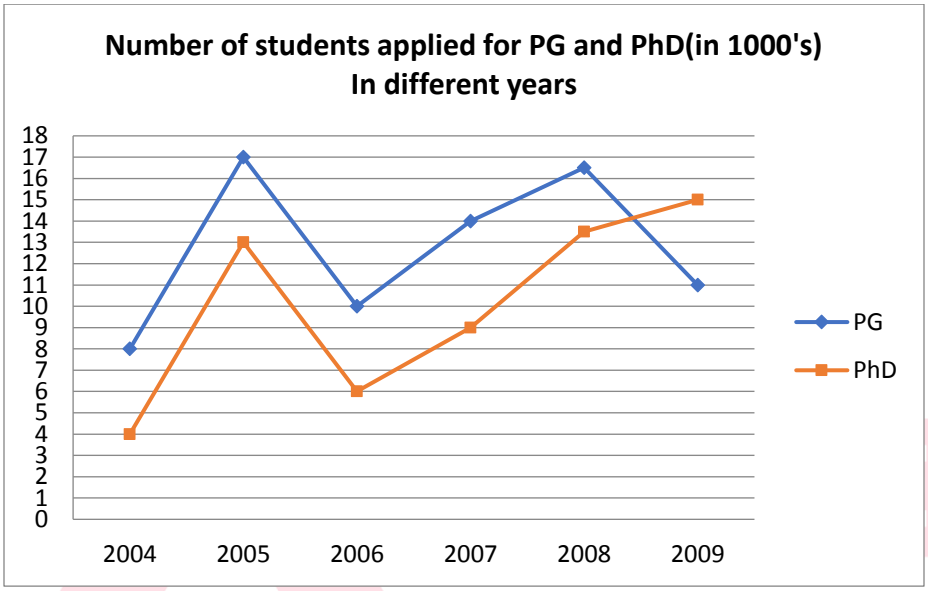
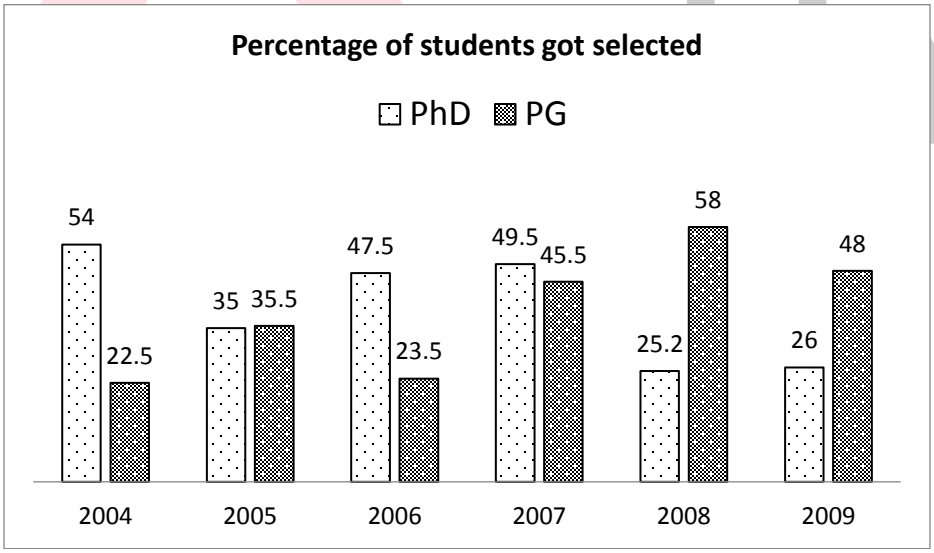
Quiz Date: 4th October 2020

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 how many of them got selected from year 2004-2009 are shown by the graphs given below:





Q1. The percentage increase/decrease in the students got selected for PG in 2005 over year 2004 is approximately what percent of the percentage increase/decrease in the number of students applied for PhD in year 2008 over year 2007?

