

Quiz Date: 19<sup>th</sup> April 2020

Q1. Area of a given circle is  $616 \text{ m}^2$ . Perimeter of a rectangle is same as perimeter of circle. Find the diagonal of the rectangle if length of rectangle is 20% more than the breadth of the rectangle.

- (a)  $2\sqrt{59}$
- (b)  $2\sqrt{62}$
- (c)  $4\sqrt{61}$
- (d)  $4\sqrt{15}$
- (e)  $2\sqrt{65}$

Q2. The difference of the areas of two squares drawn on 2 line segments of different lengths is  $32 \text{ cm}^2$ . Find the length of the greater line segment, if one is longer than the other by 2 cm.

- (a) 9 cm
- (b) 12 cm
- (c) 10 cm
- (d) 8 cm
- (e) 6 cm

Q3. A child is asked to pick up 2 balloons from a box containing 10 blue and 15 red balloons. What is the probability of the child picking, at random, 2 balloons of different colors ?

- (a)  $\frac{1}{2}$
- (b)  $\frac{2}{3}$
- (c)  $\frac{1}{4}$
- (d)  $\frac{3}{5}$
- (e)  $\frac{5}{7}$

Q4. In how many ways can 5 prizes be distributed to 8 students if each student can get any number of prizes ?

- (a) 40
- (b)  $5^8$
- (c)  $8^5$
- (d) 120
- (e) 140

Q5. A cylinder having height 196 cm radius 14 cm is casted into 'x' number of cubes having side 7 cm. Find the value of 'x'.

- (a) 44
- (b) 352
- (c) 308
- (d) 392
- (e) 2816

Q6. The circumference of two circles is 132 m and 176 m respectively. What is difference between the area of larger circle and smaller circle ? (in m<sup>2</sup>)

- (a) 1052
- (b) 1128
- (c) 1258
- (d) 1078
- (e) 1528

Q7. The letters of the word PROMISE are to be arranged so that three vowels should not come together. Find the number of arrangements.

- (a) 4470
- (b) 4320
- (c) 3792
- (d) 4200
- (e) 4450



Q8. There are four hotels in a town. If three men check into the hotels in a day then what is the probability that all of them do not check into the same hotel?

- (a)  $\frac{15}{16}$
- (b)  $\frac{63}{64}$
- (c)  $\frac{3}{64}$
- (d)  $\frac{1}{16}$
- (e)  $\frac{1}{4}$

Q9. Two letters are chosen out of the alphabets of the English language. Find the probability that both the letters are vowels.

- (a)  $\frac{2}{65}$
- (b)  $\frac{3}{65}$
- (c)  $\frac{1}{65}$
- (d)  $\frac{3}{5}$
- (e)  $\frac{7}{65}$

Q10. How many five-letters containing 2 vowels and 3 consonants can be formed using the letters of the word EQUALITY so that 2 vowels occur together?

- (a) 1260
- (b) 1000
- (c) 1150
- (d) 1152
- (e) None of these

Q11. A number is selected at random from the first 50 natural numbers. What is the probability that it is either a multiple of 7 or a multiple of 9?

- (a)  $\frac{3}{25}$
- (b)  $\frac{6}{25}$
- (c)  $\frac{9}{50}$
- (d)  $\frac{1}{5}$
- (e)  $\frac{11}{50}$

Q12. Curved surface area of a right circular cone is  $1.76 \text{ m}^2$  and its base diameter is 140 cm. find the height of the cone?

- (a) 10 cm
- (b)  $10\sqrt{2}$  cm
- (c)  $20\sqrt{2}$  cm
- (d)  $10\sqrt{15}$  cm
- (e)  $15\sqrt{10}$  cm

Q13. There are 5 multiple choice questions in an examination. How many sequences of answers are possible, if the first three questions have 4 choices each and the next two have 6 choices each?

- (a) 2804
- (b) 3456
- (c) 7776
- (d) 2304
- (e) 1024

Q14. A bag has seven red, four white and three green balls while another bag has five red, six yellow and three blue balls. A bag is selected at random and a ball drawn out of it, then Find the probability that the ball drawn is red.

