## CLASS TEST

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## GENERAL APTITUDE

## $E C+E E$

Date of Test : 06/07/2023

1. (b)
2. 

(d)
13. (d)
19. (b)
25. (c)
2. (c)
8. (d)
14. (b)
20. (d)
26. (c)
3. (b)
9. (c)
15. (c)
21. (d)
27. (d)
4. (c)
10. (d)
16. (c)
22. (a)
28. (a)
5. (a)
11. (b)
17. (b)
23. (c)
29. (b)
6. (a)
12. (d)
18. (a)
24. (c)
30. (a)

## DETAILED EXPLANATIONS

1. (b)

$$
\begin{aligned}
\text { Number of balls } & =6+8=14 \\
\text { Number of white balls } & =8 \\
P(\text { drawing a white ball }) & =\frac{8}{14}=\frac{4}{7}=0.57
\end{aligned}
$$

2. (c)

Suppose first tap alone takes $x$ hours to empty the tank. Then, second and third taps will take $(x-5)$ and $(x-9)$ hours respectively to empty the tank.
$\therefore \quad \frac{1}{x}+\frac{1}{(x-5)}=\frac{1}{(x-9)}$
$\Rightarrow \quad \frac{x-5+x}{x(x-5)}=\frac{1}{(x-9)}$
$\Rightarrow \quad(2 x-5)(x-9)=x(x-5)$
$\Rightarrow \quad x^{2}-18 x+45=0$
$\Rightarrow \quad(x-15)(x-3)=0$
$\Rightarrow \quad x=15,3$
For $x=3,(x-5)$ and $(x-9)$ will be negative. $\therefore \quad$ answer is 15 hours.
3. (b)

The word WORKSPACE contains 9 different letters.
When the vowels (OAE) are always together. They can be supposed to form one letter.
Then, we have to arrange the letters WRKSPC (OAE).
Now, 7 letters can be arranged in $7!=5040$ ways.
The vowels (OAE) can be arranged among themselves in $3!=6$ ways.
$\therefore$ Required no. of ways $=(5040 \times 6)=30240$
4. (c)

Let the number of trucks to be used initially $=x$
Let capacity of one truck $=y$

$$
\begin{align*}
x y & =60 \\
(x+4)(y-0.5) & =60 \\
x y+4 y-0.5 x-2 & =60 \\
4 y-0.5 x-2 & =0 \\
4\left(\frac{60}{x}\right)-0.5 x-2 & =0 \\
240-0.5 x^{2}-2 x & =0 \\
x^{2}+4 x-480 & =0 \\
x & =20,-24
\end{align*}
$$

By neglecting the negative value, we get, $x=20$.
5. (a)

Let Pradeep alone can do the work in $x$ days.

$$
\frac{1}{24}+\frac{1}{30}+\frac{1}{x}=\frac{1}{12}
$$

$$
\begin{aligned}
\frac{1}{x} & =\frac{1}{12}-\frac{1}{24}-\frac{1}{30} \\
x & =120
\end{aligned}
$$

Payment is in inverse ratio of number of days they required to do the work alone.
Ratio of payment

$$
\begin{array}{ccccc}
\text { Ajay } & & \text { Vijay } & & \text { Pradeep } \\
\frac{1}{24} & : & \frac{1}{30} & : & \frac{1}{120} \\
5 & : & 4 & : & 1 \\
\Rightarrow & \text { Pradeep gets the amount }=\frac{1}{5+4+1} \times 200=₹ 20
\end{array}
$$

6. (a)

The number of digits possible

7. (d)

$$
\begin{aligned}
\text { Change in consumption } & =\frac{\text { Percentage change in rate } \times 100}{100+\text { Percentage change in rate }} \\
& =\frac{20 \times 100}{100+20}=\frac{2000}{120}=16 \frac{2}{3} \%
\end{aligned}
$$

