QUE 1: $S_n = \frac{n}{2}(2a+(n-1)d$

$340 = \frac{n}{2}(2(7)+(n-1)6)$

$680 = n(14+6n-6)$

$680 = n(8+6n)$

$680 = 8n+6n^2$

$6n^2+8n-680=0$

$\frac{-8 \pm \sqrt{8^2-4(6)(680)}}{2(6)}$

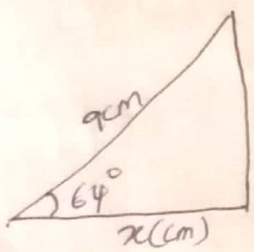
$\frac{-8 \pm \sqrt{64+16320}}{12}$

$\frac{-8 \pm \sqrt{16384}}{12}$

$\frac{-8+128}{12}$ or $\frac{-8-128}{12}$

$n=10$ $\boxed{\text{option B}}$

QUE 2:



$\cos\theta = \frac{adj}{hyp}$

$\cos 64 = \frac{x}{9}$

$x = 3.9cm$ $\boxed{\text{option D}}$

QUE 3: $\frac{1+i}{1-i}$

$\frac{1+i}{1-i} \times \frac{1+i}{1+i}$

$\frac{1+2i+i^2}{2} \Rightarrow \frac{2i}{2}$

$= 0+i$

$r(\cos\theta + i\sin\theta)$

$1(\cos\frac{\pi}{2} + i\sin\frac{\pi}{2})$

QUE 4: $n(U) = 20$

$n(S) = 16$

$n(H) = 12$

$n(S\cup H)^c = 2$

$n(S\cap H) = ?$

$n(S\cup H) = n(S)+n(H)-n(S\cap H)$

$n(S\cup H) = 16+12-n(S\cap H)$

$= 28-n(S\cap H)$

$n(S\cup H)+n(S\cup H)^c = n(U)$

$28-n(S\cap H)+2 = 20$

$30-n(S\cap H) = 20$

$30-20 = n(S\cap H)$

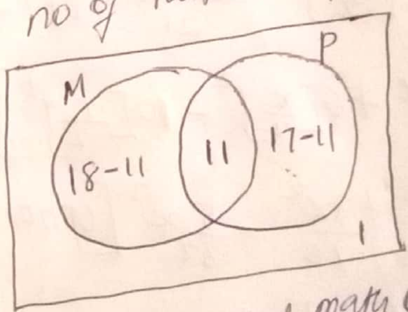
$10 = n(S\cap H)$ $\boxed{\text{option B}}$

QUE 5: no of those who passed math = 18

" " physics = 17

no of those who passed both = 11

no of those who failed both = 1



no of those who passed math only = 7

$\boxed{\text{option B}}$

QUE 6: $\frac{4+2i}{5-i}$ $\boxed{\text{option B}}$

$\frac{4+2i}{5-i} \times \frac{5+i}{5+i}$

$\frac{20+4i+10i+2i^2}{26}$

$20+14i+2i^2 \Rightarrow \frac{18+14i}{26}$

$\frac{9}{13}+i\frac{7}{13}$

QUE 7: $(3+2x)^6$

$^6C_6 3^6(2x)^0 + {^6C_5} 3^5(2x)^1 + {^6C_4} 3^4(2x)^2 + {^6C_3} 3^3(2x)^3$
$+ {^6C_2} 3^2(2x)^4 + {^6C_1} 3(2x)^5 + {^6C_0} 3^0(2x)^6$

$729 + 2916x + 4860x^2 + 4320x^3$

$\therefore$ The coefficient of x^3 is 4320

Alternatively: $\sum {^nC_r} x^{n-r} y^r$

$^6C_r x^{6-r} y^r$

$x^3 = x^r$

$6C_3 x^3 y^3$

$6C_3 (3^3)(2x)^3$

$20 \times 27 \times 8x^3$

$= 4320x^3$ [option A]

QUE 8: Expand $(2+x)^{-3}$

$\left[2^{-3}\left[1+\frac{x}{2}\right]^{-3}\right]$

$\frac{1}{8}\left[1+\left[\frac{-3x}{2}\right] + \frac{-3[-3-1]}{2!}\left[\frac{x}{2}\right]^2 + \frac{[-3][-4][-5]}{3!}\frac{x}{2}^3\right]$

$\frac{1}{8}\left[1 - \frac{3x}{2} + 6\left[\frac{x}{2}\right]^2 - 10\left[\frac{x}{2}\right]^3\right]$

$\frac{1}{8} - \frac{3x}{16} + \frac{3x^2}{16} - \frac{5}{32}x^3$ [option B]

QUE 9: $\Delta = b^2 - 4ac$

$\Delta = (-3)^2 - 4(1)(-10)$

$\Delta = 9 + 40$

$\Delta = 49$

Roots of the equation is Real and distinct because it positive and also a perfect square.

QUE 10: $5x^2 - 7x - 3 = 0$

Form the equation whose roots are $\alpha - \frac{1}{\beta}$ and $\beta - 1/\alpha$

$\alpha + \beta = -b/a = 7/5$

$\alpha\beta = c/a = -3/5$

Equation from roots = $x^2 - [\text{sum of root}]x + \text{product}$

$\frac{\alpha\beta - 1}{\beta} + \frac{\alpha\beta - 1}{\alpha}$

$\frac{\alpha(\alpha\beta - 1) + \beta(\alpha\beta - 1)}{\alpha\beta}$

$\frac{\alpha^2\beta - \alpha + \beta^2\alpha - \beta}{\alpha\beta}$

$\frac{\alpha^2\beta + \beta^2\alpha - \alpha - \beta}{\alpha\beta}$

$\frac{\alpha\beta[\alpha+\beta] - [\alpha+\beta]}{\alpha\beta}$

$\frac{\frac{-3}{5}\left[\frac{7}{5}\right] - \frac{7}{5}}{-3/5}$

$= 56/15$ [sum of the root]

