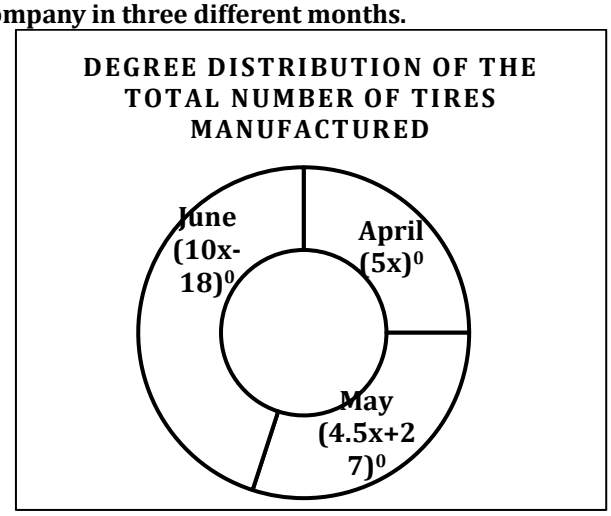
SBI PO Mains Quant Memory Based Paper

Q1. Find the pattern of the series and answer the question given below.
Series P: a, a + 2, 2a -2, 3a, a, 3a +2, 1.5a -1
Note: a is the smallest prime number.
Find the fourth term of the series.
(a) 4
(b) 6
(c) 5
(d) 3
(e) 7

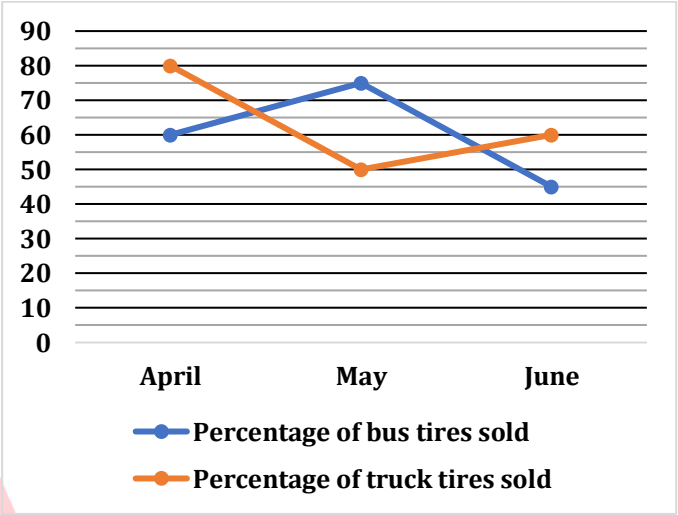
Q2. Find the pattern of the series and answer the question given below.
Series: 16X, 48000, 16000, 4000, Y, 133 1/3
Find the value of X/3 – 1.5Y.
(a) 10200
(b) 9500
(c) 12000
(d) 8000
(e) 7500

Q3. Find the pattern of the series and answer the question given below.
Series: n, (n+1), $(n + 2)^2$, $((n + 1)^3 - 2^3)$, $((3x)^2+11)$, m
Note: The root of the equation $x^2 - 6x + 9 = 0$ is equal to n.
Find the value of m.
(a) 150.5
(b) 142.5
(c) 92
(d) 125.5
(e) 130.5

Directions (4-8): Read the following charts carefully and answer the questions given below.
The donut chart shows the degree distribution of the total number of tires (bus + truck) manufactured by a company in three different months.



The line chart shows the percentage of bus tires sold (out of bus tires manufactured) and the percentage of truck tires sold (out of truck tires manufactured) by the company in these months.



Q4. The total number of bus tires and truck tires manufactured in May is in the ratio of (x-4) : $\sqrt{121}$ respectively. If the total number of unsold bus tires in May is 21, then find which of the statement/s is/are correct.
I. Total number of tires (bus + truck) manufactured in June > 225
II. Total number of truck tires manufactured in May < 68.
III. Total number of unsold truck tires in May is multiple of 11.
(a) Only II
(b) Both I & II
(c) Both I & III
(d) Both II & III
(e) Only I

Q5. The total number of truck tires manufactured in April is 4x+3 and the total number of bus tires manufactured in April is 33.33% less than that of truck tires.

Quantity I: Total number of tires (bus + truck) manufactured in June.

Quantity II: Total number of bus tires and truck tires together sold and in April.

(a) Quantity I > Quantity II
(b) Quantity I < Quantity II
(c) Quantity I ≥ Quantity II
(d) Quantity I ≤ Quantity II
(e) Quantity I = Quantity II or no relation

Q6. Which of the statement/s is/are sufficient to find the number of unsold truck tires in May.

Statement I: Total number of tires (bus + truck) manufactured in July is 20x which is 20% less than the total number of tires (bus + truck) manufactured in June.

Statement II: Total number of tires (bus + truck) sold in May is 192.

