**Quiz Date: 11th April 2020**

Directions (1-5): Read the following graph carefully and answer the questions given below:-
Delhi University offers two courses PG and PhD. The information regarding number of students applied for these two courses and among them how many got selected from year 2004-2009 are shown by the graph given below:

Number of students applied for PG and PhD(in 1000's) In different years

Percentage of students got selected
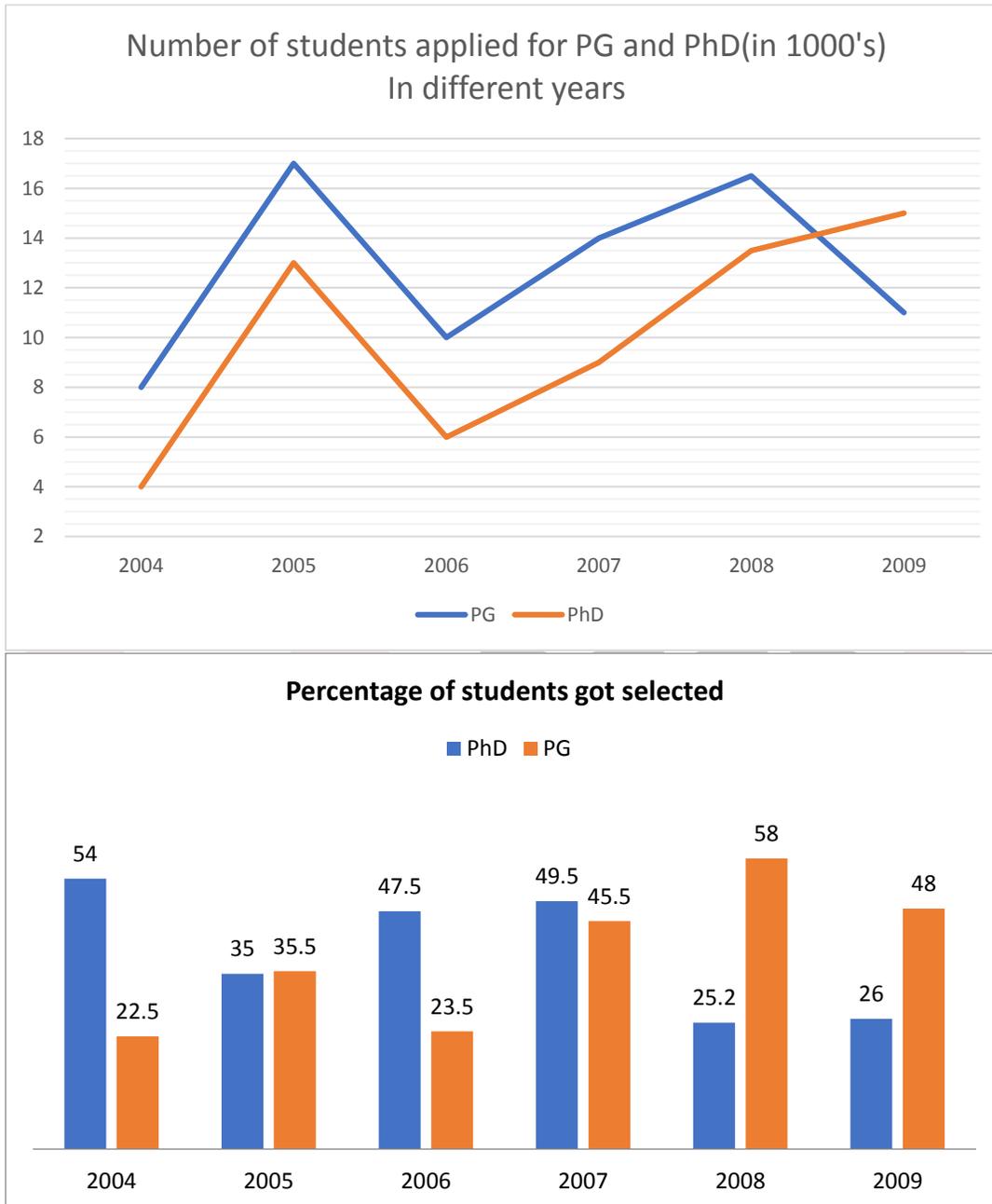
Q1. What is the respective ratio of the number of students increase/decrease in the students got selected for PG in 2005 over year 2004 to the number of students increase/decrease in the number of students applied for PhD in year 2008 over year 2007?

