ONE MARK & TWO MARKS SPECIAL TEST, 2011 - 2012

STANDARD X

Reg. No. | | | | | | |

Time : 1.30 hrs. **MATHEMATICS** **[Marks : 75**

[Sequences and series of Real Numbers (34–67), Mensuration (219–248)]

PART – I **25X1=25**

Note: Answer ALL the questions. Choose the correct answer and write the alphabet only :

1. The 8^{th} term of the sequence 1,1,2,3,5,8, . . . is
   a) 25 b) 24 c) 23 d) 21
2. If a,b,c,l,m are in A.P., then the value of a – 4b + 6c – 4l + m is
   a) 1 b) 2 c) 3 d) 0
3. If a,b,c are in A.P. then $\frac{a-b}{b-c}$ is equal to
   a) $\frac{a}{b}$ b) $\frac{b}{c}$ c) $\frac{a}{c}$ d) 1
4. If the sequence a_1,a_2,a_3, . . . is in A.P., then the sequence a_5,a_{10},a_{15}, . . . is
   a) a G.P. b) an A.P. c) neither A.P. nor G.P. d) a constant sequence
5. In an A.P. if $5t_5 = 8t_8$ then t_{13} is
   a) 0 b) 4 c) 8 d) 12
6. If k + 2, 4k – 6, 3k – 2 are the three consecutive terms of an A.P., then the value of 'k' is
   a) 2 b) 3 c) 4 d) 5
7. The sequence – 3 , – 3 , – 3, . . . is
   a) an A.P. only b) a G.P.only c) neither A.P.nor G.P. d) both A.P.and G.P.
8. If the product of the first four consecutive terms of a G.P. is 256 and if the common ratio is 4 and the first term is positive, then its 3rd term is
   a) 8 b) $\frac{1}{16}$ c) $\frac{1}{32}$ d) 16
9. In a G.P. $t_2 = \frac{3}{5}$ and $t_3 = \frac{1}{5}$. Then the common ratio is
   a) $\frac{1}{5}$ b) $\frac{1}{3}$ c) 1 d) 5
10. The common ratio of the G.P. a^{m-n}, a^m,a^{m+n} is
    a) a^m b) a^{-m} c) a^n d) a^{-n}
11. In a G.P. 'a' is the first term and r = 1 then the value of S_n is
    a) $(na)^2$ b) na^2 c) na d) an^2
12. If 1 + 2 + 3 + . . . + n = k then $1^3 + 2^3 + . . . + n^3$ is equal to
    a) k^2 b) k^3 c) $\frac{k(k+1)}{2}$ d) $(k+1)^3$
13. If n is the number of sides of a polygon then the sum of the interior angles of a polygon is
    a) $(n-2)\,180^o$ b) $180^o n$ c) $(n-1)\,90^o$ d) $(n+2)\,180^o$
14. Base area of a right circular cylinder is $80cm^2$. If its height is 5 cm, then the volume is equal to
    a) 400 cm^3 b) 16 cm^3 c) 200 cm^3 d) $\frac{400}{3}$ cm^3
15. The curved surface area of a right circular cylinder whose radius is 'a' units and height is 'b' units, is equal to (sq.units)
    a) $\pi a^2 b$ b) $2\pi ab$ c) 2π d) 2
16. Radius and height of a right circular cone and that of a right circular cylinder are equal. If the volume of the cylinder is 120 cm^3, then the volume of the cone is equal to
    a) 1200 cm^3 b) 360 cm^3 c) 40 cm^3 d) 90 cm^3
17. If the diameter and height of a right circular cone are 12cm and 8cm respectively, then the slant height is
    a) 10 cm b) 20 cm c) 30 cm d) 96 cm
18. If the circumference at the base of a right circular cone and the slant height are 120π cm and 10 cm respectively, then the curved surface area of the cone is equal to
    a) 1200π cm^2 b) 600π cm^2 c) 300π cm^2 d) 600 cm^2
19. A sector of radius 20cm is folded into a cone of radius 5 cm. Its curved surface area is (sq.cm)
    a) 25 b) 15 c) 100 d) 4

