GATE Questions 21

EE24BTECH11012 - Bhavanisankar G S

1) You should _____ when to say _____.

a) no, no
b) no, know
c) know, know
d) know, no

2) Two straight lines pass though the origin $(x_0, y_0) = (0, 0)$. One of them passes through the point $(x_1, y_1) = (1, 3)$ and the other passes through the point $(x_2, y_2) = (1, 2)$. What is the area enclosed between the straight lines in the interval $[0, 1]$ on the x-axis ?

a) 0.5
b) 1.0
c) 1.5
d) 2.0

3) If

$$p : q = 1 : 2$$

$$q : r = 4 : 3$$

$$r : s = 4 : 5$$

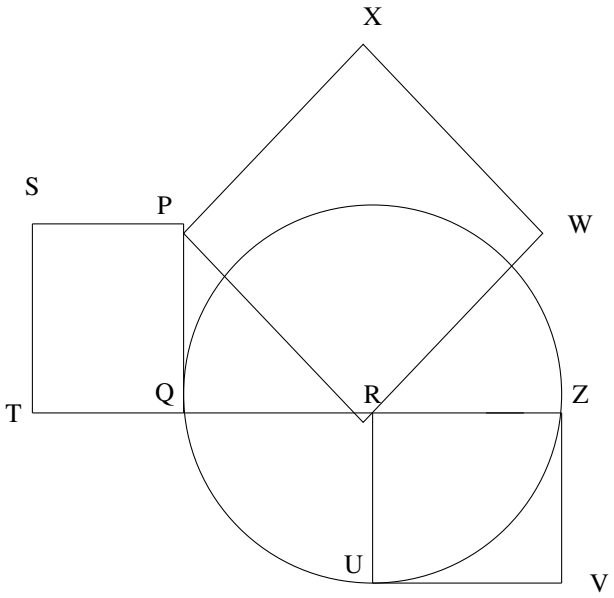
and u is 50 % more than s, then what is the ratio of $p : u$?

a) 2:15
b) 16:15
c) 1:5
d) 16:45

4) Given the statements :
P is the sister of Q
Q is the husband of R
R is the mother of S
T is the husband of P
Based on the above information, T is _____ of S.

a) the grandfather
b) an uncle
c) the father
d) a brother

5) In the following diagram, the point R is the centre of the circle. The lines PQ and ZV are tangential to the circle. The relation among the areas of the squares, PXWR, RUVZ and SPQT is



a) Ar(SPQT) = Ar(RUVZ) + Ar(PXWR)
b) Ar(SPQT) = Ar(PXWR) + Ar(RUVZ)
c) Ar(PXWR) = Ar(SPQT) - Ar(RUVZ)
d) Ar(PXWR) = Ar(RUVZ) - Ar(SPQT)

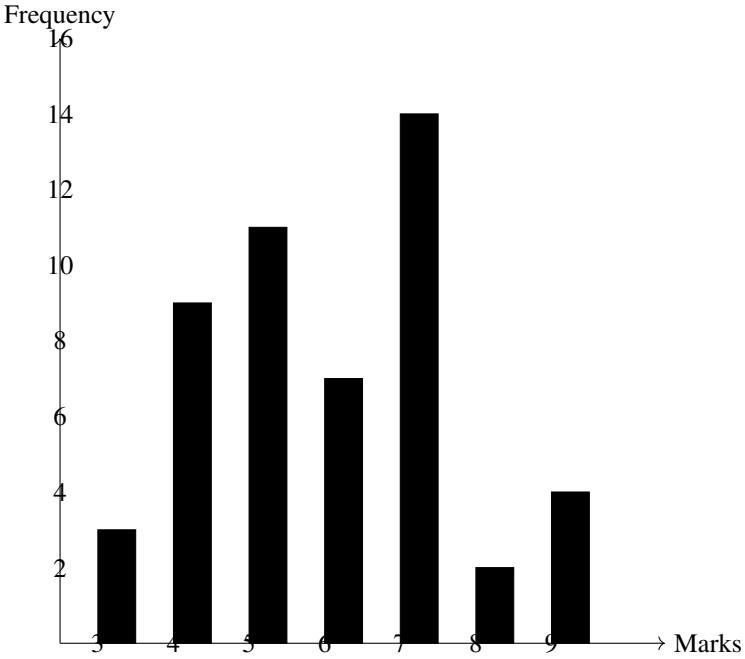
6) Healthy eating is a critical component of healthy ageing. When should one start eating healthy ? It turns out that it is never too early. For example, babies who start eating healthy in the first year are more likely to have better overall health as they get older.
Which one of the following is the CORRECT logical inference based on the information in the above passage ?

a) Healthy eating is important for those with good health conditions, but not for others.
b) Eating healthy can be started at any age, earlier the better.
c) Eating healthy and better overall health are more correlated at a young age, but not older age.
d) Healthy eating is more important for adults than kids.