8. (d)

$$
\begin{aligned}
304,314 \ldots . .394(\text { except } 344) & =9 \text { numbers } \\
340,341 \ldots .349(\text { except } 344) & =9 \text { numbers } \\
400,401 \ldots .409(\text { except } 404) & =9 \text { numbers } \\
410,411 \ldots .419(\text { except } 414) & =9 \text { numbers } \\
420,421 \ldots .429(\text { except } 424) & =9 \text { numbers } \\
430,431 \ldots .439(\text { except } 434) & =9 \text { members } \\
440,441 \ldots . \ldots 49(\text { all excepted) } & =0 \text { numbers } \\
450,451 \ldots .459(\text { except } 454) & =9 \text { numbers } \\
460,461 \ldots .469(\text { except } 464) & =9 \text { numbers } \\
470,471 \ldots .479(\text { except } 474) & =9 \text { numbers } \\
480,481 \ldots .489(\text { except } 484) & =9 \text { numbers } \\
490,491 \ldots .499(\text { except } 494) & =9 \text { numbers } \\
504,514 \ldots .594(\text { except } 544) & =9 \text { numbers } \\
540,541 \ldots .549(\text { except } 544) & =9 \text { numbers } \\
\text { Total } & =117 \text { numbers }
\end{aligned}
$$

9. (c)

As water of a river flows, similarly water of a pool is stagnant. Option (c) is the most appropriate option. Though the other three options are close, but they are not used while talking about a still body of water like a pool.
10. (d)
"Which" is used in relative clauses to refer to animals and to things.
Also, in this question the other three options can be easily eliminated.
The correct answer is (d).
11. (b)

A 4 O'clock, the hands of the watch are 20 minute spaces apart.
To be in opposite directions, they must be 30 min spaces apart.
$\therefore \quad$ Minute hand will have to gain 50 minute spaces
55 minute spaces are gained in 60 min
50 minute space are gained in $\left(\frac{60}{55} \times 50\right)$ min or $54 \frac{6}{11}$ min
$\therefore \quad$ Required time $=54 \frac{6}{11}$ min past 4
The answer is (b).
12. (d)

There is an increase in gold reserves during the years 1982-1983, 1984-1985, 1986-1987, 1987-1988 as compared to previous year as shown by bar-graph.
The percentage increase in reserves during these years compared to previous year are:

$$
\begin{aligned}
& \text { For 1982-1983 }=\left[\frac{(3720-2640)}{2640} \times 100\right] \%=40.91 \% \\
& \text { For 1984-1985 }=\left[\frac{(3360-2520)}{2520} \times 100\right] \%=33.33 \% \\
& \text { For 1986-1987 }=\left[\frac{(4320-3120)}{3120} \times 100\right] \%=38.46 \% \\
& \text { For } 1987-1988=\left[\frac{(5040-4320)}{4320} \times 100\right] \%=16.67 \%
\end{aligned}
$$

Clearly, the percentage increase over previous year is highest for 1982-1983.
The answer is (d).
13. (d)

Volume of the large cube $=\left(6^{3}+8^{3}+10^{3}\right)$

$$
=216+512+1000=1728 \mathrm{~cm}^{3}
$$

Let the edge of the large cube be $x$
So, $\quad x^{3}=1728$
$\Rightarrow \quad x=12 \mathrm{~cm}$

$$
\begin{aligned}
\therefore \quad \text { Required ratio } & =\left(\frac{6 \times 12^{2}}{6 \times\left(6^{2}+8^{2}+10^{2}\right)}\right)=\frac{12^{2}}{36+64+100} \\
& =\frac{144}{200}=18: 25
\end{aligned}
$$

The answer is (d).
14. (b)

Female population below poverty line for Punjab $=2.1$ million
Let the male population below poverty line for Punjab be $x$ million
Then

$$
5: 6=x: 2.1
$$

$\Rightarrow \quad x=\frac{2.1 \times 5}{6}=1.75$ million
$\therefore$ Population between poverty line for Punjab $=(2.1+1.75)$ million $=3.85$ million
Let the population above poverty line for Punjab be $y$ million.
Since, $35 \%$ of population of Punjab is below poverty line, therefore, $65 \%$ of the total population of Punjab is above poverty line i.e. the ratio of population below poverty line to that above poverty line for Punjab is $35: 65$.

$$
\begin{array}{ll}
\therefore & 35: 65=3.85: y \\
\Rightarrow & y=\frac{65 \times 3.85}{35}=7.15
\end{array}
$$

