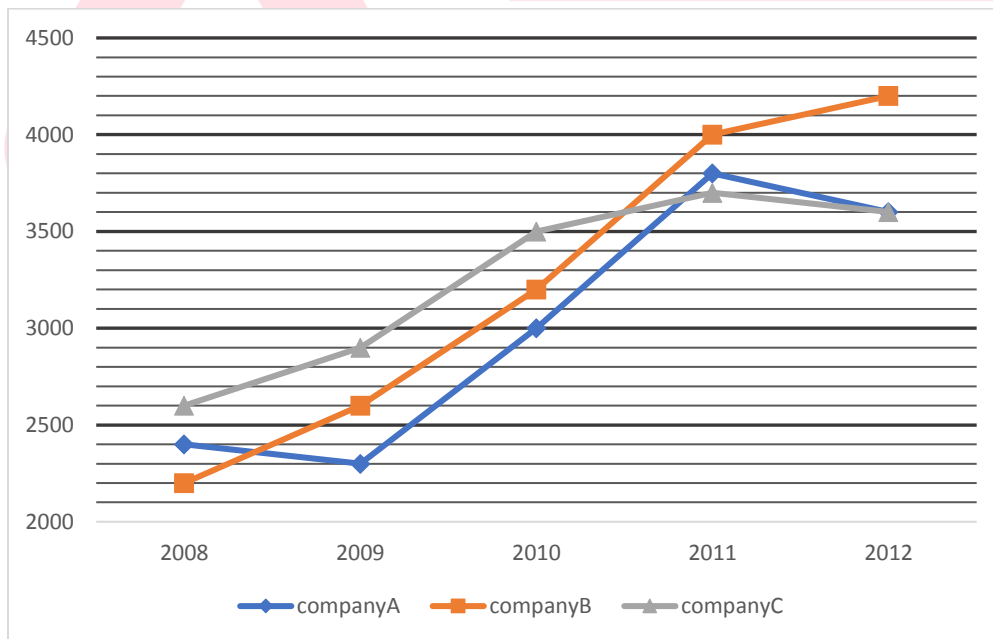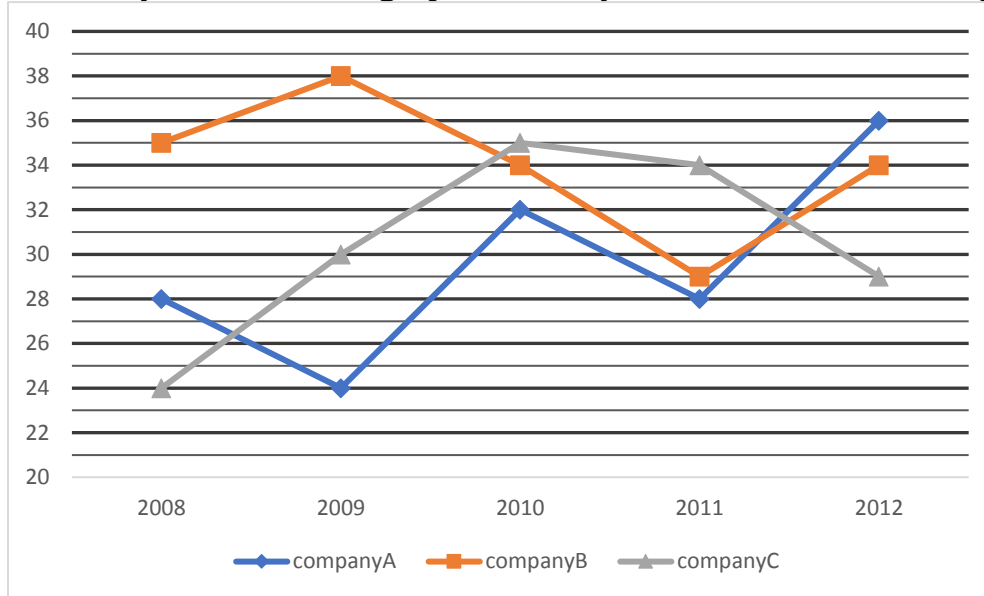**Quiz Date: 3rd August 2020**

Directions (1-5): Given below is the line graph showing the production of fertilizer (in lakh tonnes) by 3 companies from 2008 to 2012. The second line graph shows the corresponding selling price (in Rs per tonne) of the fertilizer of these companies in different years . Read the graphs carefully and answer the following questions:

Q1. What is the total revenue of all 3 companies in year 2008 and 2011 together ?
(a) 5788 cr
(b) 5548 cr
(c) 5578 cr
(d) 5598 cr

(e) 5688 cr

Q2. Revenue of company A in 2008 and 2009 together is what percent more or less than revenue of company B in 2010 and 2011 together ? (round off to 2 decimal places)
(a) 45.55%
(b) 55.55%
(c) 48.55%
(d) 49.55%
(e) None of these

Q3. What is half of the difference between average production of the company having highest total production and average production of the company having lowest total production ?
(a) 220000 tonne
(b) 22000 tonne
(c) 280000 tonne
(d) 28000 tonne
(e) 440000 tonne

Q4. Find the average revenue of company B over all the years.
(a) 1024.8 cr
(b) 1046.8 cr
(c) 1094.8 cr
(d) 1086.8 cr
(e) None of these

Q5. Total revenue of all companies together in 2010 is what times of that of in 2011 ? (round off to 2 decimal places)
(a) 0.74
(b) 0.84
(c) 0.88
(d) 0.90
(e) 0.94

Directions (6-10): In the following number series only one number is wrong. Find out the wrong number.
Q6. 3, 7, 23, 59, 123, 221, 367

(a) 367
(b) 23
(c) 3
(d) 221
(e) 7

Q7. 6, 91, 584, 2935, 11756, 35277, 70558

(a) 6

(b) 70558

(c) 584

(d) 2935

(e) 35277

Q8. 8424, 4212, 2106, 1051, 526.5, 263.25, 131.625

(a) 526.5

(b) 1051

(c) 4212

(d) 8424

(e) 263.25

Q9. 8.1, 9.2, 17.3, 26.5, 43.8, 71.5, 114.1
(a) 17.3
(b) 26.5
(c) 43.8
(d) 9.2
(e) 114.1

Q10. 4, 10, 22, 46, 96, 190, 382
(a) 46
(b) 10
(c) 96
(d) 382
(e) 190

Directions (11-15): In each of these questions, two equations (I) and (II) are given. You have to solve both the equations and give answer
(a) if x>y
(b) if x≥y
(c) if x<y
(d) if x ≤y
(e) if x = y or no relation can be established between x and y

Q11.   I. $6x^2 - 7x + 2 = 0$

II. $3y^2 - 11y + 6 = 0$

Q12. I. $3x^2 - 16x - 12 = 0$
II. $y^2 - 10y + 24 = 0$

Q13. I. $2x^2 - x - 3 = 0$
II. $3y^2 + 5y - 2 = 0$

Q14. I. $x^2 + 7x + 10 = 0$
II. $10y^2 + 11y + 3 = 0$

Q15. I. $4x^2 = 16x - 16$
II. $5y^2 = y + 4$

Solutions

S1. Ans. (b)
Sol.   Total revenue in 2008 and 2011 together $= (28 \times 2400) + (35 \times 2200) + (24 \times 2600) + (28 \times 3800) + (29 \times 4000) + (34 \times 3700)$
$= 554800$ lakh or 5548 cr

S2. Ans. (a)
Sol. Revenue of company A in 2008 and 2009 $= (28 \times 2400) + (24 \times 2300)$
$= 67200 + 55200$
$= 122400$ lakh or 1224 cr
Revenue of company B in 2010 and 2011 $= (34 \times 3200) + (29 \times 4000) = 224800$ lakh or 2248 cr
Required percentage $= \frac{(2248-1224)}{2248} \times 100 \approx 45.55\%$

S3. Ans. (a)
Sol. total production throughout the given years
A $= 28 + 24 + 32 + 28 + 36 = 148\ tonnes$
B $= 35 + 38 + 34 + 29 + 34 = 170\ tonnes$
C $= 24 + 30 + 35 + 34 + 29 = 152\ tonne$

Highest production is of company B and lowest is of company A

Required answer $= \frac{1}{2}\left[\frac{170}{5} - \frac{148}{5}\right]$

= 2.2 lakh tonne

= 220000tonne

S4. Ans. (d)

Sol.   Required average $= \frac{1}{5}[(35 \times 2200) + (38 \times 2600) + (34 \times 3200) + (29 \times 4000) +$ $(34 \times 4200)]$