7) P invested rupees 5000 per month for 6 months of a year and Q invested rupess x per month for 8 months of the year in a partnership business. The profit is shared in proportion to the total investment in that year.
If at the end of that investment year, Q receives $\frac{4}{9}$ of the total profit, what is the value of x (in rupees) ?

a) 2500 b) 3000 c) 4687 d) 8437

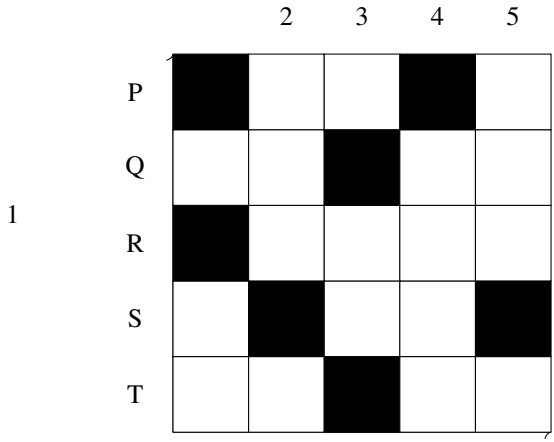
8) The frequency chart below shows the frequency distribution of marks obtained by a set of students in an exam .



From the data presented above, which of the following is CORRECT ?

a) mean > mode > median
b) mode > median > median
c) mode > mean > median
d) median > mode > mean

9) In the suare grid shown below, a person standing at P2 position is required to move to p5 position.

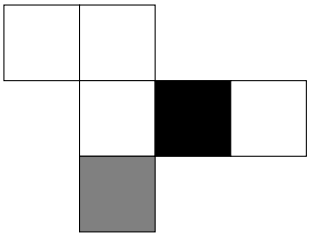


The only movement allowed for a step involves, " two moves along one direction followed by one move in a perpendicular direction ". Without occupying any of the shaded squares at the end of each step, the minimum number of steps required to go from P2 to P5 is

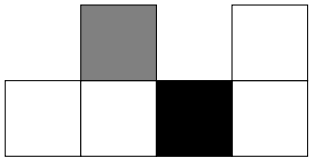
a) 4 b) 5 c) 6 d) 7

10) Consider a cube made by folding a single sheet of paper of appropriate shape. The interior faces of the cube are all blank. However, the exterior faces that are not visible in the above view may not be blank.
Which one of the following represents a possible unfolding of the cube ?

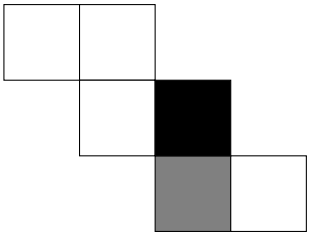
a)



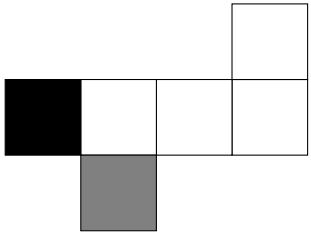
c)



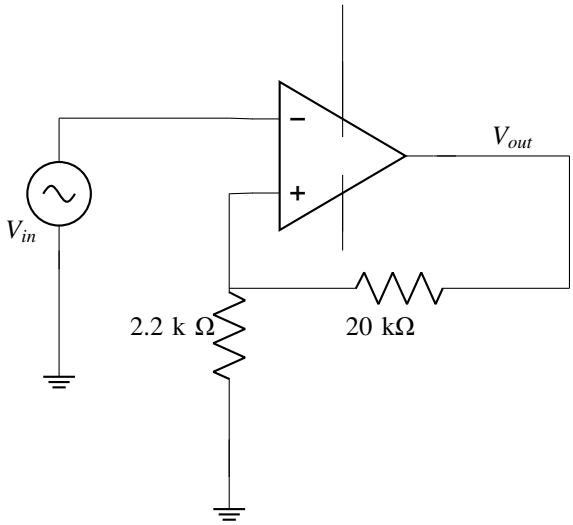
b)

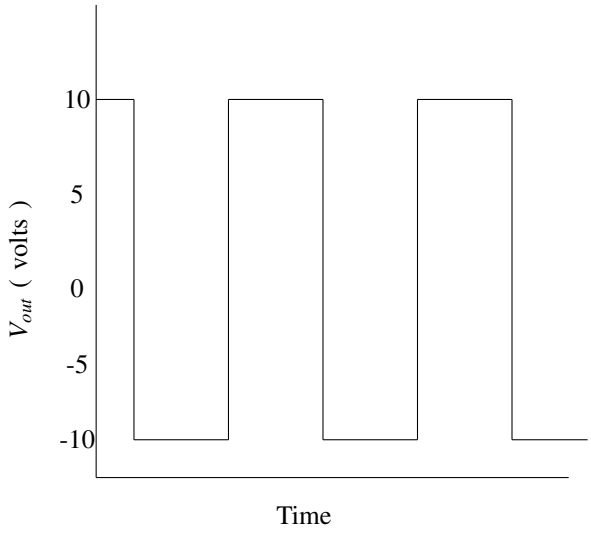


d)