- (a)  $\frac{1}{7}$
- (b)  $\frac{3}{7}$
- (c)  $\frac{2}{7}$
- (d) 1

(e)  $\frac{6}{7}$ 

Q15. Curved surface area of a given cylinder is  $924 \text{ m}^2$ . If ratio of radius and height of cylinder is  $1 : 3$  then find the volume of cylinder (in  $\text{m}^3$ )

- (a) 3234  
 (b) 2156  
 (c) 3102  
 (d) 2860  
 (e) 3476

### Solutions

S1. Ans.(c)

Sol.

$$\pi r^2 = 616$$

$$\Rightarrow r = 14 \text{ m}$$

$$\text{Perimeter of rectangle} = \text{Perimeter of circle} = 2\pi r = 2 \times \frac{22}{7} \times 14 = 88$$

And,

$$2(\ell + b) = 88$$

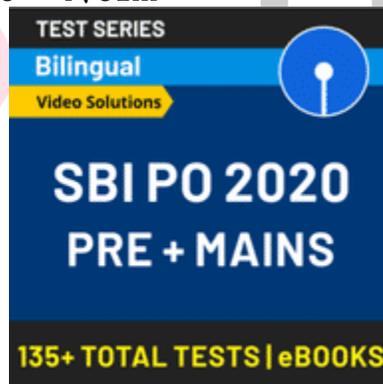
$$(1.2b + b) = 44$$

$$2.2b = 44$$

$$b = 20$$

$$\ell = 24$$

$$\text{Diagonal} = \sqrt{20^2 + 24^2} = \sqrt{976} = 4\sqrt{61} \text{ m}$$



S2. Ans.(a)

Sol.

Let the length of smaller be  $x$  cm

$\therefore$  length of larger be  $(x + 2)$  cm

ATQ,

$$(x + 2)^2 - x^2 = 32$$

$$x^2 + 4x + 4 - x^2 = 32$$

$$4x = 28$$

$$x = 7 \text{ cm}$$

$\therefore$  length of greater line segment = 9 cm.

S3. Ans.(a)

Sol.

Blue and Red or Red and Blue

$$= \left(\frac{10}{25}\right) \times \left(\frac{15}{24}\right) + \left(\frac{15}{25}\right) \times \left(\frac{10}{24}\right) = \left(\frac{1}{2}\right)$$

S4. Ans.(c)

Sol.

No. of ways =  $8^5$

S5. Ans.(b)

Sol.

Volume of cylinder = Volume of 'x' cubes

$$\frac{22}{7} \times 14 \times 14 \times 196 = x \times 7^3$$

$$\Rightarrow x = 352$$

S6. Ans.(d)

Sol.

Let radius of smaller & larger circles be  $r_1$  &  $r_2$  respectively.

$$2\pi r_1 = 132$$

$$r_1 = 21 \text{ m}$$

$$2\pi r_2 = 176 \Rightarrow r_2 = 28 \text{ m.}$$

$\therefore$  Required difference

$$= \pi(r_2^2 - r_1^2)$$

$$= \frac{22}{7} \times 49 \times 7$$

$$= 1078 \text{ m}^2$$

S7. Ans.(b)

Sol.

Total number of letters = 7

Total number of arrangements =  $7!$

Now, if all time vowels come together then we have to suppose three vowels as a unit, for example OIE PRMS.

Thus,

Number of words when three vowels come together =  $5! \times 3! = 720$

And the number of arrangements when three vowels do not come together = total number of arrangements - 720

$$= 7! - 720$$

$$= 5040 - 720 = 4320.$$

S8. Ans.(a)

Sol.

The total number of ways in which they can check in =  $4 \times 4 \times 4 = 64$  ways.

Out of this there will be 4 ways in which all of them will check into the same hotel.

Number of ways all of them do not check into the same hotel =  $64 - 4 = 60$  ways

$$\text{Required probability} = \frac{60}{64} = \frac{15}{16}$$

S9. Ans.(a)

Sol.

For both letters to be vowels.

Possible cases =  ${}^5C_2 = 10$  ways.