(a) Only I
(b) Both together
(c) Neither I nor II
(d) Either I or II
(e) Only II

Q7. The total number of bus tires sold in April is 90, and the total number of unsold truck tires in April is 2.5x. Find the difference between the total number of tires (bus + truck) manufactured in June and the number of unsold bus tires in May.

(a) 84
(b) 204
(c) Can't be determined
(d) 180
(e) None of these

Q8. The difference between the total number of tires (bus + truck) manufactured in June and April is $(x+2)^2$, and the total number of bus tires sold in May is 120 more than that of the truck. Find the total number of unsold tires (bus + truck) in May.

(a) $(x/2)^2$
(b) $(x - 12)^3$
(c) 3888/x
(d) Both (a) & (c)
(e) Both (b) & (c)

Directions (9-11): Read the following information carefully and answer the questions given below. The information is about the total number of students (boys and girls) registered in an exam in three years.

2021: 90% of the total number of students appeared in the exam out of the total number of students registered in the exam.

2022: 75% of the total number of students registered for the exam out of the total number of students appeared in the exam in 2021.

2023: 20% of the total number of students did not appeared in the exam out of the total number of students registered in the exam in 2022.

Q9. The total number of students not qualified in the exam in 2021 is 162, which is 170% more than the total number of students did not appeared in the exam in 2021. If the total number of students appeared in the exam in 2023 is 190, then find the total number of students registered in the exam in 2023.

(a) 271
(b) 280
(c) 322
(d) 303
(e) 299

Q10. The difference between the total number of students did not appeared in 2023 and in 2021 is 14. If the total number of students appeared in 2022 is 140, then find the average number of students registered in 2021 and number of students did not appeared 2022.

(a) 290
(b) 320
(c) 270
(d) 315
(e) 265

Q11. The total number of students appeared in 2021 is 720, and the total number of students registered in 2023 is 20% less than that in 2021. If the total number of students appeared in 2022 is half that in 2023, then find the total number of students did not appeared in 2022.

(a) 280
(b) 274
(c) 291
(d) 267
(e) 254

Solutions

S1. Ans.(b)

Sol. The smallest prime number = 2

a = 2

Series P: 2, 2 + 2, 2(2) -2, 3(2), 2, 3(2) +2, 1.5(2) -1

Series P: 2, 4, 2, 6, 2, 8, 2

The pattern of the series:

2, 4, 2, 6, 2, 8, 2

× 2 ÷ 2 × 3 ÷ 3 × 4 ÷ 4

Fourth term of the series = 6

S2. Ans.(d)

Sol. The pattern of the series:

16X, 48000, 16000, 4000, Y, 133 1/3

16X, 48000, 16000, 4000, Y, $\frac{400}{3}$

$\times\frac{1}{2}$ $\times\frac{1}{3}$ $\times\frac{1}{4}$ $\times\frac{1}{5}$ $\times\frac{1}{6}$

$16X \times \frac{1}{2} = 48000$

16X = 96000

X = 6000

$4000 \times \frac{1}{5} = Y$

800 = Y

Required value = $\frac{X}{3} - 1.5Y$

$= \frac{6000}{3} - 1.5(800)$

= 2000 – 1200

= 8000

S3. Ans.(e)

Sol. x^2 - 6x + 9 = 0

x^2 - 3x -3x + 9 = 0

x = 3, 3

n = 3

The pattern of the series:

n, (n+1), $(n + 2)^2$, $((n + 1)^3 - 2^3)$, $((3x)^2+11)$, m

3, 4, 25, 56, 92, m

1 21 31 36 38.5

20 10 5 2.5

÷ 2 ÷ 2 ÷ 2

m = 92 + 38.5

m = 130.5

Sol. (4-8)

Given,

5x + 4.5x + 27 + 10x – 18 = 360

19.5x = 351

x = 18

Degree of total number of tires (bus + truck) manufactured in April = 90 degree

Degree of total number of tires (bus + truck) manufactured in may = 108 degree

Degree of total number of tires (bus + truck) manufactured in April = 162 degree

S4. Ans.(d)

Sol. Let the total number of tires (bus + truck) manufactured all three months together be 180a

The ratio of bus tires manufactured and truck tires manufactured in may = (18 - 4) : 11

14 :11

The number of bus tires manufactured in may

$= 180a \times \frac{108}{360} \times \frac{14}{25} = 30.24$

The number of bus tires sold in may

$= 30.24a \times \frac{75}{100} = 22.68a$

The number of bus tires unsold in may = 30.24a – 22.68a

= 7.56a

Given, 7.56a = 21

a = 21/7.56

The total number of tires (bus + truck) manufactured all three months together = $180 \times \frac{21}{7.56} = 500$

I. Total number of tires (bus + truck) manufactured in June > 225

Total number of tires (bus + truck) manufactured in June

$= 500 \times \frac{162}{360} = 225$

It is incorrect.

II. Total number of truck tires manufactured in May < 68.

Total number of truck tires manufactured in May

$= 500 \times \frac{108}{360} \times \frac{11}{25} = 66$

It is correct.