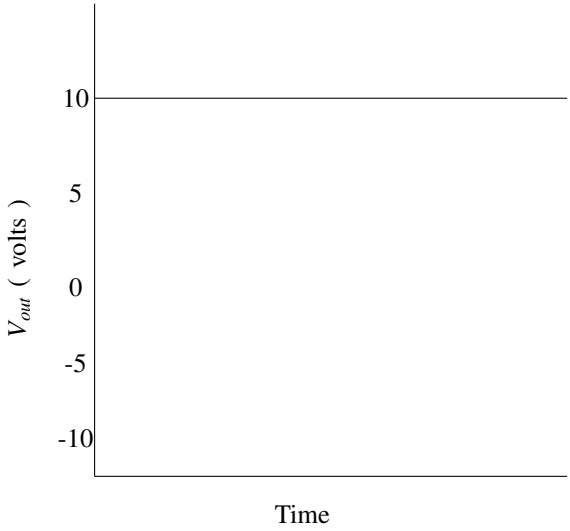


11) For the Op-Amp circuit shown below, choose the correct output waveform corresponding to the input $V_{in} = 1.5 \sin 20\pi t$ (in Volts). The saturation voltage for this circuit is $V_{sat} = \pm 10V$

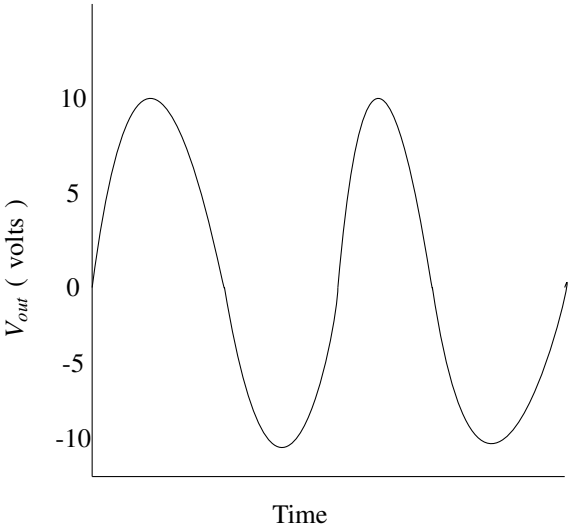




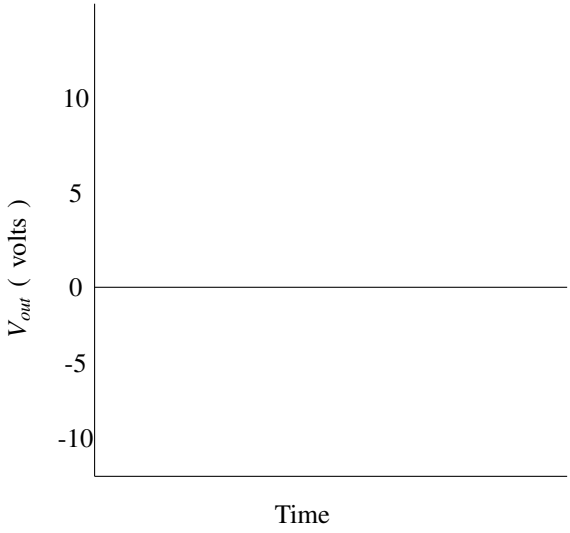
a)



b)



c)



d)

12) Match the order of β^{-1} decays given in the left column to appropriate clause in the right column. Here $X(i^{\pi})$and$Y(I^{\pi})$ are nuclei with intrinsic spin I and parity π.

$X\left(\frac{1}{2}^{+}\right) \rightarrow Y\left(\frac{1}{2}^{+}\right)$	(i) First forbidden β-decay
$X\left(\frac{1}{2}^{-}\right) \rightarrow Y\left(\frac{5}{2}^{+}\right)$	(ii) Second forbidden β-decay
$X(3^{+}) \rightarrow Y(0^{+})$	(iii) Third forbidden β-decay
$X(4^{-}) \rightarrow Y(0^{+})$	(iv) Allowed β-decay

a) 1 - i, 2 - ii, 3 - iii, 4 - iv
b) 1 - iv, 2 - 1, 3 - ii, 4 - iii
c) 1 - i, 2 - iii, 3 - ii, 4 - iv
d) 1 - iv, 2 - ii, 3 - iii, 4 - i

13) What is the maximum number of free independent real parameters specifying an n-dimensional orthogonal matrix ?

a) $n(n-2)$ b) $(n-1)^2$ c) $\frac{n(n-1)}{2}$ d) $\frac{n(n+1)}{2}$