toy.

15. Construct a $\triangle$ ABC with sides CA=6cm,AB=5cm $\angle$ ABC= 45° , then construct a triangle similar to ABC whose sides are 6/5 times the corresponding sides of triangle ABC .

16. In the given figure, ΔPQR is an equilateral triangle of side 8 cm and P, Q, R are centres of circular arcs, each of radius 4 cm. Find the area of shaded region. (Use π =3.14 and $\sqrt{3}$ =1.732)
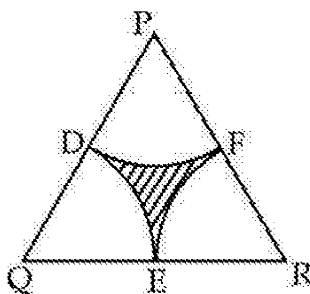
17. Find the sum of all 3-digit numbers which leave the remainder 3 when divided by 5.

18. The line segment joining the points P(2,1) and Q(5,-8) is divided by the points A such that $\frac{PA}{PQ} = \frac{1}{3}$

If A lies on the line given by 2x+y+k=0 , find the value of k.

19. A pair of dice is rolled once. Find the probability of getting a sum of 10 on both dice.

20. Which term of the sequences 114,109,104 ………is the first negative term?

Questions 21-31 Carrying 4 Marks Each

21. Prove that the parallelogram circumscribing a circle is a rhombus.

22. Using A (4,-6), B(3,-2) and C(5,2),verify that a median of the triangle ABC divides it into two triangles of equal areas.

23. In fig. 4, circle with centre O touches the side BC of $\triangle ABC$ at Q and sides AB and AC are produced at P and R respectively.

    Show that AP = $\frac{1}{2}$ perimeter of $\triangle ABC$.

fig. 4
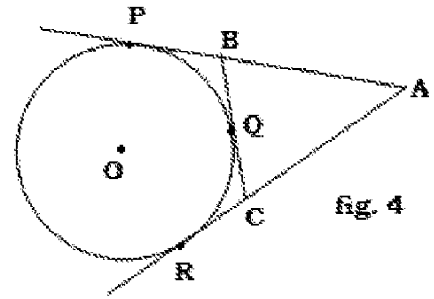
24. A passenger train takes a 2 hour less for a journey of 300km, it its speed is increased by 5km/h from its usual speed. Find its usual speed.

    OR

    A motor boat, whose speed is 15km/h in still water, goes 30km down stream and comes back in a total of 4 hours and 30 minutes. Determine the speed of streams.

25. The internal and external diameters of hollow hemispherical vessel are 16cm and 12cm respectively. If the cost of painting 1cm^2 of the surface area is Rs 5.00, find the total cost of painting the vessel all over.   (use π = 3.14)

    OR

    A Solid is composed of a cylinder with hemispherical ends. If the whole length of solid is 100 cm and diameter of the hemispherical ends is 28cm. Find the cost of polishing the surface of the solid at the rate of 5 paise per square cm. (use $\pi = \frac{22}{7}$)

26. The angle of elevation of a jet fighter from point A on ground is 60^0. After a flight of 10 seconds, the angle changes to 30^0. If the jet is flying at a speed of 648 km/hour, find the constant height at which the jet is flying.

27. A solid iron pole consists of a cylinder of height 220 cm and base diameter 24 cm is surmounted by another cylinder of height 60 cm and radius 8 cm. Find the mass of the pole, given that 1 cm^3 of iron has approximately 8 g mass. (use π = 3.14)
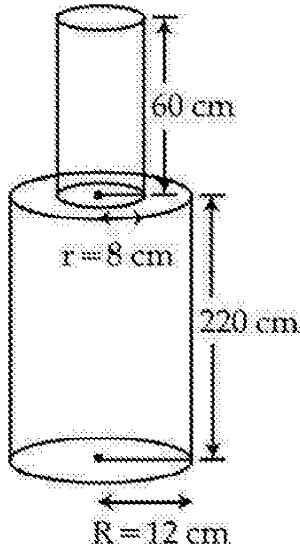
28. A two digit number is such that the product of its digits is 18. When 63 is subtracted from the number, the digits interchange their places. Find the number.

29. From a window (60 m high above the ground) of a house in a street, the angles of elevation and depression of the top and the foot of another house on opposite side of the street are 60^0 and 45^0 respectively. Find the height of the opposite house. [Given that $\sqrt{3}$ =1.73]

30. If *l* and m are two parallel tangents at A and B. The tangent at C makes an intercept DE between *l* and m. Prove that $\angle DEF = 90^0$.
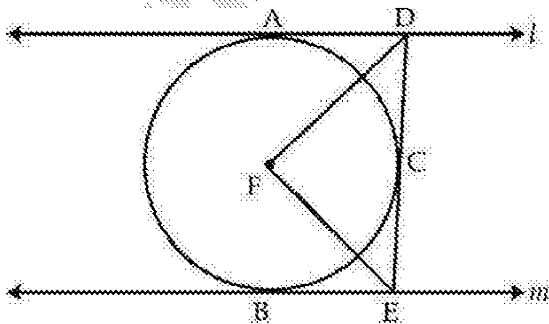
31. A donor agency ensures milk is supplied in containers, which are in the form of a frustum of a cone to be distributed to flood victims in a camp. The height of each frustum is 30 cm and the radii of whose lower and upper circular ends are 20 cm and 40 cm respectively. . If this milk is available at the rate of Rs.35 per litre and 880 litres of milk is needed daily for a camp.

(a) Find how many milk containers are needed daily for the camp.

(b) What daily cost will it put on the donor agency?

(c) What value of the donor agency is depicted in this situation?