(a) 470%

(b) 450%

(c) 440%

(d) 460%
(e) 410%

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 quantum difference between the number of students applied and got selected for PhD programs.
(a) 2004
(b) 2005
(c) 2006
(d) 2008
(e) 2009

Q4. The 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 student selected over previous year?
(a) 2005
(b) 2006
(c) 2007
(d) 2008
(e) 2009

Q6. A man invested in two different schemes A & B and investment in scheme A is 25% more than that of scheme B. Scheme A offered SI at the rate of (R – 2.5)% for two year while scheme B offered SI at the rate of (R + 5)% for three years and ratio of interest received by man from scheme A to that of scheme B is 5 : 12. Find the total interest received by man, if he will invest Rs 2250 at the rate of 2R% per annum on CI for two years?
(a) 920 Rs
(b) 990 Rs
(c) 960 Rs
(d) 900 Rs
(e) 850 Rs

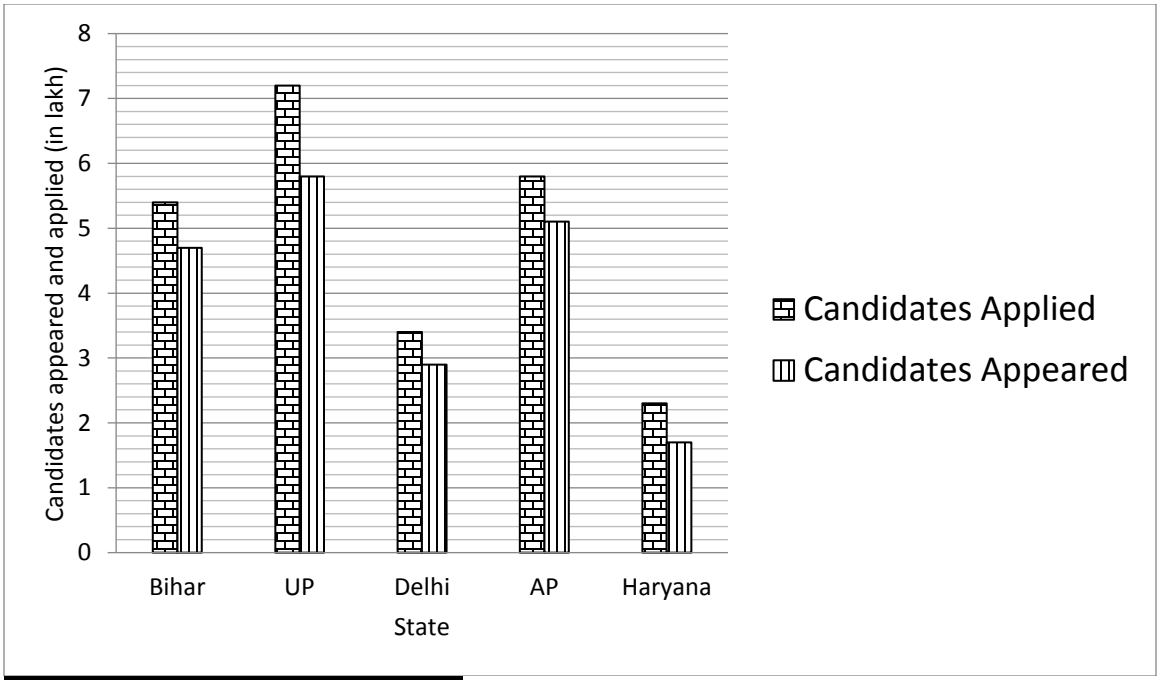
Q7. 21 women can complete a piece of work in 20 days by working 10 hours a day. In how many days 21 men will complete the work by working 8 hrs a day if 3 men work as much as 5 women?
(a) 18 days
(b) 15 days
(c) 16 days
(d) 12 days
(e) 10 days

Q8. The speed of a boat in still water is 5 km/hr and speed of current is 3 km/hr. If time taken to cover a certain distance upstream is 8 hours then how long will the boat take to cover the same distance in downstream?
(a) 2.5 hrs.
(b) 3 hrs.
(c) 2 hrs.
(d) 3.5 hrs.
(e) 1.5 hrs.

