Solutions – Easy Test

١. (d) : Let the ages of Akshat، Rishab، Gaurav be X، Y، Z years respectively.
X = ٢ Z . . . . .
X + Z = ٢ Y (١) . . .
(X + ٦ + Y + ٦) = ٣ (Z + ٦) . . . (٢). (٣)
Solve to get X = ٢٤، Y = ١٨، Z = ١٢ years.

٢. (b) : Suppose P is midway between Q & R . Now X hours after ٧ a.m. ٢٥
X − ٢٠ (X − ١.٢٥) = ٢٢٠ − ٢٥ X − ٣٠ (X − ٢.٥) etc.
So، ١٢ o'clock & ١٢٥ km from A.

٣. (c) : A + ٤ = B + ٥ = C + ٦ = D + ٧ = A + B + C + D + ٨
A + ٤ = B + ٥ A − ١ = B
A + ٤ = C + ٦ A − ٢ = C
A + ٤ = D + ٧ A − ٣ = D
Now، A + ٤ = A + A − ١ + A − ٢ + A − ٣ + ٨

$A = \frac{٢}{٣}$

$B = -\frac{١}{٣}$، $C = -\frac{٤}{٣}$، $D = -\frac{٧}{٣}$

So، A + B + C + D =

٤. (b) : Let Ab = X km and speed of bus be Y km /hr and time be T hrs original equation becomes

$\frac{X}{Y} = T$ . . . . . (١)

By increasing speed by ٧ km /hr equation becomes

$\frac{X}{y + ٧} = T - ١$ . . . . . (٢)

By decreasing speed by ٥ km /hr equation becomes

$\frac{X}{y - 5} = T + ٢$ . . . . . (٣)

On solving equation ١، ٢ & ٣ we get the value of y as and

$\frac{٣٥}{٣}$ km /h and $T = \frac{٨}{٣}$ hrs

$\therefore AB = X = \frac{٢٨٠}{٩}$ km = ٣١.١١ km

$\approx$ ٣١ km

٥. (b) : For every day's work، P١ can afford to miss ٣ days.
Hence، to break even it has to be ٧ days' work in ٢٨ days.

٦. (b) : Put a = ٢، b = ١٢ in $\sqrt{ab} = ٥b + a٢$

$\setminus \sqrt{٢١٢} = ٥ ´ ١٢ + ٤ = ٦٤$

⇒ ٢≟٦٤، which is true.

٧. (c): Let h = height of the container،
Given h = ٢ r
∴ Volume v = π r٢h = πr٢ (٢r) = ٢πr٣
∴ Absolute error = (١.٠٢)٣ × ٢πr٣ − ٢πr٣ × ١٣
= ٢π r٣ ﷺ(١.٠٢)٣ ١ﷺ = ٢πr٣ ﷺ١.٠٦١٢ − ١ﷺ
= ٠.٠٦١٢ × ٢π r٣

∴ ٪ error = $\frac{٠.٠٦١٢ ´ ٢pr^٣}{٢pr^٣}$ ´ ١٠٠٪ = ٦.١٢٪

٨. (b): Final ratio of wages = ٥ × ٤ : ٧ × ٣ : ٩ × ٢ = ٢٠ : ٢١ : ١٨

Total wages received by P = $\frac{٢٠´٥٩٠٠}{٥٩}$ = ٢٠٠٠

Daily wage of P = $\frac{٢٠٠٠}{٥}$ = ٤٠٠

٩. (a): We know that،

a٢ + a2 = (4)٢، a٢ = ١٦، a = ٤
Now، ٢(area of square) = (square of diagonal)
So، for new area ٣٢ (١٦ × ٢)
٢×٣٢ = d٢
٨ = d

١٠. (c): Since x < ٠ then at x = ١، we get y = ٢ and for the rest values we get y < ٢

Also for ٠ x > ١ ؛ x $\frac{١}{x}$ < ٢

and for x < ١ ؛ x $\frac{١}{x}$ < ٢

Hence، y ⩾ ٢

١١. (c): Option (b) and (c) both satisfies the given condition، but ٩٩٧٩١٨ is the larger of the two.

