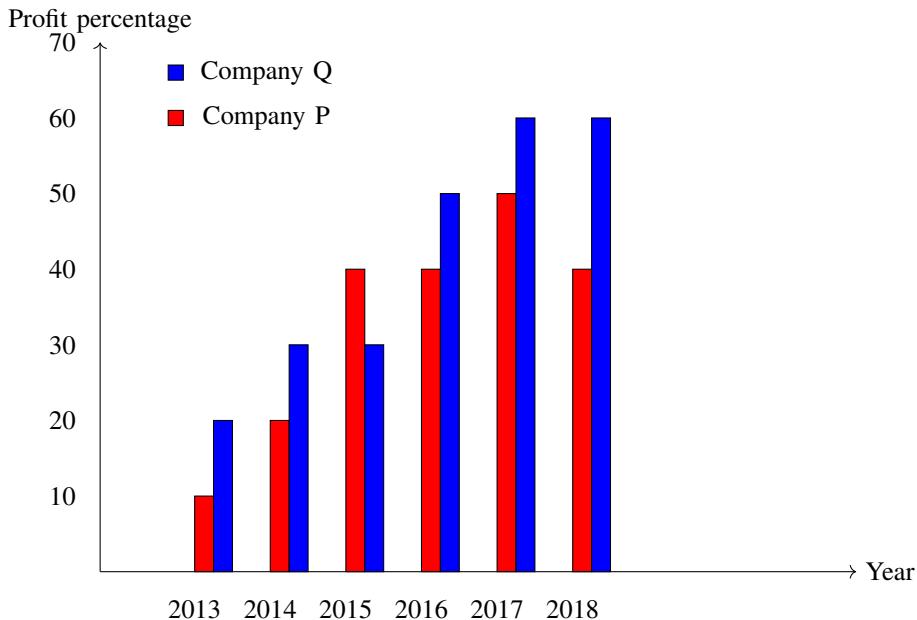


# GATE Questions 17

EE24BTECH11012 - Bhavanisankar G S

- 1) Rajiv Gandhi Khel Award was conferred \_ Mary Kom, a six-time world champion in boxing, recently in a ceremony \_ the Rashtrapati Bhawan ( the President's official residence ) in New Delhi.
- a) with, at  
b) on, in
- c) on, at  
d) to, at
- 2) Despite a string of poor performances, the chances of K.L.Rahul's selection in the team are \_
- a) slim                  b) bright                  c) obvious                  d) uncertain
- 3) Select the word that fits the analogy :  
Cover : Uncover :: Associate : \_
- a) Unassociate      b) Inassociate      c) Misassociate      d) Dissociate
- 4) Hit by floods, the kharif ( summer sown ) crops in various parts of the country have been affected. Officials believe that the loss in production of the kharif crops can be recovered in the output of the rabi ( winter sown ) crops so that the country can achieve its food-grain production target of 291 million tons in the crop-year 2019-20 ( July-June ). They are hopeful that good rains in July-August will help the soil retain moisture for a longer period, helping winter sown crops such as wheat and pulses during the November-February period.  
Which of the following can be inferred from the passage ?
- a) Officials declared that the food-grain production target will be met due to good rains.  
b) Officials want the food-grain production target to be met by the November-February period.  
c) Officials feel that the food-grain production target cannot be met due to floods.  
d) Officials hope that the food-grain production target will be met due to a good rabi produce.
- 5) The difference between the sum of the first  $2n$  natural numbers and the sum of the first  $n$  odd natural numbers is
- a)  $n^2 - n$                   b)  $n^2 + n$                   c)  $2n^2 - n$                   d)  $2n^2 + n$
- 6) Repo rate is the rate at which Reserve Bank of India ( RBI ) lends commercial banks, and reverse repo rate is the rate at which RBI borrows money from commercial banks. Which of the following statemets can be inferred from the above passage ?

- a) Decrease in repo rate will increase cost of borrowing and decrease lending by commercial banks.
- b) Increase in repo rate will decrease cost of borrowing and increase lending by commercial banks.
- c) Decrease in repo rate will increase cost of borrowing and increase lending by commercial banks.
- d) Increase in repo rate will decrease cost of borrowing and decrease lending by commercial banks.
- 7) P, Q, R, S, T, U, V and W are seated around a circular table
- I. S is seated opposite to W.
- II. U is seated at the second place to the right of R.
- III. T is seated at the third place to the left of R.
- IV. V is a neighbour of S.
- Which of the following must be true ?
- a) P is a neighbour of R
- b) Q is a neighbour of R
- c) P is not seated opposite to Q
- d) R is the left neighbour of S
- 8) The distance between Delhi and Agra is 233 km. A car P started travelling from Delhi to Agra and another car Q started from Agra to Delhi along the same road 1 hour after the car P started. The two cars crossed each other 75 minutes after the car Q started. Both cars were travelling at constant speed. The speed of car P was 10 *km/hr* more than the speed of car Q. How many kilometres the car Q had travelled when the cars crossed each other ?
- a) 66.6                      b) 75.2                      c) 88.2                      d) 116.5
- 9) For a matrix  $M = [m_{ij}]$ ;  $i, j = 1, 2, 3, 4$ , the diagonal elements are all zero and  $m_{ij} = -m_{ji}$ , the minimum number of elements required to fully specify the matrix is
- a) 0                          b) 6                          c) 12                          d) 16
- 10) The profits shares of two companies P and Q are shown in the figure. If the two companies have invested a fixed and equal amount every year, the the ratio of the total revenue of company P to the ratio revenue of company Q, during 2013-2018 is



- a) 15:17                      b) 16:17                      c) 17:15                      d) 17:16

11) Let  $A$  be a  $4 \times 3$  non-zero matrix and let  $b$  be a  $4 \times 1$  column vector. Then  $Ax = b$  has

- a) a solution for every  $b$                       d) a solution if  $b$  and the columns of  $A$  form a linearly independent set.  
 b) no solution for some  $b$   
 c) a solution only when  $b = 0$

12) Let  $x_0, x_1, x_2, \dots$  be the sequence generated by the Newton-Raphson method applied to the function  $f(x) = x^3 - 2x + 2$  with  $x_0 = 1$ . Then the sequence

- a) converges to 0                      c) converges to a root of  $f(x)$   
 b) becomes unbounded                      d) does not converges

13) Let  $z(t)$  be the solution of the initial value problem

$$\frac{d^2 z}{dt^2} = bz, z(0) = 0, \frac{dz}{dt}(0) = 1 \text{ for } t \geq 0$$

If the planar curve parameterized by  $t$  having x-coordinate  $z(t)$  and y-coordinate  $\frac{dz}{dt}$  is closed, then necessarily

a)  $b \geq 0$

b)  $b \leq 0$

c)  $b = 0$

d)  $b$  is a non-zero rational number.