

Quiz Date: 20th July 2020

Q1. The outer circumference of a 1 cm thick pipe is 44 cm. How much water will 7 cm of the pipe hold.

(take $\pi=22/7$)

- (a) 1078 cm³
- (b) 1792 cm³
- (c) 303 cm³
- (d) 792 cm³
- (e) 972 cm³

Q2. Two solid cylinders of radii 4 cm and 5 cm and lengths 6 cm and 4 cm, respectively are recast into cylindrical disc of thickness 1 cm. The radius of the disc is

- (a) 7 cm
- (b) 14 cm
- (c) 21 cm
- (d) 28 cm
- (e) 32 cm

Q3. A path of uniform width surrounds a circular park. The difference of internal and external circumferences of this circular path is 132 m. Its width is (take $\pi=22/7$)

- (a) 22 m
- (b) 20 m
- (c) 21 m
- (d) 24 m
- (e) 26 m

Q4. A person observed that he required 30 s time to cross a circular ground along its diameter than to cover it once along the boundary. If his speed was 30 m/min, then the radius of the circular ground is (take $\pi=22/7$)

- (a) 10.5 m
- (b) 3.5 m
- (c) 5.5 m
- (d) 7.5 m
- (e) 8.5 m

Q5. The area of a triangle is 216 cm² and its sides are in the ratio 3 : 4 : 5. The perimeter of the triangle is

- (a) 6 cm
- (b) 12 cm
- (c) 36 cm
- (d) 72 cm
- (e) 24 cm

Q6. If all possible four-digit numbers are formed using the digits 3, 5, 6, 9 without repetition and arranged in ascending order of magnitude, then the position of the number 6953 is

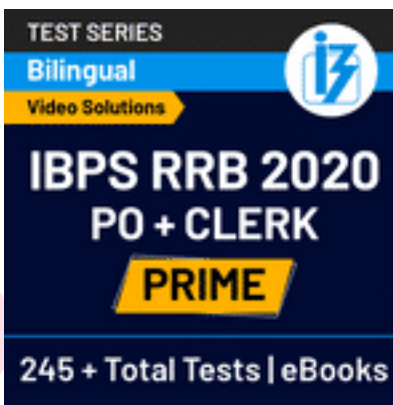
- (a) 20
- (b) 16
- (c) 18
- (d) 15
- (e) 24

Directions (7-10): **Read the following passage and answer the questions based on it.**

The Bangalore office of Infosys has 1200 executives. Out of these, 880 subscribe to the Time magazine and 650 subscribe to the Economist. Each executive may subscribe to either the Time or the Economist or both. If an executive is picked at random, find the probability that

Q7. He has subscribed to the Time magazine.

- (a) 11/15
- (b) 11/12
- (c) 7/15
- (d) 7/11
- (e) 4/15



Q8. He has subscribed to the Economist.

- (a) 13/21
- (b) 13/20
- (c) 13/24
- (d) 12/30
- (e) 11/24

Q9. He has subscribed to both magazines.

- (a) 22/40
- (b) 11/40
- (c) 12/20
- (d) 4/20
- (e) 13/40

Q10. If among the executives who have subscribed to the Time magazine, an executive is picked at random. What is the probability that he has also subscribed to the Economist?

- (a) 3/8

- (b) $5/8$
- (c) $2/3$
- (d) $1/8$
- (e) $7/8$

Q11. How many words can be formed by using three letters out of a, b, c, d, e without repetition of alphabets.

- (a) 55
- (b) 60
- (c) 61
- (d) 69
- (e) 72

Q12. How many words of three letters with or without meaning can be formed using all the alphabets of the word SIMPLE without repetition of alphabets.

- (a) 100
- (b) 160
- (c) 95
- (d) 120
- (e) 130

Q13. In how many ways can 6 persons take water from 6 taps if no tap remains unused.

- (a) 1024 ways
- (b) 860 ways
- (c) 720 ways
- (d) 700 ways
- (e) 820 ways

Q14. What is the probability that card drawn at random from a pack of cards is either black or a jack?

- (a) $15/26$
- (b) $7/13$
- (c) $27/52$
- (d) $3/13$
- (e) $11/52$

Q15. Two dice are thrown. The probability that both of them show a prime number greater than 2 is:

- (a) $1/9$
- (b) $1/6$
- (c) $2/3$
- (d) $1/4$
- (e) $5/9$

Solutions

S1. Ans.(d)

Sol.

$$\text{Given, } 2\pi r = 44$$

$$r = \frac{44}{2\pi} = \frac{22}{\pi} = \frac{22 \times 7}{22} = 7 \text{ cm}$$

$$\text{Inner radius of pipe} = 7 - 1 \\ = 6 \text{ cm}$$

$$\text{Volume of pipe} = \pi r^2 h$$

$$= \pi \times 6^2 \times 7$$

$$= \frac{22}{7} \times 6^2 \times 7$$

$$= 792 \text{ cm}^3$$

S2. Ans.(b)

Sol.

