Summative Assessment II - (2015 - 16)   Code.- **KJ3SDZ0**
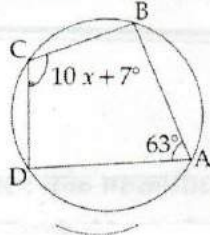
HOLY MISSION HIGH SCHOOL

MATHEMATICS   Class – IX

Time allowed : 3 hours   **Maximum Marks : 90**

खण्ड-अ / SECTION-A

Question numbers **1** to **4** carry **one** mark each.

1. A circle passes through A,B,C and D as shown in the figure. If $\angle BAD = 63°$, find x.   1

2. Compute the curved surface area of a hemisphere whose diameter is 14 cm.   1

3. The mean of the set of numbers 6, 3, x, 4, 3, 5 and y is given as 5. What is the value of $x+y$?   1

4. Find the range of first 5 odd composite numbers.   1

Question numbers **5** to **10** carry **two** marks each.   खण्ड-ब / SECTION-B

5. ABCD is parallelogram and O is the point of intersection of its diagonals. If ar ($\triangle AOD$) = 4 cm^2, find ar ($\triangle AOB$).   2
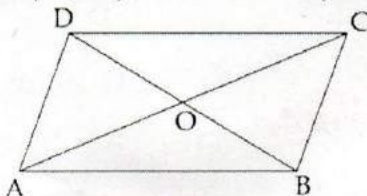
6. Construct $\angle POY = 30°$, using compass and ruler.   2

7. If one angle of a parallelogram is twice of its adjacent angle, find the angles of the parallelogram.   2

8. The volume of a cone with circular base is 216 π cm^3. If the base radius is 9 cm, then find the height of the cone.   2

9. A die is rolled a number times and its outcomes are recorded as below :   2

Outcome	1	2	3	4	5	6
Frequency	35	45	50	38	53	29

Find the probability of getting an odd number.

10. 1500 families were surveyed and following data was recorded about their maids at homes :   2

Types of maids	Only part - time	Only full time	Part time and full time	None
Nos. of maids	860	370	250	20

A family is selected at random. Find the probability that the family selected has :

(a) both types of maids   (b) has part – time maid

Question numbers 11 to 18 carry three marks each.

11. If the mean of 5 observations x, $x + 4$, $x + 8$, $x + 12$ and $x + 16$ is 13, then find the observations. 3

12. A company manufactures car tyres of a particular type. The lives (in years) of 40 such tyres are as follows: 3

2.6, 3.0, 3.7, 3.2, 2.2, 4.1, 3.5, 4.5, 3.5, 2.3, 3.2, 3.4, 3.8, 3.2, 4.6, 3.7, 2.5, 4.4, 3.4, 3.3, 2.9, 3.0, 4.3, 2.8, 3.5, 3.2, 3.9, 3.2, 3.2, 3.1, 3.7, 3.4, 4.6, 3.8, 3.2, 2.6, 3.5, 4.2, 2.9, 3.6

Construct a continuous grouped frequency distribution for the above data of equal class size and with first class interval as 2-2.5, (2.5 is not included)

13. In ΔDEF, M and N are mid – points of sides EF and DE respectively. If ar $(\Delta EMN) = 4$ cm^2, find ar (ΔDEF). 3

14. Two equal chords PQ and RS of a circle with centre O, when produced meet at a point M as shown in the figure. Prove that QM = SM 3
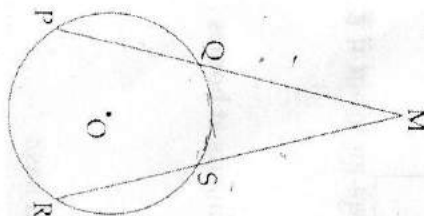
15. Construct an isosceles triangle whose base is of length 8 cm and corresponding altitude is of length 4 cm. Write steps of construction. 3

16. Lines are drawn through vertices P, Q and R of a ΔPQR which are parallel to the sides QR, PR and PQ, and form a ΔABC as shown in figure. Show that the perimeter of ΔPQR is equal to half the perimeter of ΔABC. 3
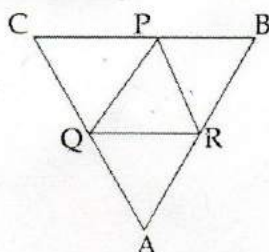
17. Construct a triangle whose angles are in the ratio 1 : 3 : 5 and length of side included by first two angles is 6 cm. 3

18. The radius and height of a cylinder are in the ratio 5 : 7. If its volume is 4400 cm^3, find the radius of the cylinder. 3