$\frac{\alpha\beta - 1}{\beta} \times \frac{\alpha\beta - 1}{\alpha}$

$\frac{\alpha^2\beta^2 - \alpha\beta - \alpha\beta + 1}{\alpha\beta}$

$\frac{\alpha^2\beta^2 - 2\alpha\beta + 1}{\alpha\beta}$

$\frac{[\alpha\beta]^2 - 2\alpha\beta + 1}{\alpha\beta}$

$\frac{\left[\frac{-3}{5}\right]^2 - 2\left(\frac{-3}{5}\right) + 1}{-3/5}$

$= -64/15$

Equation of the root equals

$x^2 - [56/15]x + \frac{-64}{15} = 0$

$15x^2 - 56x - 64 = 0$

[option B]

QUE 11: Common ratio = 2

5th term: $ar^4 = a + 45$

$ar^4 = a + 45$

where $r = 2$

$a2^4 = a + 45$

$16a = a + 45$

$15a = 45$

$a = 3$

5th term $= ar^4$

$= 3 \times 2^4$

$= 3 \times 16 = 48$ [option B]

QUE 12: Harmonic sequence can be defined as the reciprocal of the arithmetic sequence with numbers other than zero. Therefore, Harmonic sequence can be zero. [option D]

QUE 13: 2, 4, 6, 8, 10, 12 is an example of Arithmetic progression. The common difference shows this [option B]

QUE 14: Series obtained by adding term of Arithmetic sequence is called Arithmetic prog. while that of division is Geometric prog [option C]

QUE 15: $1, \frac{1}{3}, \frac{1}{3^2} \ldots$

$a = 1$

$r = \frac{1}{3}$

$S_\infty = \frac{a}{1-r}$

$= \frac{1}{\frac{2}{3}}$

$= \frac{3}{2}$ [option B]

QUE 16: Arithmetic mean $\bar{x}$ between 2 and 3

$\frac{a+b}{2} = \frac{2+3}{2} = \frac{5}{2}$

Harmonic mean between 2 and 3

$\frac{2ab}{a+b} = \frac{2(2)(3)}{2+3} = \frac{12}{5}$

$\bar{x} + H = \frac{12}{5} + \frac{5}{2}$

$\frac{24+25}{10} = \frac{49}{10}$

[option B]

QUE 17: Arithmetic mean between 9 & 11

$\frac{a+b}{2} = \frac{9+11}{2}$

$\bar{x} = 10$ [option A]

QUE 18: Expand $a^2 + b^2$

$[a+b]^2 = a^2 + b^2 + 2ab$

$[a+b]^2 - 2ab = a^2 + b^2$

[option E] $(a+ib)(a-ib)$

QUE 19: $z_1 = 2+i$

$z_2 = 1+3i$

$[z_1 - z_2] = 2 - 1 + 1i - 3i$

$z_1 - z_2 = 1 - 2i$

QUE 20: $|z_1 + z_2| =$

$z_1 + z_2 = 3 + 4i$

$|z_1 + z_2| = \sqrt{3^2 + 4^2}$

$|z_1 + z_2| = 5$

$|z_1| = \sqrt{2^2 + 1^2}$

$|z_1| = \sqrt{5}$

$|z_2| = \sqrt{1^2 + 3^2}$

$|z_2| = \sqrt{10}$

$|z_1| + |z_2| = \sqrt{5} + \sqrt{10}$

$= 5.4$

$\therefore |z_1 + z_2| \le |z_1| + |z_2|$

QUE 21: Polar form of complex number

$r(\cos\theta + i\sin\theta)$ [option C]

QUE 22: Arithmetic mean between $x-3$ & $x+5$

$\frac{a+b}{2} = \frac{x-3+x+5}{2} \Rightarrow \frac{2x+2}{2}$

$\bar{x} = x+1$

[option C]

QUE 23: 2, 6, 18

$a = 2$

$r = 3$

$S_{n_5} = \frac{a[r^n - 1]}{r-1}$ where n is 5

$S_{n_5} = \frac{2[3^5 - 1]}{3-1}$

$S_{n_5} = \frac{\cancel{2}[242]}{\cancel{2}}$

$S_{n_5} = 242$ [option C]

QUE 24: $[3+2x]^6$ find the constant term

$^nC_r x^{n-r} y^r$

$^6C_0 3^6 (2x)^0$

$= 729$ [option A]

QUE 25: $U: \{1, 2, 3, 4\}$

$P = \{2, 3\}$

$Q = \{2, 4\}$

what is $\{P \cap Q\}^c$

$\{P \cap Q\} = 2$

$\{P \cap Q\}^c = \{1, 3, 4\}$ [option B]

QUE 26: Length = 8cm

radius = 6cm

$L = r\theta$

$8 = 6\theta$

$\theta = 4/3$

Area $= \frac{r^2\theta}{2}$

$= \frac{36}{2} \times \frac{4}{3}$

$= 24cm^2$ [option C]

QUE 27: $\tan\alpha = 1/5$ and $\beta = 4/19$ $\tan\gamma = \frac{2}{5}$

value of $\tan[\alpha+\beta+\gamma]$

$$Tan[\alpha+\beta+\gamma] = \frac{Tan[\alpha] + Tan[\beta+\gamma]}{1 - Tan[\alpha]\,Tan[\beta+\gamma]}$$

$$Tan[\beta+\gamma] = \frac{Tan[\beta] + Tan[\gamma]}{1 - Tan[\beta]\,Tan[\gamma]}$$

$$= \frac{4}{19} + \frac{2}{5} \Big/ 1 - \frac{4}{19}\left[\frac{2}{5}\right]$$

$$= \frac{58}{95} \times \frac{95}{87} = \frac{58}{87}$$

$$Tan[\alpha+\beta+\gamma] = \frac{Tan\alpha + [Tan\beta+\gamma]}{1 - Tan[\alpha]\,Tan[\gamma]}$$

$$= \frac{1}{5} + \frac{58}{87} \Big/ 1 - \frac{1}{5}\left[\frac{58}{87}\right]$$

$$= \frac{13}{15} \times \frac{15}{13} = 1$$

$\therefore Tan(\alpha+\beta+\gamma] = 1$ [option B]

QUE 28:

$Tan\,\theta = \frac{opp}{adj}$

$Tan\,45 = \frac{x}{7\sqrt{2}}$

$x = 7\sqrt{2}cm$ [option B]

QUE 29: Find the 4th term of an AP whose first term is 2 and the common difference is 0.5

$T_{n4} = a+3d$

$= 2+3[0.5]$

$= 3.5$ [option C]

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QUE 30: Length = ?