III. Total number of unsold truck tires in May is multiple of 11.

Total number of unsold truck tires in May

$= 500 \times \frac{108}{360} \times \frac{11}{25} \times \frac{50}{100} = 33$

It is correct.

S5. Ans.(a)

Sol. The total number of truck tires manufactured in April = 4x + 3 = 4(18) + 3 = 75

The total number of bus tires manufactured in April = $75 \times \frac{2}{3} = 50$

Let the total number of tires (bus + truck) manufactured all three months together be 180a

$180a \times \frac{90}{360} = (75 + 50)$

$45a = 125$

a = 125/45

The total number of tires (bus + truck) manufactured all three months together = 180a = 500

Quantity I: Total number of tires (bus + truck) manufactured in June = $500 \times \frac{162}{360} = 225$

Quantity II: Total number of bus tires and truck tires together sold and in April

$= 50 \times \frac{60}{100} + 75 \times \frac{80}{100} = 30 + 60 = 90$

So, **Quantity I > Quantity II**

S6. Ans.(c)

Sol. From I:

Total number of tires (bus + truck) manufactured in July

= 20x = 20 (18) = 360

Total number of tires (bus + truck) manufactured in June

$= 360 \times \frac{100}{80} = 450$

Total number of tires (bus + truck) manufactured in May

$= 450 \times \frac{108}{162} = 300$

From II:

Total number of tires (bus + truck) sold in May = 192.

Both statements together

Total number of tires (bus + truck) manufactured in May = 300

Total number of tires (bus + truck) sold in May = 192.

Total number of tires (bus + truck) unsold in May = 300 – 192 = 108

We have no data about total number of bus tires or truck tires

So, neither I nor II.

S7. Ans.(c)

Sol. Total number of bus tires sold in April = 90

Total number of unsold truck tires in April

= 2.5x = 2.5(18) = 45

Total number of bus tires manufactured in April

$= 90 \times \frac{100}{60} = 150$

Total number of truck tires manufactured in April

$= 45 \times \frac{100}{20} = 225$

Total number of tires (bus + truck) manufactured in April

= 150 + 225 = 375

Total number of tires (bus + truck) manufactured in June

$= 375 \times \frac{162}{90} = 675$

Total number of tires (bus + truck) manufactured in May

$= 375 \times \frac{108}{90} = 450$

We have no data about the total number of bus tires or truck tires in May.

So, can't be determined

S8. Ans.(e)

Sol. Let the total number of tires (bus + truck) manufactured all three months together be 180a

Given,

$180a \times \frac{162-90}{360} = (x+2)^2$

36a = 400

a = 400/36

The total number of tires (bus + truck) manufactured all three months together = 180a

= 2000

The total number of tires (bus + truck) manufactured in May

$= 2000 \times \frac{108}{360} = 600$

Let the number of bus tires manufactured in May be P

And the number of truck tires manufactured in May

= 600 – P

ATQ,

$P \times \frac{75}{100} - (600 - P) \times \frac{1}{2} = 120$

$0.75P - 300 + 0.5P = 120$

1.25P = 420

P = 336

The number of bus tires manufactured in May = 336

And the number of truck tires manufactured in May

= 600 – 336 = 264

Total number of unsold tires (bus + truck) in May

$= 336 \times \frac{25}{100} + 264 \times \frac{1}{2} = 84 + 132$

= 216

Solutions (9-11): In 2021

Let total number of students registered be 100x

Total number of students appeared = 90x

Total number of students did not appeared = 10x

In 2022

Total number of students registered

$= 90x \times \frac{75}{100} = 67.5x$

In 2023

Total number of students did not appeared

$= \frac{20}{100} \times 67.5 = 13.5x$

S9. Ans.(a)

Sol. Total number of students not qualified in the exam in 2021 = 162

Total number of students did not appeared in the exam in 2021 = $162 \times \frac{100}{270} = 60$

10x = 60

x = 6

Total number of students registered in the exam n 2022

= 67.5 (6)

= 405

Total number of students did not appeared in 2023

$= \frac{20}{100} \times 405 = 81$

Total number of students registered in the exam in 2023

= 81 + 190 = 271

S10. Ans.(e)
Sol. Given,
13.5x – 10x = 14
x = 4
Total number of students registered in 2021 = 100x = 400
Number of students did not appeared 2022 = 67.5(4) -140 = 130
Required average = (400 + 130)/2 = 265

S11. Ans.(b)
Sol. 90x = 720
x = 8
Total number of students registered in 2023
$= \frac{80}{100} \times 100 \times 8 = 640$
Total number of students did not appeared in 2023
$= 13.5 \times 8 = 108$
Total number of students appeared in 2023
= 640 – 108 = 532
Total number of students appeared in 2022 = 532/2 = 266
Total number of students registered in 2022 = 67.5(8) = 540
Total number of students did not appeared in 2022
= 540 – 266 = 274