$\therefore \quad$ Population above poverty line for Punjab $=7.15$ million.
So, male population above poverty line for Punjab $=\left(\frac{6}{13} \times 7.15\right)$ million $=3.3$ million
The answer is (b).
15. (c)


So the required alphabets have to start with P and the common difference in terms is 3 . Hence, PSVY is the answer.
The answer is option (c).
16. (c)

Let, The full fare $=₹ x$
The reservation charge $=₹ y$

$$
x+y=362
$$

$$
\frac{3}{2} x+2 y=554
$$

From here, $\quad x=340$ and $y=22$
$\Rightarrow$ Reservation charge is ₹ 22 .
17. (b)

Let the speed of planes are $v_{1}$ and $v_{2}\left(v_{1}>v_{2}\right)$ in $\mathrm{km} / \mathrm{sec}$

$$
\begin{aligned}
& \left(v_{1}+v_{2}\right) \times 15=1.2 \\
& \left(v_{1}-v_{2}\right) \times 60=1.2
\end{aligned}
$$

From solving these equations, we get,

$$
\begin{aligned}
& v_{1}=0.05 \mathrm{~km} / \mathrm{s}=50 \mathrm{~m} / \mathrm{s} \\
& v_{2}=0.03 \mathrm{~km} / \mathrm{s}=30 \mathrm{~km} / \mathrm{s}
\end{aligned}
$$

18. (a)

Volume of total wood $=\pi r^{2} \times h$

$$
=\pi r^{2} \times 2 r
$$

$$
[\because h=\text { diameter }=2 r]
$$



The radius of largest sphere possible $=r$
volume of sphere $=$ volume of wood used

$$
=\frac{4}{3} \pi r^{3}
$$

Volume of wood wasted $=2 \pi r^{3}-\frac{4}{3} \pi r^{3}=\frac{2}{3} \pi r^{3}$

$$
\text { Required ratio }=\frac{4}{3} \pi r^{3}: \frac{2}{3} \pi r^{3}=2: 1
$$

19. (b)

From figure (i), (ii) and (iii), we conclude that $B, C, D, F$ are adjacent to $E$ and $A$ both. So face opposite to $A$ is $E$.
20. (d)

Let the integers $r, s$ and $t$ are $n-2, n$ and $n+2$ respectively
(a)

LHS $(n-2) \times n=n^{2}-2 n \neq n+2 \quad$ [not true]
(b) $\quad r+t=2 t-s$

LHS $\quad n-2+n+2=2 n$
RHS $2 \times(n+2)-n=n+4 \quad$ [not true]
(c) LHS $\quad(n-2)+n=2 n-2$
RHS $n+2-2=n \quad$ [not true]
(d)

| $r+t$ | $=2 s$ |
| ---: | :--- |

LHS $n-2+n+2=2 n$
RHS $2 \times n=2 n \quad$ [true]
21. (d)

In $\triangle P O S$,


Drop a perpendicular from $R$ on $x$-axis at point $T$.
$\triangle P O S$ and $\triangle R S T$ are similar


$$
\begin{aligned}
O S+S T & =\sqrt{3}+1 \\
R T & =\sqrt{3}
\end{aligned}
$$

$\therefore$ Coordinates of point $R=(1+\sqrt{3}, \sqrt{3})$
22. (a)

At the end of year,

$$
\begin{aligned}
\text { Rahul's money } & =100 \times 1.12=₹ 112 \\
\text { Sonia's money } & =100\left(1+\frac{12}{4 \times 100}\right)^{4} \\
& =100(1.03)^{4}=₹ 112.55 \\
\text { Difference } & =₹ 0.55
\end{aligned}
$$

The formula we used for Sonia is :

$$
V=P\left(1+\frac{r}{100 n}\right)^{n t}
$$

where $V=$ Total value, $P=$ Principal, $r=$ Annual interest rate, $n=$ number of times per year invested, $t=$ number of years.
23. (c)


$$
\begin{array}{rlrl}
\angle A B C & =90^{\circ} \\
& \therefore & A B^{2}+B C^{2} & =A C^{2} \\
\Rightarrow & r^{2}+(12 \sqrt{3})^{2} & =(2 r)^{2} \\
\Rightarrow & 432 & =3 r^{2} \\
\Rightarrow & r & =12
\end{array}
$$