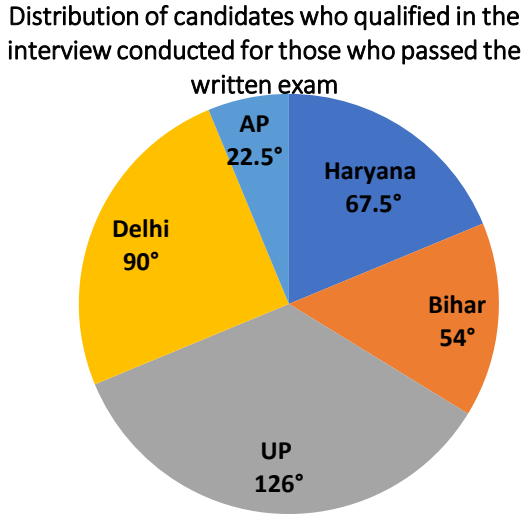
Q9. On Rs. 1250 invested at a simple interest rate at 2 per cent per annum, Rs 250 is obtained as interest in certain years. In order to earn Rs 1000 as interest on Rs 2000 in the same number of years, what should be the rate of simple interest?
(a) 3%
(b) 4%
(c) 5%
(d) 6%
(e) None of these

Q10. P, Q and R take $(x - 28)$ days, $(x - 18)$ days and $(x - 8)$ days respectively to complete a job. The three work in a rotation to complete the job with only 1 person working on a day. Who should start the job so that the job is completed in the least possible time?
(a) P
(b) Q
(c) R
(d) Any one of the three
(e) Can't be determined

Directions (11 – 15): Study the following line – graph and pie-chart carefully to answer these questions.
The number of candidates appeared, applied and % passed in UPSC written exam in 2013 from five different states.



Percentage of candidates passed in written exam	
Bihar	23
UP	25
Delhi	29
AP	40
Haryana	32



Q11. What is the total number of candidates who qualified in the interview from all the states together?
(a) 145540
(b) 128920
(c) 158640
(d) 110940
(e) 134560

Q12. What is the ratio of the number of candidates who applied from Bihar and UP together to that of those who qualified in the interview from Bihar, AP and Haryana?
(a) 525 : 152
(b) 152 : 525

(c) 21 : 5
(d) 25 : 6
(e) None of these

Q13. The total number of candidates who cleared the interview is approximately what per cent of the number of candidates who appeared for interview from UP and Bihar ?
(a) 44%
(b) 52%
(c) 56%
(d) 58%
(e) 60%

Q14. What is the difference between the number of candidates who applied from Delhi, Haryana and AP and the number of candidates qualified in the interview from these states?
(a) 1075455
(b) 1072425
(c) 1075485
(d) 1065425
(e) 1106025

Q15. What is the difference between the average number of candidates who passed the written exam from all the states and the average number of candidates qualified in the interview?
(a) 96932
(b) 70482
(c) 90562
(d) 90129
(e) 98972

Solutions

S1. Ans (a)
Sol. Percentage increase in selected students in PG in 2005$= \frac{6035-1800}{1800} \times 100 = 235\%$

Percentage increase in number of applied students in PhD in 2008 $= \frac{13500-9000}{9000} \times 100 = 50\%$
Required percentage$=\frac{235}{50} \times 100 = 470\%$

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 student 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 $= 4000 + 6000 + 13500 = 23500$
Required ratio $= 12905 : 23500$
$= 2581 : 4700$

S5. Ans (a)
Sol. Percentage increase/decrease in the number of selected students
For year $2005 = \frac{6035-1800}{1800} \times 100 = 235\%$ (approx)
For year $2006 = \frac{6035-2350}{6035} \times 100 = 61\%$ (approx)
For year $2007 = \frac{6370-2350}{2350} \times 100 = 171\%$ (approx)
For year $2008 = \frac{9570-6370}{6370} \times 100 = 50\%$ (approx)
For year $2009 = \frac{9570-5280}{9570} \times 100 = 45\%$ (approx)

S6. Ans.(b)
Sol.
Let man invested Rs 100x in scheme B
So, amount invested in scheme A = 125x
ATQ,
$\frac{125x \times 2 \times (R-2.5)}{100x \times 3 \times (R+5)} = \frac{5}{12}$
$\frac{5R-12.5}{6R+30} = \frac{5}{12}$
60R-150= 30R+150
30R= 300
R= 10%