Question numbers 19 to 28 carry four marks each. **SECTION-D**

19. Without drawing a histogram, construct a frequency ploygon for the given frequency distribution: 4

Class Interval	0-10	10-20	20-30	30-40	40-50
Frequency	50	40	45	25	5

21. A pair of opposite sides of a cyclic quadrilateral is equal. Prove that the other pair is parallel and its a diagonals are also equal. 4

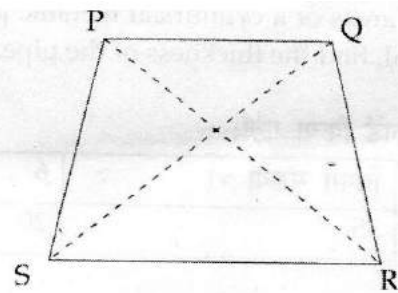22. Construct ΔKLM, if its perimeter is 10.5 cm, $\angle L = 120°$ and M = 30°. 4

20
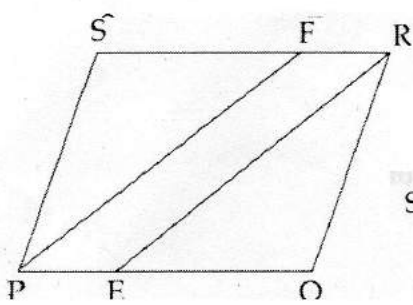
PQRS is a parallelogram. E is a point on PQ such that QE = 2 PE and F is a point on RS such that 2 RF = SF.

Show that PERF is a parallelogram and ar(PERF) = $\frac{1}{3}$ ar(PQRS)

4

23

In the figure, PQRS is a trapezium in which PQ∥RS and PS = QR. Show that

(i) $\triangle PQR \cong \triangle QPS$
(ii)   PR = QS

4

24 Roof top of a house in a village is rectangular shaped of dimensions 22 m by 20 m. The owner of house has connected drain of roof top with a cylindrical vessel on ground through a circular pipe so that the whole rain water collected on the roof top can be stored in a cylindrical vessel. The radius of the cylindrical vessel is 2 m. A certain day recorded rainfall of 5 cm.

(a)   Find the height of water filled in the cylindrical tank.
(b)   Find the volume of water filled in the cylindrical tank.
(c)   Which moral value is depicted in this problem ? (Use $\pi = \frac{22}{7}$)

4

25 An cuboidal box of external dimensions 84 cm by 64 cm by 17 cm (open from the top) is made up of wood of thickness 2 cm. Find the :

(a)   volume of the inner cuboid.   (b)   outer lateral surface area.

4

26 Find the mass of a solid cone whose base is of diameter 14 cm and vertical height is 51 cm, supposing that the material of which it is made has density 20 g per cm^3. Also find curved surface area of the cone.

4

27 The difference between outside and inside curved surface areas of a cylindrical metallic pipe 28 cm long is 88 cm^2. If the pipe is made of 198 cm^3 of metal, find the thickness of the pipe.

4

28 A die is tassed 120 times and the outcomes are recorded as follows :

Outcomes	1	even no < 6	odd no > 1	6
Frequency	25	40	35	20

Find the probability of getting :

(a)   an even number   (b)   an odd number greater than 1.   (c)   getting 1

4

Open Text   SECTION-E

(* Please ensure that open text of the given theme is supplied with this question paper.)

Theme : Childhood Obesity in India

29   BMI को x और वजन को y kg मानकर एक रैखिक समीकरण लिखिए जिसमें ऊँचाई 170 cm है। आलेख भी   3
खींचिए।

Taking the height as 170 cm, form a linear equation in two variables taking BMI as x and weight as y kg.

30   रीना को अनुभव हुआ कि उसका वजन थोड़ा अधिक हो गया है, इसलिए उसने अपने लिए शारीरिक सक्रियाओं की   3
योजना बनाई। वह एक दिन में 300 कैलोरी जलाना (खर्च करना) चाहती है। उसने दौड़ना और घर के कार्यों को
चुना तथा योजना बनाई कि वह 't' मिनट दौड़ने में तथा 'h' मिनट घर के कार्यों में लगाएगी। इसके लिए एक रैखिक
समीकरण लिखिए और आलेख खींचिए।

Reena realized that she is getting overweight so she planned a physical regime for herself. She wants to burn 300 calories in a day. She chooses jogging and home activities for the same and plans to spend 't' in running and 'h' minutes for home activities. Write the linear equation for the same and draw the graph.

31   समोसे में फ्रेंच फ्राइस की अपेक्षा आधी कैलोरी होती हैं। समोसे और फ्रेंच फ्राइस में कुल कैलोरी की संख्या 450 है।   4
इसके लिए एक रैखिक समीकरण लिखिए और आलेख भी खींचिए।

Samosa contain half as many calories as they are in one French fries. Total calories in French fries and Samosa is 450. Set up an linear equation for the same and draw its graph also.

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