## T.I.M.E.

Triumphant Institute of Management Education Pvt. Ltd.

## Solutions for QCT510607

1. Applying the weighted average rule, the average weight of all the students in three sections of the class is,
$\frac{(50 \times 40)+(60 \times 70)+(40 \times 90)}{40+70+90}$
$=\frac{9800}{200}=49 \mathrm{~kg}$.
Alternatively, if we take the arbitrary figure 50 kg as the assumed mean, then the average
$=50+\left(\frac{0 \times 40+10 \times 70+(-10 \times 90)}{40+70+90}\right)$
$=50+\frac{700-900}{200}=50-\frac{200}{200}=49 \mathrm{~kg}$
Choice (2)
2. As the two kinds of grapes are mixed in the ratio $3: 2$, let the actual quantities mixed be 3 k and 2 k .
Applying the weighted average rule, the average cost of the mixture can be calculated as
$\frac{(18 \times 3 k)+(24 \times 2 k)}{(3 k+2 k)}=\frac{102}{5}$
$=$ Rs.20.40 per kg
Choice (2)
3. Let the 11 distinct positive integers be represented by a, b, c, .......k.
$a+b+c+d+e+f+g+h+i+j+k=21(11)$
$=231$------- (1)
$a+b+c+d+e+f=23(6)=138$
$f+g+h+i+j+k=22(6)=132$ -
Adding equations (2) and (3) and subtracting equation (1), we get, $f=39$.

Choice (4)
4. Total age of 50 students in class X is $15 \times 50$ = 750 years.
Total age of 60 students in class XI is $16 \times 60$ = 960 years
Total age of 110 students $=750+960=1710$ years.
Average age of students of both classes put together
$=1710 / 110=15^{6} / 11$ years .
Choice (1)
5. Average value per coin $=775$ paise $/ 100$ coins 7.75 paise/coin. By the application of the alligation equation.
The number of 5 paise coins and the number of 10 paise coins $=\frac{10-7.75}{7.75-5}=\frac{2.25}{2.75}=\frac{9}{11}$
Hence the number of 5 paise coins
$=(9 / 20) \times(100)=45$
Choice (4)
Note: The problem can also be solved using simultaneous equation.
6. Applying the alligation equation, Quantity of
milk/quantity of water $=\frac{16-0}{18-16}=8: 1 \quad$ Choice $(1)$
7. Simple interest on a sum of Rs.P at r\% p.a. for $n$ years is given by $\frac{\mathrm{Pnr}}{100}$
Here $P=R s .2,400 ; n=4$ years; $r=5 \%$
$\therefore$ S.I. $=\frac{2400 \times 4 \times 5}{100}=$ Rs. 480
Choice (4)
8. If interest is compounded half yearly, then the amount is given by $P\left(1+\frac{r}{100} k\right)^{k n}$, where $p$ is principal, $r$ is the rate of interest, k is the number of compounding periods and $n$ is the number of years. Since the interest is compounded every 6 months, the number of time periods is 4 . Amount at the end of 2 years
$=P\left[1+\frac{r}{2 \times 100}\right]^{4}=20,000\left[1+\frac{15}{200}\right]^{4}$
$=20,000\left[1+\frac{15}{200}\right]^{4}$
$=$ Rs.26,709 (ignoring the decimal part)
Choice (1)
9. Simple interest for two years = compound interest for two years - Difference between C.I. and S.I. for two years $=704-64=$ Rs.640. We know that the difference between the compound interest and the simple interest for 2 years is equal to the interest for one year on first year simple interest. Since, simple interest for two years is Rs.640, for one year it is Rs.320. Hence interest for one year on first year's simple interest $=\frac{r(320)}{100}=64$ $\Rightarrow r=20 \%$ p.a.
Also $\frac{P \times 2 \times 20}{100}=640$
$\Rightarrow P=$ Rs. 1,600
Choice (1)
10. The compound interest for the $(n+1)^{\text {th }}$ year is the same as the amount for one year on a principal equal to the $\mathrm{n}^{\text {th }}$ year interest.
$\therefore 1996.5=1885[(1+(r / 100)]$;
$\Rightarrow r=10 \%$
$\Rightarrow r=10 \%$
Choice (3)