Now, area of equilateral triangle $=\frac{\sqrt{3}}{4}(\text { side })^{2}$

$$
\text { Area }=\frac{\sqrt{3}}{4}(12)^{2}=\frac{\sqrt{3}}{4}(144)=36 \sqrt{3} \text { unit }^{2}
$$

24. (c)

Let the number is $10 x+y$
number obtained by reversing the digits is $10 y+x$

$$
\begin{aligned}
(10 x+y)(10 y+x) & =2430 \\
100 x y+10 y^{2}+10 x^{2}+x y & =2430 \\
101 x y+10\left(x^{2}+y^{2}\right) & =2430
\end{aligned}
$$

Since unit digit of product is a single zero,
$\Rightarrow$ either $x$ or $y$ is 5 and another is multiple of two
Let

$$
x=5
$$

$$
505 y+10\left(y^{2}+25\right)=2430
$$

$$
10 y^{2}+505 y-2180=0
$$

$$
y=4 \quad \text { or }-54.5
$$

$\Rightarrow$ The number is either 54 or 45 , of which 45 is smaller.
25. (c)

Let the average salary of managers be ' $S$ '.
$15 \times 40000+82 \times 12500+3 \times S=100 \times 22250$
$\Rightarrow \quad 3 S=2225000-600000-1025000$
$\Rightarrow \quad 3 S=600000$
$\Rightarrow \quad S=₹ 200000$
26. (c)

With no restrictions, the six children can be arranged in 6! ways i.e. 720 ways.
In all these arrangements it is just as likely for $E$ to be on the left of $F$ as it is for $E$ to be on the right of $F$.
Therefore, exactly half must have $E$ to the right of $F$, and exactly half must have $E$ to the left of $F$.
Therefore, exactly $\frac{720}{2}=360$ of the arrangements have $E$ to the left of $F$.
27. (d)
$Q R: P R=2: 5$ i.e. $P Q: P R=3: 5$
or we can simply say $P Q=3$ and $P R=5$
then $\mathrm{QS}=\mathrm{PQ}=3$
The diameter of the larger semicircle $\mathrm{PR}=5$
The sum of the diameters of two smaller semicircles $\mathrm{PQ}+\mathrm{QS}=3+3=6$
Ratio of diameters $=5: 6$
This will be the same as the ratio of circumferences i.e $5: 6$.
28. (a)

$$
\begin{aligned}
\text { Ways to select } 2 \text { females } & ={ }^{5} C_{2} \\
\text { Ways to select } 1 \text { male } & ={ }^{7} C_{1} \\
\therefore \quad & \quad \text { Required probability }
\end{aligned}=\frac{{ }^{5} C_{2} \times{ }^{7} C_{1}}{{ }^{12} C_{3}}=\frac{7}{22}
$$

29. (b)


$$
\begin{aligned}
x+y & =5 \sqrt{2} \\
9 x^{2} & =y^{2} \\
3 x & =y \\
x+3 x & =5 \sqrt{2} \\
4 x & =5 \sqrt{2} \\
x & =\frac{5 \sqrt{2}}{4}=\frac{5}{2 \sqrt{2}} \text { unit }
\end{aligned}
$$

30. (a)

Let $C=$ number of questions answered correctly
$I=$ number of questions answered incorrectly or unanswered

$$
\begin{aligned}
\text { Total score } & =18 C-14 I \\
18 C-14 I & =0 \\
18 C & =14 I
\end{aligned}
$$

$$
\Rightarrow \quad C=\frac{7 I}{9}
$$

Now, $C$ has to be an integer, this is possible only if $I$ is divisible by 9 .
If

$$
\begin{aligned}
& I=9, C=7 \text { i.e. } I+C=16 \\
& I=18, C=14 \text { i.e. } I+C=32
\end{aligned}
$$

If
It is given that the test has fewer than 30 questions
Thus, answer is 16 .