(a) 847:900
(b) 847:890
(c) 900:847
(d) 860:895
(e) 854:900

Q2. Average number of students got selected for PhD program is approximately what percent more/less than the average number of students applied for PG programs?
(a) 72% less
(b) 72% more
(c) 82% less
(d) 82% more
(e) 77% more

Q3. Which year shows the highest difference between the number of students applied and got selected for PhD programs?
(a) 2004
(b) 2005
(c) 2006
(d) 2008
(e) 2009
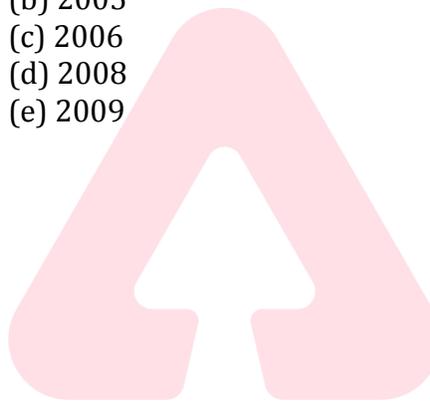
Q4. Ratio of number of students selected in 2005, 2007 and 2009 for PhD course to number of students applied in 2004, 2006 and 2008 for same course is:
(a) 2389 : 4980
(b) 2581 : 4700
(c) 2679 : 4321
(d) 2471 : 5321
(e) None of the above

Q5. In PG program which year shows highest percentage increase/decrease in number of students selected over previous year?
(a) 2005
(b) 2006
(c) 2007
(d) 2008

(e) 2009

Direction (6 – 11): What approximate value should come in the place of question mark (?) in the given questions:

Q6. $55.01 \times 47.98 - ? \% \text{ of } 7999.93 = (11.89)^3 + 68.11 \times 4.01$
(a) 8
(b) 12
(c) 16
(d) 2
(e) 18

Q7. $\frac{352.09 + ?}{31.98} + 125.11\% \text{ of } 63.98 - \sqrt{361.05} = (10.11)^2$
(a) 848
(b) 896
(c) 832
(d) 820
(e) 872

Q8. $\frac{4589.79}{?} + (24.89)^2 - 36.89\% \text{ of } 4798.98 + 104.87 = (21.86)^2$
(a) 10
(b) 8
(c) 12
(d) 3
(e) 19

Q9. $44.03 \times 24.98 + 48.03 \times 14.99 + ? = 32.07\% \text{ of } 6000.09$
(a) 120
(b) 100
(c) 140
(d) 160
(e) 180

Q10. $? \% \text{ of } 699.97 + (20.87)^2 - \sqrt{3843.86} = (17.91)^3$
(a) 779
(b) 484
(c) 684
(d) 729
(e) 801

Q11. $547.05 + 243.02 - ? = 24.89 \% \text{ of } 2584.11$
(a) 128
(b) 144
(c) 120
(d)118
(e) 156

Q12. Time taken by a boat to cover (D-11) km in upstream is 5 times of the time taken by boat to cover (D-21) km in downstream. If ratio of speed of current to speed of boat in downstream is 1 : 3 and boat can cover (D-8) km in upstream in 14 hours, then, find speed of boat in still water?
(a) 6 kmph
(b) 4 kmph
(c) 8 kmph
(d) 5 kmph
(e) 7 kmph

Q13. A, B and C can complete a work in 20 days working together. A and B together are 50% more efficient than C and A & C together are 100% more efficient than B. Then in how many days A alone can complete the work?
(a)None of these
(b)85 days
(c)80 days
(d)75 days
(e)65 days

Q14. A container contains mixture of milk and water in the ratio 7 : x. If 20 litre of water is added to mixture then ratio of milk to water becomes 7 : 15 and if 10 litres of water is added then ratio of milk to water becomes 14 : 25. Find initial quantity of milk in the mixture.
(a) 42 L
(b) 35 L
(c) 28 L
(d) 21 L
(e) 14 L

Q15. Veer bought 12 jeans at a discount of 12.5%. If cost price of one jeans is 80% of marked price of one jeans and total profit obtained on all jeans is Rs.1800 then find the total cost price of one jeans.
(a) Rs. 1200
(b) Rs. 1700
(c) Rs. 2000
(d) Rs. 1800
(e) Rs. 1600

Solutions

S1. Ans (a)
Sol. increase in selected students in PG in 2005=6035-1800=4235

increase in number of applied students in PhD in 2008 =13500-9000=4500
Required ratio = 4235 : 4500 = 847 : 900

S2. Ans (a)

Sol. Average students selected for PhD program $= \frac{2160+4550+2850+4455+3402+3900}{6} = \frac{21317}{6} = 3553$ (approx)

Average number of students applied for PG program $= \frac{8000+17000+10000+14000+16500+11000}{6} = \frac{76500}{6} = 12750$

Required percentage $= \frac{12750-3553}{12750} \times 100 = 72\%$ less

S3. Ans (e)

Sol. Difference for year $2004 = 4000 - 2160 = 1840$
For year, $2005 = 13000 - 4550 = 8450$
For year, $2006 = 6000 - 2850 = 3150$
For year, $2007 = 9000 - 4455 = 4545$
For year, $2008 = 13500 - 3402 = 10098$
For year, $2009 = 15000 - 3900 = 11100$

S4. Ans (b)