120R – 300 = 60R + 300
60R = 600

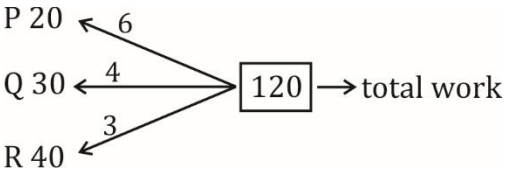
R = 10%
Equivalent rate of interest for two year at rate $2R = 20 + 20 + \frac{20\times20}{100}$
= 44%
Required compound interest
$= 2250 \times \frac{44}{100}$
= 990 Rs.

S7. Ans.(b)
Sol.
Given, 3m = 5w
Hence, 21m = 35w
Now,
21w × 20 × 10 = 35w × 8 × d
or, d = $\frac{21\times20\times10}{35\times8}$
d = 15 days.

S8. Ans.(c)
Sol.
Total distance covered in upstream in 8 hr = 8 (5 – 3) = 16 km
Required time (in downstream) = $\frac{16}{(5+3)} = \frac{16}{8}$ = 2 hrs.

S9. Ans (c)
Sol. $250 = \frac{1250\times2\times t}{100}$
$t = 10$ years
$1000 = \frac{2000\times10\times r}{100}$
$r = 5\%$

S10. Ans.(a)
Sol.
Here, Let x=48 (we can assume any value here)
P → 48 – 28 = 20 days
Q → 48 – 18 = 30 days
R → 48 – 8 = 40 days



If we want to do the work in least possible time then P should start the work because in 3 day they complete total 13 units of work and in 27 days they complete 117 units of work. Remaining 3 unit is completed by P in least time

S11. Ans (d)

Sol. total number of candidates who qualified in the interview from all the states together
$=(470000 \times \frac{23}{100} \times \frac{54}{360} + 580000 \times \frac{25}{100} \times \frac{126}{360} + 290000 \times \frac{29}{100} \times \frac{90}{360} + 510000 \times \frac{40}{100} \times \frac{22.5}{360} +$
$170000 \times \frac{32}{100} \times \frac{67.5}{360}$
$= 16215 + 50750 + 21025 + 12750 + 10200 = 110940$

S12. Ans (e)
Sol. Total number of candidates applied from UP and Bihar = 7.2 + 5.4 = 12.6 lakh = 1260000
Total number of candidates qualified in interview from Bihar , AP and Haryana
$= 470000 \times \frac{23}{100} \times \frac{54}{360} + 510000 \times \frac{40}{100} \times \frac{22.5}{360} + 170000 \times \frac{32}{100} \times \frac{67.5}{360}$
$=16215 + 12750 + 10200 = 39165$
$\therefore$ Reqd. ratio = 1260000 : 39165
$= 84000 : 2611$

S13. Ans (a)
Sol. Candidates appeared for interview from UP = $580000 \times \frac{25}{100} = 145000$
Candidates appeared for interview from Bihar = $470000 \times \frac{23}{100} = 108100$
Reqd. percentage = $\frac{110940}{108100+145000} \times 100$
$= \frac{110940}{253100} \times 100 \approx 43.83 \approx 44\%$

S14. Ans (e)
Sol. Total no of candidates applied from Delhi, Haryana and AP=3.4+5.8+2.3=11.5 lakh
Total number of candidates qualified in interview from Delhi, Haryana and AP= $290000 \times \frac{29}{100} \times \frac{90}{360} + 170000 \times \frac{32}{100} \times \frac{67.5}{360} + 510000 \times \frac{40}{100} \times \frac{22.5}{360}$
$= 21025+10200+12750=43975$
Difference=1150000-43975=1106025

S15. Ans (a)
Sol.
candidates who passed written exam $= 470000 \times \frac{23}{100} + 580000 \times \frac{25}{100} + 290000 \times \frac{29}{100} +$
$510000 \times \frac{40}{100} + 170000 \times \frac{32}{100}$
Difference $= \frac{108100+145000+84100+204000+54400}{5} - \frac{110940}{5} = \frac{595600}{5} - \frac{110940}{5}$
$= 119120 - 22188 = 96932$