$\theta = 150 \times \frac{\pi}{180} = \frac{5\pi}{6}$

$r = 12cm$

$L = r\theta$

$L = 12 \times \frac{5\pi}{6}$

$L = 10\pi cm$ [option C]

QUE 31: $A = \{a, b, c\}$

$B = \{a, b, c, d, e\}$

$C = \{a, b, c, d, e, f\}$

Find $(A \cup B) \cap (A \cup C)$

$[A \cup B] = \{a, b, c, d, e\}$

$[A \cup C] = \{a, b, c, d, e, f\}$

$(A \cup B) \cap (A \cup C) = \{a, b, c, d, e\}$ [option B]

QUE 32: If $\cos 60^\circ = \frac{1}{2}$

$\cos 60^\circ = \sin 30^\circ$

[option A]

QUE 33: Perimeter of a sector

$\frac{\theta}{360} \times 2\pi r + 2r$

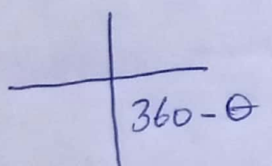
$\frac{120}{360} \times 2 \times \frac{22}{7} \times 10.5 + 2(10.5)$

$\frac{55440}{2520} + 21$

$22 + 21$

$= 43cm$ [option C]

QUE 34: Cos 75° has the same value as

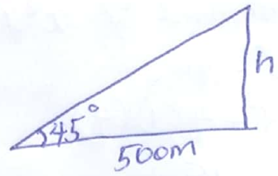


$360 - 75 = 285^\circ$

$\therefore \cos 75^\circ$ is equivalent to $\cos 285^\circ$

[option C]

QUE 35:



$\tan\theta = \frac{opp}{adj}$

$\tan 45 = \frac{h}{500}$

$h = 500m$ [option E]

QUE 36: Calculate the sum to infinity

$1 + \frac{1}{3} + \frac{1}{9} + \frac{1}{27}$

$a = 1$

$r = \frac{1}{3}$

$S_{\infty} = \frac{a}{1-r}$

$S_{\infty} = \frac{1}{2/3}$

$= \frac{3}{2}$ [option B]

QUE 37: $\frac{1+2i}{1-3i}$

Rationalize

$\frac{1+2i}{1-3i} \times \frac{1+3i}{1+3i}$

$\frac{1+5i+6i^2}{10}$

$\frac{-5+5i}{10} = -\frac{1}{2} + \frac{i}{2}$

Modulus $= \sqrt{(-\frac{1}{2})^2 + (\frac{1}{2})^2}$

$= \sqrt{\frac{1}{2}}$

$= \frac{1}{\sqrt{2}}$

Arg $[\tan\theta] = y/x$

$\tan\theta = \frac{1}{2} \times \frac{-2}{1}$

$\theta = -45^\circ$

From Argand diagram

$\cancel{\theta = 360 - 45}$ $\theta = 180 - 45$

$\cancel{\theta = 315}$ $\theta = 135^\circ$

$[\frac{1}{\sqrt{2}}, \frac{3\pi}{4}]$

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QUE 38: Discriminant of $x^2+3x+4=0$

$D=b^2-4ac$

$D=3^2-4(1)(4)$

$D=9-16$

$D=-7$ [option B]

QUE 39: $x^2-5x+4=0$ Find $\frac{1}{\alpha}-\frac{1}{\beta}$

$\alpha+\beta=-5$ --- (i)

$\alpha\beta=4$ --- (ii)

$\alpha=4/\beta$ --- (iii)

$\frac{4}{\beta}+\beta=-5$

$\beta^2+5\beta+4=0$

$\frac{-5\pm\sqrt{5^2-4(4)}}{2}$

$\frac{-5\pm\sqrt{9}}{2}$

$\frac{-5+3}{2}$ or $\frac{-5-3}{2}$

$\beta=-1$ or -4

when $\beta=-1$ $\alpha=-4$

" $\beta=-4$ $\alpha=-1$

To solve $1/\alpha-1/\beta$ when α is -1 and β is -4

$\frac{1}{\alpha}-\frac{1}{\beta}$

$\frac{\beta-\alpha}{\alpha\beta}$

$\frac{-4-[-1]}{4}=-3/4$

To solve $\frac{1}{\alpha}-\frac{1}{\beta}$ when $\alpha=-4$ & $\beta=-1$

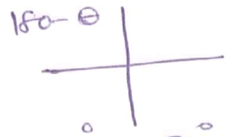
$\frac{\beta-\alpha}{\alpha\beta}$

$\frac{-1-[-4]}{4}=3/4$

$\therefore 1/\alpha-1/\beta=\pm 3/4$

[option C]

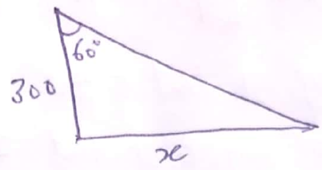
QUE 40: The value of Sin 210°



$180-210^\circ=-30^\circ$

$\therefore$ The value of $\sin 210^\circ=-1/2$

QUE 41:



$\tan\theta=\frac{opp}{adj}$

$\tan 60^\circ=\frac{x}{300}$

$\sqrt{3}=\frac{x}{300}$

$x=300\sqrt{3}$

QUE 42: $S=\{1,2,3,4,5,6\}$

$T=\{3,4,5,6\}$

$R=\{1,4,5\}$

Find $(S\cap T)\cup R$

$(S\cap T)=\{3,4,5,6\}$

$(S\cap T)\cup R=\{1,3,4,5,6\}$

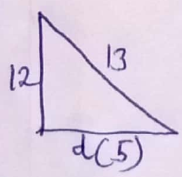
QUE 43: Write as a single fraction

$\frac{5}{6r}-\frac{3}{4r}$

$\frac{10-9}{12r}=1/12r$ [option E]

