# Quantitative Aptitude 

Directions (Qns. 1-5) : Read the following information carefully to answer the questions given below.

In a college, 150 students of MBA are enrolled. The ratio of boys and girls is $7: 8$ respectively. There are three disciplines namely marketing, HR and finance in the college. In marketing discipline there are $50 \%$ girls of their total number and the boys are $40 \%$ of their total number. In HR discipline, girls are 30\% of their total number while boys are $30 \%$ of their total number. Finance discipline has girls $20 \%$ of their total number and boys $30 \%$ of their total number. 7 boys and 9 girls are in HR and marketing both. 6 boys and 7 girls are in HR and finance both. 5 boys and 8 girls are in marketing and finance both. 2 boys and 3 girls are enrolled in all three disciplines.

1. What percentage of students are enrolled in all three disciplines ?
A) $3.3 \%$
B) $7.2 \%$
C) $8.5 \%$
D) $9.32 \%$
E) None of these

## Explanation :

Ans: A)
Required percentage

$$
=\frac{5}{150} \times 100=\frac{10}{3}=3 \frac{1}{3} \%=3.3 \%
$$

2. What is the respective ratio of boys and girls only in marketing discipline ?
A) $13: 9$
B) $9: 13$
C) $9: 11$
D) $11: 9$
E) None of these

## Explanation :

Ans: B)
Required ratio $=18: 26=9: 13$
3. The ratio of number of boys in marketing and finance both and that of girls in finance only is
A) $5: 3$
B) $3: 5$
C) $5: 4$
D) $4: 7$
E) None of these

## Explanation :

Ans: C)
Required ratio $=5: 4$
4. By what percent is the number of boys in marketing more than the number of girls in HR discipline ?
A) $13 \frac{1}{3} \%$
B) $33 \frac{1}{3} \%$
C) $14 \frac{2}{3} \%$
D) $16 \frac{2}{3} \%$
E) None of these

Explanation :
Ans: D)
Required percentage

$$
=\frac{28-24}{24} \times 100=\frac{50}{3}=16 \frac{2}{3} \%
$$

5. The ratio of boys and girls enrolled in HR discipline only is respectively
A) $10: 11$
B) $9: 10$
C) $7: 5$
D) $5: 7$
E) None of these

Explanation :
Ans: A)
Required ratio = 10: 11
Directions (Qns. 6-10) : Each of the following questions consists of a question followed by three statements I, II and III. You have to study the question and the statements and decide which of the statement(s) is/are necessary to answer the question.
6. What is the speed of boat in still water ?
I. The boat covers 12 km in 2 hours in downstream.
II. The boat covers same distance in 4 hours in upstream.
III. The speed of stream is one third of that of boat in still water.

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## Select the correct answer :

A) Both I and II
B) I and either II or III
C) All I, II and III
D) Question cannot be answered even with the information in all three statements.
E) None of these

## Explanation :

Ans: B)
From statements I and II, Rate downstream

$$
=\mathrm{u}+\mathrm{v}=6 \mathrm{kmph}
$$

Rate upstream $=\mathrm{u}-\mathrm{v}=3 \mathrm{kmph}$
$\mathrm{u}=\frac{1}{2}((\mathrm{u}+\mathrm{v})+(\mathrm{u}-\mathrm{v}))$
$=\frac{1}{2}(6+3)=\frac{9}{2} \mathrm{kmph}$
From statements I and III, $u+v=6 \mathrm{kmph}$
$\Rightarrow u+\frac{u}{3}=6 \Rightarrow 4 u=18$
$\Rightarrow \mathrm{u}=\frac{18}{4}=\frac{9}{2} \mathrm{kmph}$
7. What is the speed of train ?
I. The length of train is 240 metre.
II. The train crosses a pole in 24 seconds.
III. The train crosses a platform in 48 seconds.

## Select the correct answer :

A) Both I and III
B) Both I and II
C) Both II and III
D) Any two of three
E) None of these

## Explanation :

Ans: B)
From statements I and II,
Speed of train $=\frac{240}{24}=10 \mathrm{~m} / \mathrm{sec}$
8. What is the age of class teacher ?
I. There are 11 students in the class.
II. The average age of students and the teacher is 14 years.
III. The average age of the teacher and students is 3 years more than that of students.