20. If the volume of a sphere is $\frac{9}{16}\pi$ cu.cm, then its radius is

    a) $\frac{4}{3}$ cm b) $\frac{3}{4}$ cm c) $\frac{3}{2}$ cm d) $\frac{2}{3}$ cm

21. If the surface area of a sphere is 100π cm^2, then its radius is equal to

    a) 25 cm b) 100 cm c) 5 cm d) 10 cm

22. The circumference of the edge of a hemispherical bowl is 132 cm. It's radius is (cm)

    a) 66 b) 40 c) 21 d) 10.5

23. If the total surface area of a solid hemisphere is 12π cm^2 then its curved surface area is equal to

    a) 6π cm^2 b) 24π cm^2 c) 36π cm^2 d) 8π cm^2

24. Curved surface area of solid sphere is $24cm^2$. If the sphere is divided into two hemispheres, then the total surface area of one of the hemispheres is

    a) $12cm^2$ b) 8 cm^2 c) $16cm^2$ d) $18cm^2$

25. The ratios of the respective heights and the respective radii of two cylinders are 1:2 and 2:1 respectively. Then their respective volumes are in the ratio

    a) 4:1 b) 1:4 c) 2:1 d) 1:2

PART – II

Note: Answer ALL the questions : **25X2=50**

1. If $F_1 = F_2 = 1$ and $F_n = F_{n-1} + F_{n-2}$ for n = 3,4,5, . . . find F_3 and F_4.
2. If $a_1, a_2, a_3, \ldots$ are in A.P. such that $\frac{a_4}{a_7} = \frac{3}{2}$, then find the 13^{th} term of the A.P.
3. If the n^{th} term of an A.P. is $t_n = 3 - 5n$, then find the sum of the first n terms.
4. Prove that 3m – 1, 3m – 3, 3m – 5, . . . forms an A.P.
5. In a flower garden, there are 23 rose plants in the first row, 21 in the second row, 19 in the third row and so on. There are 5 rose plants in the last row. How many rows are there in the flower garden ?
6. Three numbers are in the ratio 2:5:7. If 7 is subtracted from the second, the resulting numbers form an arithmetic sequence. Determine the numbers.
7. Find the 12^{th} term of the A.P. $\sqrt{2}, 3\sqrt{2}, 5\sqrt{2}, \ldots$
8. Prove that $\sqrt{2}, \frac{1}{\sqrt{2}}, \frac{1}{2\sqrt{2}}$ . . . . . forms a G.P. find its common ratio.
9. The fifth term of a G.P. is 1875. If the first term is 3, find the common ratio.
10. Which term of the G.P. 1,2,4,8, . . . is 1024 ?
11. In a G.P. if a = 2400, r = – 3 and n = 5 find S_5.
12. Find the value of 'k' if $1^3 + 2^3 + 3^3 + \ldots + k^3 = 2025$.
13. Find the sum of the arithmetic series 5 + 11 + 17 + . . . + 95.
14. If a clock strikes once at 1o'clock, twice at 2 o'clock and so on, how many times will it strike in a day ?
15. Find the sum of 1 + 3 + 5 + . . . to 25 terms.
16. Find the total surface area of a solid right circular cylinder whose radius is half of its height 'h'
17. A solid right circular cylinder has radius 7 cm and height 20 cm. Find its
    (i) curved surface area and (ii) total surface area.
18. If the volume and the base area of a right circular cone are 48π cm^3 and 12π cm^2 respectively, then find the height of the cone
19. If the height and the base area of a right circular cone are 5 cm and 48 sq.cm respectively, then find the volume of the cone
20. The surface areas of two spheres are in the ratio of 9:25. Then find the ratio of their volumes.
21. If the surface area of a sphere is 36π cm^2, then find the volume of the sphere.
22. If the radius of a sphere is half of the radius of another sphere, then find the ratio of their volumes.
23. Find the volume of a sphere-shaped metallic shot-put having diameter of 8.4 cm.
24. If the vertical angle and the radius of a right circular cone are 60^o and 15 cm respectively, then find its height and slant height.
25. If the curved surface area of a solid hemisphere is 2772 sq.cm, then find its total surface area.

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