QUE 44: If $\sin x=12/13$

Find $1-\cos^2 x$



$13^2=12^2+d^2$

$169-144=d^2$

$d=5$

$\cos x=5/12$

$1-\left(\frac{5}{13}\right)^2=1-\frac{25}{169}$

$=144/169$

[option D]

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QUE 45: BANANA

$$\frac{7!}{3!\,2!}$$

$$\frac{7\times6\times5\times4\times3\times2}{[3\times2\times1][2\times1]}$$

$= 720$ [option A]

QUE 46: no of student $= 40$

no of physic student $= 22$

no of math student $= 21$

no of student $= n(P) + n(m) - n(P\cap m)$

$40 = 22 + 21 - x$

$40 = 43 - x$

$x = 3$

no of those who study physics $=$

$n(P) - n(P\cap m)$

$22 - 3 = 19$

[option D]

QUE 47: $n(U) = 37$

$n(C) = 8,\ n(E) = 19$

$n(M) = 25,\ n(E\cap M) = 12$

$n(C\cap E) = 0 \quad n(C\cap M) = ?$

$n(\ldots) = ?$

$n(U) = n(C) + n(m) + n[E] - [n(E\cap m) + n(C\cap E) + n(C\cap m)]$

$37 = 8 + 25 + 19 - [12 + 0 + x]$

$37 = 52 - [12 + x]$

$37 = 40 - x$

$x = 3$ [option A]

QUE 48: If $\tan\theta < 0$, $\sin\theta < 0$

Then angle lies at the first quadrant because all is positive at the first quadrant.

QUE 49: $\cos(x + \alpha)$

$\cos(x + \alpha)$ is equivalent to

$-\cos\alpha$ [option B]

QUE 50: $\sec[\alpha - 90°]$

$\sec[\alpha - 90]$ is equivalent to

$\operatorname{cosec}\alpha$ [option A]

QUE 51: $\cot[90° - \alpha]$

Recall that $\cot = 1/\tan$

$\therefore \cot[90 - \alpha] = \tan\alpha$

[option A]

QUE 52: $\sin\left[\frac{3\pi}{2} - \theta\right] =$

$\sin[270 - \theta]$

$= -\cos\theta$

[option D]

QUE 53, 54, 55 & 56 are Rational Numbers

QUE 57: first term $= x$

second term $= x+1$

third term $= x+2$

$4[x+2]^2 - 3[x]^2 = 41 + 2[x+1]^2$

$4[x^2 + 4x + 4] - 3x^2 = 41 + 2[x^2 + 2x + 1]$

$4x^2 + 16x + 16 - 3x^2 = 41 + 2x^2 + 4x + 2$

$x^2 + 16x + 16 = 2x^2 + 4x + 43$

Collect like terms

$x^2 - 12x + 27 = 0$

$$\frac{12 \pm \sqrt{(-12)^2 - 4(27)}}{2}$$

$$\frac{12 \pm \sqrt{144 - 108}}{2}$$

$\frac{12+6}{2}$ or $\frac{12-6}{2}$

$x = 9$ or 3

The values of the three consecutive number $= 3, 4 \& 5$ or $9, 10, 11$

[option A]

QUE 58: Find the sum of all numbers between 5 & 130 which are divisible by 4

$8, 12, 16 \ldots 128$

$T_n = a + (n-1)d$

$128 = 8 + (n-1)4$

$128 = 8 + 4n - 4$

$128 = 4 + 4n$

$124 = 4n$

$n = 31$

$S_n = n/2(2a + (n-1)d)$

$S_n = \frac{31}{2}(2(8) + (31-1)4)$

$S_n = \frac{31}{2}(16 + 120)$

$S_n = \frac{31}{2} \times 136$

$S_n = 2108$ [option C]

QUE 59: What is the coefficient of x^3 in the expansion of $(3+2x)^6$

$\sum^n {}^nC_r x^{n-r} y^r$

${}^6C_r 3^{6-r} y^r$

$x^3 = x^r$

$\therefore r = 3$

${}^6C_3 3^{6-3} \cdot (2x)^3$

$20 \times 3^3 (2x)^3$

$20 \times 27 \times 8x^3$

$= 4320x^3$ [option A]

QUE 60: Find the modulus of $1+i$

modulus $(r) = \sqrt{1^2 + 1^2}$

$= \sqrt{2}$

Arg$(\tan\theta) = y/x$

$\tan\theta = 1/1$

$\theta = 45^\circ$

$[\sqrt{2}, 45^\circ]$ [option A]

QUE 61: $x^2 - 5x + 4 = 0$

Solved already in Q 39

QUE 62: $n(X) = 120$

$n(Y) = 75$

$n(1) = 60$

$n(Y \cap L) = ?$

$n(X) = n(Y) + n(1) - n(Y \cap L)$

$120 = 75 + 60 - x$

$120 = 135 - x$

$x = 15$ [option C]

QUE 63: Since the no of those who learned both subject is 15

$n(1) = 60 - 15$

$= 45$ [option A]

QUE 64: Second term $(ar) = -1/2$

Third term $(ar^2) = 1/4$

$ar = -1/2$

$ar^2 = 1/4$

$r = 1/4 \times \frac{-2}{1}$

$r = -1/2$

$ar = -1/2$

$-\frac{1}{2}a = -1/2$

$a = 1$

Sum to infinity $\frac{a}{1-r}$

$= \frac{1}{1-[-1/2]} = \frac{1}{1+1/2}$

$[= 2/3]$ [option D]