## Select the correct answer :

A) Both I and III
B) Both I and II
C) II and either I or III
D) All I, II and III
E) None of these

Explanation :
Ans: D)
From all three statements,
Total age of 11 students +1 teacher
$=14 \times 12=168$ years
Average age of 11 students + teacher
$=$ Average age of 11 students +3
$\Rightarrow$ Average age of 11 students
$=14-3=11$ years
Their total age $=11 \times 11=121$ years
Teacher's age $=168-121=47$ years
9. Sri Gupta borrowed a sum at compound interest. What is the amount returned in 2 years?
I. The rate of interest is $5 \%$ per annum.
II. The simple interest incurred on the sum in 1 year is ₹ 600 .
III. The borrowed sum is ten times the amount earned as simple interest in two years.

## Select the correct answer :

A) Only I
B) Only III
C) Both II and III
D) Either I or III
E) All I, II and III

## Explanation :

Ans: E)
From statements I, II and III,
SI for two years $=₹ 1200$
Principal $=10 \times 1200=₹ 12000$
Thus we can find C.I. and amount.
10. What is the area of the given right angled triangle ?
I. The length of hypotenuse is 5 cm .
II. The perimeter of triangle is four times of its base.
III. One of the angles of triangle is $60^{\circ}$

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## Select the correct answer :

A) Only II
B) Only III
C) Either II or III
D) Both I and III
E) Question cannot be answered even with the information in all three statements

## Explanation :

Ans: D)
From statements I and III,

$\frac{\mathrm{AB}}{\mathrm{AC}}=\cos 60^{\circ} \Rightarrow \mathrm{BC}=\frac{5}{2}$
$\mathrm{a}=\frac{5}{2}, \mathrm{~b}=5$ and $\theta=60^{\circ}$
$\therefore$ We get area by $\mathrm{A}=\frac{1}{2} \mathrm{ab} \sin \mathrm{C}$
Directions (Qns. 11 - 15) : Study the following graph carefully to answer the questions given below.

Number of selected employees in different grades/ranks by three companies during 2012

11. What is the average number of selected employees by company $A$ in all grades taken together ?
A) 450
B) 460
C) 475
D) 375
E) None of these

Explanation :
Ans: A)
Required average $=\frac{2700}{6}=450$
12. What is the respective ratio of selected employees for the post of assistant IT managers by all the companies $A, B$ and C together ?
A) $8: 10: 11$
B) $10: 8: 11$
C) $11: 10: 8$
D) $10: 11: 8$
E) None of these

Explanation :
Ans: B)
Required average
$=500: 400: 550=10: 8: 11$
13. By what percent is the number of selected employees for finance managers by company C more than that of selected employees by company $B$ for the same post ?
A) $35 \%$
B) $30 \%$
C) $25 \%$
D) $40 \%$
E) None of these

Explanation :
Ans: C)
Required percentage

$$
=\frac{250-200}{200} \times 100=25 \%
$$

14. What is the average number of selected employees for the post of assistant marketing managers by all companies taken together ?
A) 570
B) 520
C) 620
D) 720
E) None of these

Explanation :
Ans: D)
Required average
$=\frac{800+700+660}{3}=\frac{2160}{3}=720$

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15. What is the respective ratio of selected employees for IT managers by all companies $A, B$ and $C$ ?
А) $6: 4: 7$
B) $5: 3: 7$
C) $4: 7: 9$
D) $8: 7: 6$
E) None of these

Explanation :
Ans: A)
Required ratio $=300: 200: 350=6: 4: 7$
16. Three men $A, B$ and $C$ start a business together. They invest ₹ 30000, ₹ 24000 and $₹ 42000$ respectively in the beginning. After 4 months, B took out ₹ 6000 and C took out ₹ 10000. They get a profit of ₹ 11960 at the end of the year. B's share in the profit is
A) ₹ 2700
B) ₹ 2803
C) ₹ 2900
D) ₹ 2785
E) None of these

Explanation :
Ans: B)
Ratio of equivalent capitals for 1 month
$=30000 \times 12:(24000 \times 4+18000 \times 8)$
$:(42000 \times 4+32000 \times 8)$
$=360000: 240000: 424000$
$=90: 60: 106=45: 30: 53$
Sum of ratios $=45+30+53=128$
$\therefore$ B's share $=\frac{30}{128} \times 11960=₹ 2803$
17. The edge of an ice cube is 14 cm . The volume of the largest cylindrical ice cube that can be formed out of it is
A) $2200 \mathrm{cu} . \mathrm{cm}$
B) $2000 \mathrm{cu} . \mathrm{cm}$
C) $2156 \mathrm{cu} . \mathrm{cm}$
D) $2400 \mathrm{cu} . \mathrm{cm}$
E) None of these