١٢. (d): $\frac{\log_y ٨x}{\log_y x}$ = $\frac{٤}{٣}$

$Log_x ٨x$ = $\frac{٤}{٣}$

$Log_x ٨ + log_x x$ = $\frac{٤}{٣}$

$Log_x ٨$ = $\frac{١}{٣}$

x = ٨ ٣
x = ٥١٢

١٣. (c): Consider the vowels A A E as one unit. Besides this، we have ٢R، ١N، ١G that is a total of ٥ things out of which the ٢R are identical.
Required number of ways = $\frac{٥!}{٢!}$

Now A، A and E can be arranged within themselves in ٣! ways.

Required answer = $\frac{٥! \times ٣!}{٢! \times ٢!}$

١٤. (b) : (١٥، ٣)! = Product of ٣ consecutive natural numbers starting from ١٥، which is at least divisible by ٣!.
Hence، H = ٣!.

١٥. (b) : Coefficient of $x^{٤٩}$ = − Sum of the roots of f(x)
= − (١ + ٣ + ٧ + ٩+ . . . . . . + ٩٩)
− (٥٠)٢= −٢٥٠٠

١٦. (b) : The sum of three numbers is given؛ the product will be maximum if the numbers are equal.
So، if a + b + c is defined، abc will be maximum when all three terms are equal. In this instance، however، with a، b، c being distinct integers، they cannot all be equal. So، we need to look at a، b، c to be as close to each other as possible.
a = ١٠، b = ١٠. c = ١١ is one possibility، but a، b، c have to be distinct. So، this can be ruled out.
The close options are،
a، b، c = ٩، ١٠، ١٢؛ product = ١٠٨٠
a، b، c = ٨، ١١، ١٢؛ product = ١٠٥٦
Maximum product = ١٠٨٠

١٧. (a) : Let y gold coins were given to ١st son.

Number of gold coins given to ٢nd son = $\frac{٥}{٧}$y

Number of gold coins given to ٣rd son = $\frac{٣}{٧}$y

So، $y - \frac{٣}{٧}y = ٦٠ \Rightarrow \frac{٤y}{٧} = ٦٠$

$\Rightarrow \quad y = \frac{٦٠ \times ٧}{٤} = ١٥ \times ٧ = ١٠٥$

Hence، the required number of gold coins:

$= ١٠٥ + \frac{٥}{٧} \times ١٠٥ + \frac{٣}{٧} \times ١٠٥$

= ١٠٥ + ٧٥ + ٤٥ = ٢٢٥

١٨. (c) : Q can be ٠ or ٥، but ٦٥ is not divisible by ٤.
So، Q must be ٠.
Now، sum of the digitshould be divisible by ٩.
So، P is ٨.

١٩. (a) : (٦X٢ + ٤٣X − ٤٩) − (٥X٢ + ٢X − ٧) = ٠
X٢ + ٤١X − ٤٢ = ٠
X٢ + ٤٢X − X − ٤٢ = ٠
X(X + ٤٢) − ١(X + ٤٢) = ٠
(X − ١)(X + ٤٢) = ٠

x = ١ satisfy both the equations. So، there is only one common root.

٢٠. (c) : The solid sphere is melted and recast into cones. The volume of material is the same before and after casting.

Volumeofthesphere=æ٤ö èç3ø÷pr٣ ..... (١)

Volume of the right circular cone = ١pR٢H ..... (٢)
٣

Diameter of the base of the cone

= √٢slant height

= √٢S(say) ..... (٣)

٤R = ٢S = ٢(H٢ + R٢)

٢R٢ = ٢H

R = H ..... (٤)

Volume of the cone = ١pR٢H
٣

= $\frac{١}{٣}$ pr٢ .(r) (since، R = r)

= $\frac{١}{٣}$ pr٣

From equations (١) and (٤)، it can be seen that the melted material creates exactly ٤ cones of the specified dimensions. No material is left over.