= 108680lakh or 1086.8 cr

S5. Ans. (e)

Sol. Required ratio $= \frac{(32\times3000)+(34\times3200)+(35\times3500)}{(28\times3800)+(29\times4000)+(34\times3700)}$

$$= \frac{3273}{3482} = 0.939 \approx 0.94$$

S6. Ans.(d)

Sol. The wrong no. is 221

The series is $3 + 2^2 = 7$

$7 + 4^2 = 23$

$23 + 6^2 = 59$

$59 + 8^2 = 123$

$123 + 10^2 = 223$

$223 + 12^2 = 367$

So, there should be 223 instead of 221.

S7. Ans.(c)

Sol.

The pattern of the number series is :

$6 \times 7 + 7^2 = 42 + 49 = 91$

$91 \times 6 + 6^2 = 546 + 36 = 582$, not 584

$582 \times 5 + 5^2 = 2910 + 25 = 2935$

$2935 \times 4 + 4^2 = 11740 + 16 = 11756$

$11756 \times 3 + 3^2 = 35268 + 9 = 35277$

S8. Ans.(b)

Sol.

The pattern of the number series is :

8424 / 2 = 4212

4212 / 2 = 2106

2106 / 2 = 1053 not 1051

1053 / 2 = 526.5

526.5 / 2 = 263.25

S9. Ans.(e)
Sol.
8.1 + 9.2 = 17.3
17.3 + 9.2 = 26.5
26.5 + 17.3 = 43.8
43.8 + 26.5 = 70.3 $\boxed{\text{Not 71.5}}$
70.3+43.8=114.1

S10. Ans.(c)
Sol.
$4 \times 2 + 2 = 10$
$10 \times 2 + 2 = 22$
$22 \times 2 + 2 = 46$
$46 \times 2 + 2= 94$ $\boxed{\text{Not 96}}$
$94 \times 2 +2 = 190$
$190 \times 2 + 2 =382$

S11. Ans.(d)
Sol.
I. $6x^2 – 7x + 2 = 0$
        $6x^2 – 4y – 3x + 2 = 0$
        $2x (3x – 2) – 1 (3x – 2) = 0$
        $x = ⅔, ½$
II. $3y^2 – 11y + 6 = 0$
        $3y^2 – 9y – 2y + 6 = 0$
        $3y (y – 3) – 2 (y – 3) = 0$
        $y = 3, ⅔$
        $y ≥ x$

S12. Ans.(e)
Sol.
I. $3x^2 – 16x – 12 = 0$
        $3x^2 – 18x + 2x – 12 = 0$
        $3x (x – 6) + 2 (x – 6) = 0$

x = 6, –⅔

II. $y^2 – 10y + 24 = 0$
       $y^2 – 6y – 4y + 24 = 0$
       $y (y – 6) – 4 (y – 6) = 0$
       y = 6, 4

No relation

S13. Ans.(e)
Sol.
I. $2x^2 – x – 3 = 0$
       $2x^2 – 3x + 2x – 3 = 0$
       $x (2x – 3) + 1 (2x – 3) = 0$
       x = –1, 3/2
II. $3y^2 + 5y – 2 = 0$
       $3y^2 + 6y – y – 2 = 0$
       $3y (y + 2) – 1 (y + 2) = 0$
       y = ⅓, –2
       No relation

S14. Ans.(c)
Sol.
I. $x^2 + 7x + 10 = 0$
       $x^2 + 5x + 2x + 10 = 0$
       $x (x + 5) + 2 (x + 5) = 0$
       x = –5, –2
II. $10y^2 + 11y + 3 = 0$
       $10y^2 + 5y + 6y + 3 = 0$
       $5y (2y + 1) + 3 (2y + 1) = 0$

       y = –½, –⅗

       y > x

S15. Ans.(a)
Sol.
I. $4x^2 = 16x – 16$
       $4x^2 – 8x – 8x + 16 = 0$
       $4x (x – 2) – 8 (x – 2) = 0$
       x = 2, 2
II. $5y^2 – y – 4 = 0$
       $5y^2 - 5y + 4y – 4 = 0$
       $5y (y – 1) + 4 (y – 1) = 0$

y = 1, –⅘

x > y

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