Sol. Number of students selected in 2005, 2007 and 2009 for PhD course $= 13000 \times \frac{35}{100} + 9000 \times \frac{49.5}{100} + 15000 \times \frac{26}{100}$
$= 4550 + 4455 + 3900$
$= 12905$

Number of students applied in 2004, 2006 and 2008 for PhD course $= 4000 + 6000 + 13500 = 23500$
Asked ratio $= 12905 : 23500$
$= 2581 : 4700$

S5. Ans (a)

Sol. Percentage increase/decrease in the number of selected students
For year $2005 = \frac{6035-1800}{1800} \times 100 = 235\%$
For year $2006 = \frac{6035-2350}{6035} \times 100 = 61\%$
For year $2007 = \frac{6370-2350}{2350} \times 100 = 171\%$
For year $2008 = \frac{9570-6370}{6370} \times 100 = 50\%$

For year 2009 $= \frac{9570-5280}{9570} \times 100 = 44.8\%$

S6. Ans(a)
Sol.
$55 \times 48 - \frac{?}{100} \times 8000 = (12)^3 + 68 \times 4$
$\frac{?}{100} \times 8000 = 2640 - 1728 - 272$
$? = \frac{640 \times 100}{8000}$
$? = 8$

S7. Ans(b)
Sol.
$\frac{352 + ?}{32} + \frac{125}{100} \times 64 - \sqrt{361} = (10)^2$

$\frac{352 + ?}{32} = 100 + 19 - 80$

$\qquad\qquad\qquad ? = 1248 - 352$
$\qquad\qquad\qquad ? = 896$

S8. Ans(d)
Sol.
$\frac{4590}{?} + (25)^2 - \frac{37 \times 4800}{100} + 105 = (22)^2$
$\frac{4590}{?} + 625 - 1776 + 105 = 484$
$\frac{4590}{?} = (484 + 1776 - 730)$
$? = \frac{4590}{1530}$
$? = 3$

S9. Ans(b)
Sol.
$44 \times 25 + 48 \times 15 + ? = \frac{32}{100} \times 6000$
$1100 + 720 + ? = 1920$
$? = 1920 - 1820$
$? = 100$

S10. Ans(a)
Sol.
$\frac{?}{100} \times 700 + (21)^2 - \sqrt{3844} = (18)^3$
$\frac{?}{100} \times 700 + 441 - 62 = 5832$
$\frac{?}{100} \times 700 = 5832 - 441 + 62$

$? = \frac{5453}{7}$

$? = 779$

S11. Ans.(b)
Sol.
$547 + 243 - ? = \frac{25}{100} \times 2584$
$790 - ? = 646$
$? = 790 - 646$
$? = 144$

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S12. Ans.(b)
Sol.
Let speed of boat in still water = x kmph
And speed of current = y kmph
∴ upstream speed = (x – y) kmph
Downstream speed = (x + y) kmph
ATQ,
$\frac{D-11}{x-y} = \frac{5(D-21)}{x+y}$ ...(i) $\left[\text{using time } = \frac{\text{Distance}}{\text{Speed}}\right]$
Also,
$\frac{y}{x+y} = \frac{1}{3}$
$\Rightarrow$ x + y = 3y
$\Rightarrow$ x = 2y   ...(ii)
From (i) & (ii)
$\frac{D-11}{2y-y} = \frac{5(D-21)}{2y+y}$
$D-11 = \frac{5(D-21)}{3}$
3D – 33 = 5D - 105
2D = 72
D= 36 km
Also,
$\frac{D-8}{x-y} = 14$ $\left[using\ time = \frac{Distance}{speed}\right]$

$\frac{36 - 8}{2y - y} = 14$

$y = \frac{28}{14} = 2$ kmph

Speed of boat in still water = x = 2y

= 2 × 2 = 4 kmph

S13. Ans.(d)
Sol.
Let efficiency of A, B and C be a, b and c respectively
ATQ,
$\frac{a+b}{c} = \frac{3}{2}$ ...(i)
$\frac{a+c}{b} = \frac{2}{1}$ ...(ii)
On solving (i) and (ii)
a : b : c = 4 : 5 : 6
∴ A alone can complete in = $\frac{20 \times 15}{4}$ = 75 days

S14. Ans.(c)
Sol.
Let initial quantity of milk and water in the mixture be 7y and xy respectively
So,
$\frac{7y}{xy + 20} = \frac{7}{15}$
105y = 7xy + 140 ...(i)
and
$\frac{7y}{xy + 10} = \frac{14}{25}$
175y = 14xy + 140 ...(ii)
Solving (i) and (ii)
$y = 4$
Initial quantity of milk in mixture = 7y = 28 L

S15. Ans.(e)
Sol.
Let marked price of one jeans be 100x
So cost price of one jeans be 80x
and selling price of one jeans be 87.5x
ATQ,
12 × (87.5x – 80x) = 1800
7.5x = 150
⇒ x = 20
Total cost price of all jeans = 80 × 20 = Rs. 1600

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