Explanation :
Ans: C)
Radius of cylinder $=\frac{14}{2}=7 \mathrm{~cm}$
Height of cylinder $=14 \mathrm{~cm}$
$\therefore$ Required volume $=\pi r^{2} h$
$=\frac{22}{7} \times 7 \times 7 \times 14=2156$ cu.cm.
18. A sum of $₹ 16800$ is divided into two parts. One part is lent at the simple interest of $6 \%$ per annum and the other at $8 \%$ per annum. After 2 years total sum received is $₹ 19000$. The sum lent at $6 \%$ of simple interest is
A) ₹ 12200
B) ₹ 12000
C) ₹ 11000
D) ₹ 10000
E) None of these

Explanation :
Ans: A)
Sum lent at $6 \%$ rate of interest $=₹ x$
S.I. $=19000-16800=₹ 2200$
$\therefore \frac{x \times 6 \times 2}{100}+\frac{(16800-x) \times 8 \times 2}{100}=2200$
$\Rightarrow 12 x+16800 \times 16-16 x=220000$
$\Rightarrow 4 x=268800-220000$
$\Rightarrow 4 x=48800 \Rightarrow x=₹ 12200$
19. The present age of Romila is one fourth of that of her father. After 6 years the father's age will be twice the age of Kapil. If Kapil celebrated fifth birth day 8 years ago, What is Romila's present age ?
A) 7 years
B) 7.5 years
C) 8 years
D) 8.5 years
E) None of these

Explanation :
Ans: C)
Kapil's present age $=13$ years
After 6 years, Kapil's age $=19$ years
$\therefore$ Father's present age $=38-6=32$ years
$\therefore$ Romila's present age $=\frac{1}{4} \times 32=8$ years
20. In an examination, $35 \%$ of total students failed in Hindi, 45\% failed in English and $20 \%$ failed in both subjects. Find the percentage of those who passed in both the subjects.
A) $35.7 \%$
B) $35 \%$
C) $40 \%$
D) $45 \%$
E) $44 \%$

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## Explanation :

Ans: C)
$n(A)=35, n(B)=45, n(A \cap B)=20$
$\mathrm{n}(\mathrm{A} \cup \mathrm{B})=\mathrm{n}(\mathrm{A})+\mathrm{n}(\mathrm{B})-\mathrm{n}(\mathrm{A} \cap \mathrm{B})$
$=35+45-20=60$
$\therefore$ Percentage of failed students in Hindi or
English or both $=60 \%$
$\therefore$ Successful students $=40 \%$
Directions (Qns. 21-25) : The following questions are based on the pie-charts given below.

Percentage wise Distribution of students studying in Arts and commerce in seven different institutions

Different institutions - A, B, C, D, E, F and G Total number of students studying Arts $=3800$


Total number of students studying commerce $=4200$

21. What is the total number of students studying Arts in institutes A and G together ?
A) 1026
B) 1126
C) 1226
D) 1206
E) 1306

Explanation :
Ans: A)
Required answer $=3800 \times \frac{27}{100}=1026$
22. How many students from institute B study Arts and Commerce ?
A) 1180
B) 1108
C) 1018
D) 1208
E) 1408

Explanation :
Ans: C)
Required answer $=\frac{3800 \times 8}{100}+\frac{4200 \times 17}{100}$
$=304+714=1018$
23. The respective ratio between the number of students studying Arts and Commerce from institute $E$ is
A) $27: 14$
B) $19: 27$
C) $19: 16$
D) $19: 28$
E) None of these

Explanation :
Ans: B)
Required ratio $=\frac{3800 \times 14}{100}: \frac{4200 \times 18}{100}$
$=38 \times 14: 42 \times 18=19: 27$
24. The ratio between the number of students studying Arts from institute E and that of students studying Commerce from institute D is
A) $12: 17$
B) $12: 7$
C) $19: 21$
D) $17: 19$
E) None of these

Explanation :
Ans: C)
Required ratio
$=\frac{3800 \times 14}{100}: \frac{4200 \times 14}{100}=19: 21$
25. How many students from institutes B and D together study Commerce ?
A) 1320
B) 1302
C) 1202
D) 1220
E) None of these

Explanation :
Ans: B)
Required answer $=\frac{4200 \times 17}{100}+\frac{4200 \times 14}{100}$
$=714+588=1302$