QUE 65: $\frac{x+5}{(x-1)(x+2)} = \frac{P}{x-1} + \frac{Q}{x+2}$

$x+5 = P(x+2) + Q[x-1]$

When x is 1

$1+5 = P(3) + Q[0]$

$6 = 3P \quad P = 2$

When x is -2

$-2+5 = P(-2+2) + Q[-3]$

$3 = -3Q$

$Q = -1 \quad P+Q = 2-1$

$= 1$ [option A]

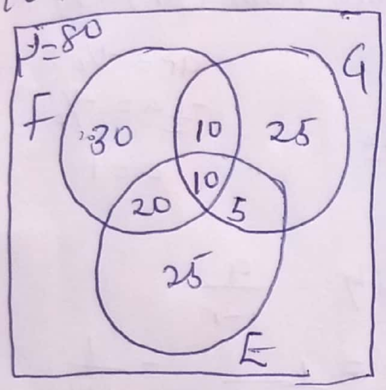
QUE 66: Null/Empty set are represented by ϕ or $\{\}$ [option D]

QUE 67: If A and B are sets and
$A \cup B = A \cap B$
This implies that $A = B$ [option C]

QUE 68: If X and Y are two sets then,
$X \cap (Y \cup X)$
$= (X \cap Y) \cup (X \cap X)$
$= \phi$ [option C]

QUE 69: The number of elements in the power of the set $\{\{a, b\}, c\}$
$\cancel{2}^{2}\ P(A) = 2^n$
$P(A) = 2^2$
$= 4$ [option B]

QUE 70:



$n(U) = 80 \quad n(E \cap F) = 30$
$n(F) = 80 \quad n(F \cap G) = 20$
$n(G) = 50 \quad n(E \cap G) = 15$
$n(E) = ? \quad n(E \cap G \cap F) = 10$

~~80 = 80 + 60 + x − [30 + 20 + 15] + 10~~

$80 = 60 + 50 + x - [30 + 20 + 15] + 10$
$80 = 110 + x - [65] + 10$
$80 = 110 + 10 - 65 + x$
$80 = 55 + x$
$x = 25$

no of those who studied at least one subject
$= 30 + 25 + 25 + 10 + 10 + 20 + 5$
$= 125$

QUE 71: $n(U) = 28 \quad n[E \cap H] = 9$
$n(E) = 18 \quad n[H \cap K] = 11$
$n(H) = 15 \quad n[K \cap E] = 13$
$n[K] = 22 \quad n[K \cap E \cap H] = ?$

$28 = 18 + 15 + 22 - [9 + 11 + 13] + x$
$28 = 55 - [33] + x$
$28 = 22 + x$
$x = 28 - 22$
$x = 6$ [option A]

QUE 72: Let the number of expert with be x
$x = \frac{1}{2}(x) + \frac{2}{3}(x) - 10 + 6$
$x = \frac{x}{2} + \frac{2x}{3} - \frac{4}{1}$
$x = \frac{3x + 4x - 24}{6}$
$6x = 7x - 24$
$24 = 7x - 6x$ [option C]
$x = 24$
$\therefore$ no of expert equals 24

QUE 73: Object in a set are called Element of a set
[option A]

QUE 74: A group or collection of objects is known as set
[option B]

QUE 75: vowels in alphabet
$\{a, e, i, o, u\}$ [option B]

QUE 76: Set $\{x$: odd numbers between 10 and 18
$\{11, 13, 15, 17\}$ [option C]

QUE 77: $a_n = \frac{[-1]^n}{2n - 1} \quad a_5 = ?$
$a_5 = \frac{[-1]^5}{2[5] - 1} \quad a_5 = \frac{-1}{9}$
[option D]

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QUE 79: what is the 31st term of the sequence 1, 4, 7, 10

$a = 1 \quad d = 3$

$T_{31} = a + (31-1)d$

$T_{31} = a + 30d$

$T_{31} = 1 + 30(3)$

$T_{31} = 91$ [option B]

QUE 80: $m-2n, m-n, m$

$a = m-2n$

$d = n$

i.e $m-n-m-2n = d$

$m-n-m+2n = d$

$n = d$

11^{th} term $= a + 10d$

$T_{11} = m-2n+10(n)$

$T_{11} = m-2n+10n$

$T_{11} = m+8n$ [option D]

QUE 81: Common difference of sequence 5, 8, 11, 14 is

$8-5 = d$

$d = 3$ [option A]

QUE 82: $2^1 + 2^2 + 2^3 \text{----} + 2^n =$

$2 + 4 + 8 \text{———} 2^n$

$r = 2$

$a = 2$

$a[r^n - 1] = 2[2^n - 1]$

[option A]

QUE 83: Second term of a sequence

$\cancel{n^3}\ n^2 - 4/2$

when n is 2

$= 2^2 - 4/2$

$= 4 - 4/2$

$= 2$ [option E]

QUE 84: A.p whose nth term is $2n-1$

when n is 1 $= 2(1) - 1$ $= 1$ A.p = 1, 3, 5

when n is 2 $= 2(2) - 1$ $= 3$ [option C & E]

when n is 3 $= 2(3) - 1 = 5$

QUE 85: How many are there in 20, 25, 30 140

$T_n = a + (n-1)d$

$140 = 20 + (n-1)5$

$140 = 20 + 5n - 5$

$140 = 15 + 5n$

$125 = 5n$

$n = 25$ [option B]

QUE 86: Find the First term of an A.P whose 8th & 12th term is 39 & 59

$T_8 = a + 7d$

$T_{12} = a + 11d$

$a + 7d = 39$

$a + 11d = 59$

$4d = 20$

$d = 5$

sub for d in ①

$a + 7d = 39$

$a + 7(5) = 39$

$a = 4$ [option C]

QUE 87: The 15th term of 20, 15, 10

$a = 20$

$d = -5$

$T_{15} = a + 14d$

$T_{15} = 20 + 14[-5]$

$T_{15} = 20 - 70$

$T_{15} = -50$ [option C]

QUE 88: $a = 5$

$a + 2d = 15$ --- ②

sub for a in ②

$5 + 2d = 15$

$2d = 10$

$d = 5$

$S_{n16} = \frac{n}{2}[2a + (n-1)d]$

$S_{n16} = \frac{16}{2}[2[5] + [16-1]5]$

$S_{n16} = 8[10 + 75]$

$S_{n16} = 680$ [option D]