Total volumes of two cylinders

$$= \pi r_1^2 h_1 + \pi r_2^2 h_2$$

$$= \frac{22}{7} [(4 \times 4 \times 6) + (5 \times 5 \times 4)]$$

$$= \frac{22}{7} (96 + 100)$$

$$= \frac{22}{7} \times 196 = 616 \text{ cm}^3$$

Let the radius of the disc be r cm.

$$\therefore \pi r^2 h = 616 \quad [\because h = 1]$$

$$\pi r^2 \times 1 = 616$$

$$\Rightarrow \frac{22}{7} \times r^2 = 616$$

$$\Rightarrow \frac{616 \times 7}{22} = 196$$

$$\Rightarrow r = \sqrt{196} = 14 \text{ cm}$$

$$\therefore \text{Radius of disc} = 14 \text{ cm}$$

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S3. Ans.(c)

Sol. Let the internal radius of the park be r and the external radius (with the path) be R . Now, according to the question,

$$\text{Difference of circumference} = 132$$

$$\therefore 2\pi R - 2\pi r = 132$$

$$\Rightarrow 2\pi(R - r) = 132$$

$$\Rightarrow R - r = \frac{132}{2\pi}$$

$$= \frac{132 \times 7}{2 \times 22} = 21$$

Hence, the width of path = 21m

S4. Ans.(b)

Sol.

Let the radius of circular field = r m

Speed of person in m/s = $\frac{30}{60} = \frac{1}{2}$ m/s

According to the question,

$$\frac{2\pi r}{1/2} - \frac{2r}{1/2} = 30 \Rightarrow 4\pi r - 4r = 30$$

$$\Rightarrow \left(4 \times \frac{22}{7} - 4\right)r = 30$$

$$\Rightarrow (12.5 - 4)r = 30 \Rightarrow (8.5)r = 30$$

$$\therefore r = \frac{30}{8.5} = 3.5 \text{ m}$$



S5. Ans.(d)

Sol.

Let the sides be $3x$, $4x$ and $5x$, respectively.

$$\text{Here, } (3x)^2 + (4x)^2 = (5x)^2$$

Since, the sides of triangle satisfies Pythagoras theorem.

\therefore Triangle is right angled triangle

$$\therefore \frac{1}{2} \times 3x \times 4x = 216$$

$$\Rightarrow 6x^2 = 216$$

$$\Rightarrow x^2 = \frac{216}{6} = 36$$

$$\therefore x = \sqrt{36} = 6$$

Perimeter of triangle

$$= (3x + 4x + 5x) \text{ cm}$$

$$= 12x \text{ cm}$$

$$= 12 \times 6 = 72 \text{ cm}$$

S6. Ans.(c)

Sol.

The number of four-digit numbers begin with 3 or 5 is $3!$ Each.

The number of four-digit numbers that begin with 63, 65 is $2!$ Each.

After that, the numbers are 6935, 6953.

The rank of 6953 is $2(3!) + 2(2!) + 2 = 18$.

S7. Ans.(a)

Sol.

Total executives = 1200

Subscribed for Time magazine = 880

Subscribed for Economy = 650

No. of executives subscribed for both
 $= (880 + 650) - 1200 = 330$

$$\begin{aligned}\text{Required probability} &= \frac{880}{1200} \\ &= \frac{11}{15}\end{aligned}$$

S8. Ans.(c)

Sol.

Total executives = 1200

Subscribed for Time magazine = 880

Subscribed for Economy = 650

No. of executives subscribed for both
 $= (880 + 650) - 1200 = 330$

$$\begin{aligned}\text{Required probability} &= \frac{650}{1200} \\ &= \frac{13}{24}\end{aligned}$$

S9. Ans.(b)

Sol.

Total executives = 1200

Subscribed for Time magazine = 880

Subscribed for Economy = 650

No. of executives subscribed for both
 $= (880 + 650) - 1200 = 330$

$$\begin{aligned}\text{Required probability} &= \frac{330}{1200} \\ &= \frac{11}{40}\end{aligned}$$

S10. Ans.(a)

Sol.

Total executives = 1200

Subscribed for Time magazine = 880

Subscribed for Economy = 650

No. of executives subscribed for both
 $= (880 + 650) - 1200 = 330$

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$$\begin{aligned}\text{Required probability} &= \frac{330}{880} \\ &= \frac{3}{8}\end{aligned}$$

S11. Ans.(b)

Sol.

$$\begin{aligned}\text{Total words} &= \frac{5 \times 4 \times 3 \times 2 \times 1}{2 \times 1} \\ &= 60\end{aligned}$$

S12. Ans.(d)

Sol.

$$\begin{aligned}\text{Total words formed} &= {}^6P_3 \\ &= \frac{6 \times 5 \times 4 \times 3 \times 2 \times 1}{3 \times 2 \times 1} \\ &= 120\end{aligned}$$

S13. Ans.(c)

Sol. Required ways = $6! = 720$

S14. Ans.(b)

Sol.

$$\begin{aligned}\text{Required probability} &= \frac{26}{52} + \frac{2}{52} \\ &= \frac{7}{13}\end{aligned}$$

S15. Ans.(a)

Sol.

$$\begin{aligned}\text{Favorable cases} &= (3, 3) \text{ or } (3, 5) \\ &\text{Or } (5, 3) \text{ or } (5, 5) \\ &= \frac{1}{6} \times \frac{1}{6} + \frac{1}{6} \times \frac{1}{6} + \frac{1}{6} \times \frac{1}{6} + \frac{1}{6} \times \frac{1}{6} \\ &= \frac{4}{36} = \frac{1}{9}\end{aligned}$$

