Mensuration Questions for SSC Cpo set-3 PDF

Question 1

The volume of a right circular cone is 2464 cm^3. If the height of cone is 12 cm, then what will be the radius of its base?

A   12 cm

B   8 cm

C   14 cm

D   10 cm

   Answer: C

Explanation:

Volume of right circular cone = $\frac{1}{3}\pi r^2 h$

Given, h = 12 cm and Volume = $2464 cm^3$

Then, $\frac{1}{3} \times \frac{22}{7} \times r^2 \times 12 = 2464$

=> $r^2 = 196$

=> r = 14 cm

Therefore, Radius of the cone = 14 cm

Question 2

A hollow iron pipe is 10 cm long and its external diameter is 18 cm. If the thickness of the pipe is 2 cm and iron weighs 8.5 g/cm^3, then the weight of the pipe from the following is closest to:

A   8.54 kg

B   9.54 kg

C   7.54 kg

D   5.54 kg

   Answer: A

Explanation:

External radius of the pipe = 9 cm

Internal radius of the pipe = 9-2 = 7cm

Volume of the pipe = $\pi \times (9^2 - 7^2) \times 10 = 1005.71 cm^3$

Weight of the pipe per $cm^3 = 8.5 gm$

Then, Total weight = 1005.71*8.5 = 8548 gm = 8.54 kg

Question 3

The ratio between the perimeter and the breadth of a rectangle is 3 : 1. If the area of the rectangle is 310 sq. cm, the length of the rectangle is nearly:

A   11.45 cm

B   10.45 cm

C   12.45 cm

D   13.45 cm

Answer: C

Explanation:
Let the length and breath of the rectangle be l cm and b cm

Given, $\dfrac{2(l+b)}{b} = \dfrac{3}{1}$

=> 2(l+b) = 3b

=> 2l+2b = 3b

=> b = 2l

Given, lb = 310

Substituting b = 2l in above equation

$l \times 2l = 310$

$2l^2 = 310$

=> $l^2 = 155$

We know that $12^2 = 144$ and $13^2 = 169$.

Hence, The value of l lies in between 12 and 13.

Therefore, From the options, l = 12.45 cm

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Question 4

A circle, with radius 8 cm, which has the area equal to the area of a triangle with base 8 cm. Then the length of the corresponding altitude of triangle is:

A 38π cm

B 16π cm

C 18π cm

D 8π cm

Answer: B

Explanation:
Area of a circle=$\pi * r * r$
Area of a triangle=(1/2)*b*h
h=64π*2*b/8
h=16π

Question 5

A copper wire is bent in the form of an equilateral triangle of area $4\sqrt{3}cm^2$.If the same wire is bent into the form of a square, the area of the square will be:

A 16 sq.cm

B 9 sq. cm

C 144 sq. cm

D 64 sq.cm

Answer: B

Explanation:
Area of a equilateral triangle=$\sqrt{3}a^2/4$
$\sqrt{3}a^2/4=4\sqrt{3}$
a=4 cm

Total length =3*4
=12 cm
Side of each square=12/4
=3 cm
Area=9 sqcm

Question 6

The length, breadth and height of a room are in the ratio of 4 : 3 : 2. The cost of carpeting the floor at ₹ 10 per square meter is ₹ 480. The height of the room is:

A   10 m

B   2 m

C   6 m

D   4 m

Answer: D

Explanation:
Let length,breath and height be 4x,3x and 2x respectively
Area of the floor=$12x^2$
Total cost of flooring=$12x^2$*10
$12x^2$*10=480
x=2
l=8 cm,b=6 cm and h=4 cm

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Question 7

Two concentric circles with radii p cm and (p+ 2) cm are drawn on a paper. The difference between their areas is 44 sq. cm What is the value of p?(Take $\pi = \frac{22}{7}$)

A   1.5

B   5

C   6

D   2.5

Answer: D

Explanation:
Given $\pi R^2 - \pi r^2$=44
$R^2 - r^2$=14
R=p+2,r=p
R-r=2 R+r=2p+2
(R+r)(R-r)=14
2p+2=7
p=2.5

Question 8

A rectangular farm has to be fenced on one long side, one short side and one diagonal. If the cost of fencing is ₹ 10 per meter, the area of the farm is 4800 m^2 and the short side is 60 m long, the cost of doing the job will be:

A   ₹2100

B ₹1800

C ₹2400

D ₹3600

Answer: C

Explanation:
Area of the farm=4800
l*b=4800
given b=60 m
l*60=4800
l=80 m
In a rectangle diagonal=$\sqrt{(l^2 + b^2)}$
=$\sqrt{(80^2 + 60^2)}$
=$\sqrt{(10000)}$
=100 m
So total fencing required=100+80+60=240 m
Cost of fencing each meter=Rs 10
For 240m it is 240*10=Rs 2400

Question 9

A wall of 12 m $\times$ 8 m has a door of 3 m $\times$ 1.5 m and two windows each of 1.5 m $\times$ 1.5 m. Find the area of wall that can be painted(free from doors and windows).