Total cases =  ${}^{26}C_2 =$

$$= 26 \times \frac{25}{2}$$

$$= 13 \times 25$$

$$= 325 \text{ ways.}$$

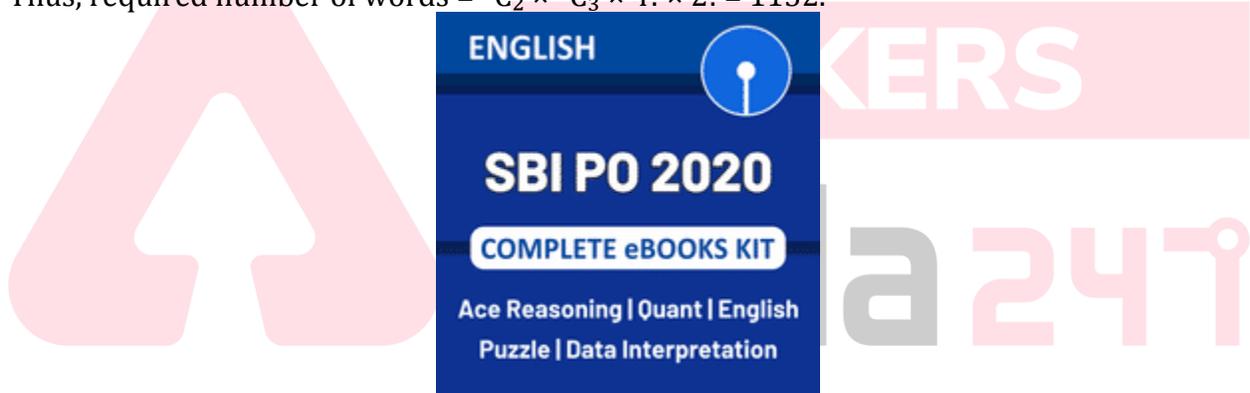
$$\text{Required probability} = \frac{10}{325} = \frac{2}{65}$$

S10. Ans.(d)

Sol.

The word EQUALITY contains 4 vowels (E, U, A, I) and 4 consonants (Q, L, T, Y). 2 vowels out of 4 and 3 consonants out of 4 can be selected in  ${}^4C_2 \times {}^4C_3$  ways

Thus, required number of words =  ${}^4C_2 \times {}^4C_3 \times 4! \times 2! = 1152$ .



S11. Ans.(b)

Sol.

There are seven multiples of 7 from 1 to 50.

Also, there are five multiples of 9 from 1 to 50.

Therefore, the possible cases =  $7 + 5 = 12$  cases

Total number of cases = 50

$$\text{Required probability} = \frac{12}{50} = \frac{6}{25}$$

S12. Ans.(d)

Sol.

Curved surface area of cone =  $\pi r \ell = 1.76 \text{ m}^2$

$$\frac{22}{7} \times 70 \times \ell = 17600$$

$$\ell = 80$$

$$\begin{aligned}\text{Height of cone} &= \sqrt{80^2 - 70^2} \\ &= \sqrt{6400 - 4900} \\ &= \sqrt{1500} = 10\sqrt{15} \text{ cm}\end{aligned}$$

S13. Ans.(d)

Sol.

Places: - - - - -

Digits: 4 4 4 6 6

Total number of sequences =  $4 \times 4 \times 4 \times 6 \times 6 = 2304$ .

S14. Ans.(b)

Sol.

In this case we need to select the probability of choosing one bag out of two given bags which will be  $= \frac{1}{2}$

So, the required probability  $= \frac{1}{2}$  (Red ball from bag 1 + Red ball from bag 2)

$$\begin{aligned}&= \frac{1}{2} \left( \frac{7}{14} + \frac{5}{14} \right) \\ &= \frac{12}{28} = \frac{6}{14} = \frac{3}{7}\end{aligned}$$

S15. Ans.(a)

Sol.

Curved surface area =  $2\pi r\ell$

Where

r = radius of box circle of cylinder

$\ell$  = length or height of cylinder

and,  $\frac{r}{\ell} = \frac{1}{3}$

$$\Rightarrow 2\pi r \times 3r = 924$$

$$\Rightarrow r^2 = 49 \Rightarrow r = 7$$

$$\Rightarrow \ell = 21$$

Volume of cylinder =  $\pi r^2 \ell$

$$= \frac{22}{7} \times 7 \times 7 \times 21$$

$$= 3234$$

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