~~QUE 89: How many terms are there in~~

~~5, 20, 80, 320 ...... 20480~~

~~$a - 5$~~

~~$r - 4$~~

$\cancel{20480 = ar^{n-1}}$

$\cancel{20480 = 5 \times r^{n-1}}$

$\cancel{4096 = 4^{n-1}}$

QUE 89: How many terms are there in

5, 20, 80, 320, -- 20480

$a - 5, \quad r - 4$

$20480 = ar^{n-1}$

$20480 = 5 \times 4^{n-1}$

$4096 = 4^{n-1}$

$4^6 = 4^{n-1}$

$6 = n - 1$

$n = 7$ [option D]

QUE 90: $x^4 - 3x + 5$ is divided by

$2x - 1$

$2x - 1 = 0$

$x = 1/2$

$[1/2]^4 - 3[1/2] + 5 = 0$

$\frac{1}{16} - \frac{3}{2} + \frac{5}{1} = 0$

$\frac{1 - 24 + 80}{16} = 0$

remainder $= 57/16$

QUE 91: Solve equation $x^2 + 5x - 6 = 0$

$[x^2 - x][+6x - 6]$

$x[x-1] + 6[x-1]$

$[x+6][x-1]$

values of x equal 1 & -6

[option B]

QUE 92: if $a < 0$, the function

$F(x) = ax^2 + bx + c$

has its maximum value

[option A]

QUE 93: if roots of $x^2 - 5x + a = 0$ then a equal

$D = b^2 - 4ac$

$D = (-5)^2 - 4[1][a]$

$D = 25 - 4a$

$25 - 4a = 0$

$a = 25/4$ [option C]

QUE 94: If w is imaginary root of unity, then w^2 is ?

$w = \sqrt[3]{-1}$

$w^2 = 1$ [option A]

QUE 95: Discriminant $= b^2 - 4ac$

[option C]

QUE 96: $x^2 - 2x + 3$ Find the equation with roots $\alpha + 2$ and $\beta + 2$

$\alpha + \beta = -b/a = 2$

$\alpha\beta = c/a = 3$

Sum of roots

$\alpha + 2 + \beta + 2 = \alpha + \beta + 4$

Sum of roots $= [+2] + 4$

$= 6$

Product of roots

$[\alpha + 2][\beta + 2]$

$\alpha\beta + 2\alpha + 2\beta + 4$

$\alpha\beta + 2[\alpha + \beta] + 4$

$3 + 2[2] + 4$

$= 11$

equation of root

$x^2 - [\text{sum of root}]x + \text{product of root}$

$x^2 - 6x + 11 = 0$

QUE 97: $ax^2 + bx + c = 0$

for root to be distinct and real the discriminant $[b^2 - 4ac]$ must be greater than zero

[option B]

QUE 98: Find the roots of $x^2+2x-15=0$ Using factorization method

$[x^2-3x]+[5x-15]=0$

$x[x-3]+5[x-3]=0$

$[x-3][x+5]$

roots equal 3 & -5 [option A]

QUE 99: Find the roots of $2x^2+3x-9=0$

$-b \pm \sqrt{\dfrac{b^2-4ac}{2a}}$

$-3 \pm \dfrac{\sqrt{(3)^2-4(2)(-9)}}{2(2)}$

$-3 \pm \dfrac{\sqrt{9+72}}{4}$

$\dfrac{-3 \pm 9}{4} \Rightarrow \dfrac{-3+9}{4}$ or $\dfrac{-3-9}{4}$

$6/4$ or $-12/4$

$3/2$ or -3 [option B]

QUE 100: Which of these sub set are equal

$L=\{5,t,5\}$

$N=\{t,5,t,r\}$

$O=\{5,5,5,t\}$

[option D is correct] all subset are equal neglecting repetition.

QUE 101: Solve for x if $5^{x^2}=625^{x+3}$

$5^{x^2}=625^{x+3}$

$5^{x^2}=5^{4[x+3]}$

$5^{x^2}=5^{4x+12}$

$x^2=4x+12$

$x^2-4x-12=0$

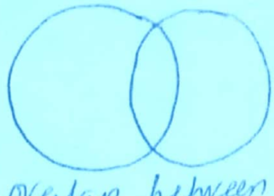
$x^2+2x-6x-12=0$

$x[x+2]-6[x+2]=0$

$[x-6][x+2]$

$x=6$ & -2 [option B]

QUE 102:



The overlap between two circle in venn diagram represent the intersection of two set

[option B]

QUE 103: no of student in cricket team = 8

no of " in badminton team = 12

intersection = 3

$n(U) = ?$

$n(U) = n(t) + n(b) - n(t \cap b)$

$n(U) = 12 + 8 - 3$

$n(U) = 17$ [option B]

QUE 104: Set is the collection of a well defined objects

[option B]

QUE 105: Anything belonging to a set is called "element" of the set

[option C]

QUE 106: The null set is considered to be a "subset" of every set.

[option A]

QUE 107: A set which does not contain any element is regarded as Null/empty set

$\{\}$ ϕ [option A]

QUE 108: Every set is a "subset" of itself

[option B]

QUE 109: Two set are said to be "Equal" if they have the same number of elements

[option A]

QUE 110: $n(U)=60$, $n[I]=32$, $n[H]=45$

$60=32+45-n[I \cap H]$

$60=77-x$

$x=17$ [option A]

(112)

QUE 111: $n(\gamma) - 80$
$n(G) = 65$
$n(E) = 50$
$n(E \cap G) = ?$

$80 = 65 + 50 - x$
$80 = 115 - x$
$x = 115 - 80$
$x = 35$ [option D]

QUE 112: $\frac{\log_{10}\sqrt{125} + \log_{10}\sqrt{27} - \log_{10}\sqrt{75}}{\log_{10}3 - \log_{10}5}$