A 80 sq.cm

B 87 sq.cm

C 96 sq.cm

D 65 sq.cm

Answer: B

Explanation:
Area of the wall=96 sq cm
Area of door=3*1.5=4.5 sq cm
Area of two windows=2*1.5*1.5
=4.5 cm
Therefore required area=96-(4.5+4.5)
=96-9
=87 sq cm

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Question 10

What will be the cost of fencing a circular garden of radius 35 m at the rate of ₹16 per meter?(Take$\pi = \frac{22}{7}$)

A ₹3520

B ₹3240

C ₹2850

D ₹3160

Answer: A

Explanation:
Circumference of the circular garden $=2\pi r$
Area=2*(22/7)*35
=220 sq mt
Cost for each each mt=Rs 16
Cost for whole garden=220*16
=Rs 3520

Question 11

A hall is 15 m long and 12 m broad.If the sum of the areas of the floor and the ceiling is equal to the sum of the areas of four walls, the volume(in m^3) of the hall is:

A 1600

B 900

C 1200

D 720

   Answer: C

Explanation:
Area of the floor and ceiling will be same and it is equal
i.e l*b=15*12=180 sq m
Area of four walls will be 2*l*h+2*b*h=2h(l+b)
2h(l+b)=360
h(12+15)=180
h=180/27
h=20/3
Volume=l*b*h=12*15*20/3
=1200 cubic meters

Question 12

A circle, with radius 8 cm, which has the area equal to the area of a triangle with base 8 cm. Then the length of the corresponding altitude of triangle is:

A $38\,\pi\,cm$

B $16\,\pi\,cm$

C $8\,\pi\,cm$

D $18\,\pi\,cm$

   Answer: B

Explanation:
Area of a circle=πr^2
Area of a triangle=(1/2)bh
Given both are equal
Therefore πr^2=(1/2)bh
$\pi\,8^2$=(1/2)8h
h=16π

Question 13

The curved surface area of a right circular cylinder of height 28 cm is 176 cm^2 . The volume(in cm^3) of cylinder is (Take $\pi = \frac{22}{7}$)

A   66

B   110

C   88

D   176

   Answer: C

Explanation:
Lateral surface area of a cylinder=$2\pi rh$
Therefore 2*(22/7)*r*28=176
r=8/8
r=1 cm
Volume of a cylinder=$(\pi)r^2h$
=22*1*1*28/7
=88 sq cm

Question 14

The area of an equilateral triangular park is equal to $5\sqrt{3}$ times the area of a triangular field with sides 18 m, 80 m and 82 m. What is the side of the triangular park?

A   125 m

B   120 m

C   140 m

D   100 m

   Answer: B

Explanation:
Given sides of the triangle are 18,80 and 82 cm
these are the sides of a right angled triangle as 9,40,41 is a Pythagorean triplet
So area of a right angled triangle=(1/2)bh
=(1/2)*80*18
=720 sq cm
Given area a equilateral triangle=$5\sqrt{3}$*720
$\sqrt{3}a^2/4=5\sqrt{3}$*720
a^2=36*100*4
a=6*10*2
a=120 cm

Question 15

The diagonal of a square is 14 cm. What will be the length of the diagonal of the square whose area is double of the area of first square?

A $28\sqrt{2}\ cm$

B $14\sqrt{2}\ cm$

C $28\ cm$

D $21\sqrt{2}\,cm$

   Answer: B

Explanation:
Diagonal of first square = 14 cm

$\sqrt{2}a = 14 => a = \dfrac{14}{\sqrt{2}}$ where a = side of first square

Area of first square $= (\dfrac{14}{\sqrt{2}})^2 = \dfrac{196}{2} = 98cm^2$

Area of second square $= 2 \times 98 = 196cm^2$
Side of second square $= \sqrt{196} = 14cm$
Diagonal of second square $= 14 \times \sqrt{2} = 14\sqrt{2}cm$

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