$\frac{\log_{10}5\sqrt{5} + \log_{10}3\sqrt{3} - \log_{10}5\sqrt{3}}{\log_{10}3 - \log_{10}5}$

$= \log_{10}\frac{15\sqrt{15}}{5\sqrt{3}} \times \log_{10}\frac{5}{3}$

$= \frac{5\sqrt{5}\times\sqrt{3}}{\sqrt{3}\times\sqrt{3}} = \frac{5\sqrt{45}}{3} = 3\sqrt{5}$

[option A]

QUE 113: obtain the roots of the equation
$x^2 - 5x + 6 = 0$
Using factorization method
$x^2 - 2x - 3x + 6 = 0$
$x[x-2) - 3[x-2] = 0$
$[x-3][x-2]$
roots of equation equals 2 & 3
[option C]

QUE 115: The sum of all numbers between 5 & 130 which are divisible by 4 is?
$8, 12, 16 \ldots\ldots\ldots 128$
$T_n = a + (n-1)d$
$128 = 8 + (n-1)4$
$128 = 8 + 4n - 4$
$n = 31$
$S_n = \frac{n}{2}[2a + (n-1)d]$
$S_n = \frac{31}{2}[2(8) + [30]4]$
$= 15.5[16 + 120] = 2108$ [option D]

QUE 114: Sequence is a set of quantities x_1, x_2, x_3 stated in a definite order
[option A]

QUE 116: Evaluate $[1+i] - [1-i]$
$1 - 1 + i - [-i]$
$2i$ [option A]

QUE 117: obtain modulus $Z = \frac{1+2i}{1-[1-i]^2}$

$Z = \frac{1+2i}{1+2i} \times \frac{1-2i}{1-2i}$

$Z = \frac{1 - 2i + 2i - 4i^2}{5}$

$Z = 5/5$
$Z = 1$ [option A]

QUE 118: ~~Tr~~ $ar^2 = 10$
$ar^6 = 6250$
divide both equation
$\frac{ar^6}{ar^2} = \frac{6250}{10}$
$r^4 = 625$
$r = 5$
sub for r in eqn ①
$a5^2 = 10$
$25a = 10$
$a = 10/25$
$a = 2/5$
$r = 5, a = 2/5$ [option A]

QUE 119: Find the co-efficient of x^0 in the expansion $[1+x]^2$
$[1+x][1+x]$
$1 + 2x + x^2$
Ans $= 1$ [option A]

QUE 120: $r = 3cm$
$\theta = 60° \simeq \pi/3$
$L = r\theta$
$L = 3 \times \frac{\pi}{3}$
$L = \pi cm$ [option B]

QUE 121: 12, x, y, z, −4. Find x

$T_n = a+(n-1)d$

$-4 = 12+[5-1]d$

$-4 = 12+4d$

$-16 = -4d$

$d = 4$

To get x:

$x - 12 = -4$

$x = -4+12$

$x = 8$ [option D]

QUE 122: Find the value of b if 15, 9, b, c, 3.

$T_n = a+[n-1]d$

$3 = 15+[4]d$

$3 = 15+4d$

$-12 = 4d$

$d = -3$

To get b, get c first

$3 - c = -3$

$3+3 = c$

$c = 6$

Then $6 - b = -3$

$6+3 = b$

$b = 9$ [option A]

QUE 123: $1 + \frac{1}{3} + \frac{1}{9} + \frac{1}{27} \dots$

$a = 1$

$r = \frac{1}{3}$

Sum $\infty = \frac{a}{1-r}$

$= \frac{1}{1-\frac{1}{3}}$

$= \frac{3}{2}[1.5]$ [option B]

QUE 124: What is the coefficient of x^3 in the expansion of $[1-2x]^{-2}$

$[1^{-2}[1-2x]^{-2}$

$\frac{1}{4}[1 + [-2][-2x] + \frac{-2[-3]}{2!}[-2x]^2 + \frac{-2[-3][-4]}{3!}[-2x]^3$

$\frac{1}{4}[1 - 4x + 12x^2 + 32x^3]$

$\frac{1}{4} - x + 3x^2 + 8x^3$

$\therefore$ The coefficient of x^3 is 8 [option E]

QUE 125: $P = \{x : 2 \le x \le 4\}$

$P = \{3, 3, 4\}$

[option C]

QUE 126: [option B] refer to [Q101]

QUE 127: Solve for y in $9^y - 4(3^y) + 3 =$

$9^y - 4(3)^y + 3 = 0$

$3^{y^2} - 4(3)^y + 3 = 0$

Let $3^y = P$

$P^2 - 4[P] + 3 = 0$

$P = 1$ & 3

recall $3^y = P$

$3^y = 1$ $\quad$ $3^y = 3^1$

$y = 0$ $\quad$ $y = 1$

[option C]

QUE 128: Find the 16th term of the sequence 3, 6, 9, 12 ......

$a = 3$ $\quad$ $d = 3$

$T_{16} = a+15d$

$= 3+15[3]$

$= 48$ [option E]

QUE 129: $n(A) = 12$

$n(B) = 10$

$n(A \cup B) = 17$

$n(A \cap B) = ?$

$n(A \cup B) = n(A) + n(B) - n(A \cap B)$

$17 = 12+10-x$

$17 = 22-x$

$x = 5$ [option C]

QUE 130: Simplify $y = a^{\log_a x}$

$\log_a y = \log_a(a^{\log_a x})$

$\log_a y = \log_a x \times \log_a a$

$\log_a a = 1$

Then: $\log_a y = \log_a x$

hence $y = x$ [option A]

QUE 131: Express $(2-3i)(1+2i)$

$2(1+2i) - 3i(1+2i)$

$= 2 + 4i - 3i - 6i^2$

$= 2 + i + 6$

$= 8 + i$ [option D]

QUE 132: Find the value that satisfy the equation $(x+y) + i(x-y) = 6 + 4i$

$x + y = 6$ --- (i)

$x - y = 4$ --- (ii)

from eqn i $x = 6 - y$

sub for x in (ii)

$6 - y - y = 4$

$6 - 2y = 4$

$6 - 4 = 2y$

$2 = 2y$

$y = 1$

To sub for y using (ii)

$x - 1 = 4$

$x = 5$

[option A]

QUE 133: If $Z = 2+3i$ Find $Z - \frac{1}{Z}$

$\frac{1}{Z} = \frac{1}{2+3i} \times \frac{2-3i}{2-3i}$

$\frac{1}{Z} = \frac{2-3i}{13}$

$Z - \frac{1}{Z} = \frac{2+3i}{1} - \frac{2-3i}{13}$

$= \frac{13(2+3i) - [2-3i]}{13}$

$= \frac{26 + 39i - 2 + 3i}{13}$

$= \frac{24 + 42i}{13} = \frac{24}{13}, \frac{42i}{13}$

QUE 134: Simplify $\frac{1+i}{1-i}$

by rationalization $\frac{1+i}{1-i} \times \frac{1+i}{1+i}$

$= \frac{1+i+i-1}{2}$

$= \frac{2i}{2}$

$= i$ [option C]

QUE 135: If $Z_1 = 1-2i$

$Z_2 = 3+2i$

Find $Z_1 Z_2$

$(1-2i)(3+2i)$

$1(3+2i) - 2i(3+2i)$

$3 + 2i - 6i - 4i^2$

$7 - 4i$

QUE 136: Find the value of $|Z|$ in

$Z = 3-4i$

$|Z| = \sqrt{3^2 + 4^2}$

$|Z| = 5$ [option A]

QUE 137: If $Z_1 = 1-3i$

$Z_2 = 2-i$

Simplify Z_1/Z_2

$\frac{1-3i}{2-i} \times \frac{2+i}{2+i}$

$\frac{2 + i - 3i - 3i^2}{5}$

$\frac{5 - 2i}{5}$

If $Z_1 = 2-3i$ Then we have

$\frac{2-3i}{2-i} \times \frac{2+i}{2+i}$

$\frac{4 + 2i - 6i - 3i^2}{5}$

$\frac{7 - 4i}{5}$

[option D]

QUE 138: Polar form of $3+4i$

$r = \sqrt{3^2 + 4^2}$

$r = 5$

$\text{Arg} = \tan^{-1} 4/3$

$\theta = 53^\circ$

$Z = 5[\cos 53^\circ + i\sin 53^\circ]$

QUE 139: $z = 1+i$

Find the complex conjugate form of $3z-2$

$3z = 3(1+i)$

$3z = 3+3i$

$3z-2 = 3+3i-2$

$= 1+3i$

conjugate of $1+3i = 1-3i$ [option C]

QUE 140: Find the modulus of $z+2$ where

$z = 1+4i$

$z+2 = 1+4i+2$

$= 3+4i$

modulus $= \sqrt{3^2+4^2}$

$= \sqrt{25}$

$= 5$ [option C]

QUE 141: Find the value of x & y

$(2x-y)+i(x+y) = 4+2i$

$2x-y = 4$ ---(i)

$x+y = 2$ ---(ii)

$x = 2-y$ ---(iii)

Substitute x in eqn (i)

$2(2-y)-y = 4$

$4-2y-y = 4$

$4-3y = 4$

$4-4 = 3y$

$y = 0$

Sub for y in (iii)

$x+0 = 2$ [option A]

$x = 2$

QUE 142: Simplify $z + 1/z$ if $z = 1+2i$

$1/z = \frac{1}{1+2i} \times \frac{1-2i}{1-2i}$

$\frac{1-2i}{5}$

$z + \frac{1}{z} = \frac{1+2i}{1} + \frac{1-2i}{5}$

$\frac{5(1+2i) + [1-2i]}{5}$

$\frac{5+10i+1-2i}{5} = \frac{6+8i}{5}$

QUE 143: Find the conjugate form of the complex number z^2 given $z = 3-2i$

$z^2 = (3-2i)(3-2i)$

$= 3(3-2i)-2i(3-2i)$

$= 9-6i-6i+4i^2$

$= 9-12i-4$

$= 5-12i$

Conjugate $= 5+12i$ [option E]

QUE 144: Express $(-1+i)^2$

$= (-1+i)(-1+i)$

$= -1(-1+i)+i(-1+i)$

$= 1-i-i+i^2$

$= -2i$

$= 0-2i$ [option B]

QUE 145: Simplify i^9

Take to the multiple of 4

$i^1 = i$ [option C]

QUE 146: Simplify i^{16}

Take to the multiple of 4

$i^0 = 1$ [option B]

QUE 147: $x+iy$ and $p+iq$ are equa

From this we will say $x = p$ and $y = q$

$x = p$ [real part]

$y = q$ [Imaginary part]

[option D]

QUE 148: Polar form of complex no

$z = a+ib$

$r(\cos\theta + i\sin\theta)$

[option C]

QUE 149: Exponential form of complex number $r(\cos\theta + i\sin\theta)$

$= re^{i\theta}$ [option A]

Since θ is positive

QUE 150: Exponential form of a complex number $r(\cos\theta - i\sin\theta)$

$= re^{-i\theta}$

[where θ is negative] [option A]

QUE 151: Compute the argument of

$Z = 4(1+i)$

$Z = 4 + 4i$

$Ay = \tan\theta = y/x$

$\tan\theta = 4/4$

$\theta = \tan^{-1} 1$

$\theta = 45^\circ$ [option E]

QUE 152: $Z = Z_1$ and $Z = Z_2$

Find the equation that satisfy

$3Z\bar{Z} + 2(Z - \bar{Z}) = 39 + 12i$

remember $Z\bar{Z} = x^2 + y^2$

$\therefore$ we have, $3(x^2+y^2) + 2[x+iy - [x-iy]] = 39+12i$

$3(x^2+y^2) + 2[2iy] = 39+12i$

$3x^2+3y^2+4iy = 39+12i$

$3x^2+3y^2 = 39$ --- (i)

$4y = 12$ --- (ii)

$y = 3$

Sub for y in eqn (i)

$3x^2+3y^2 = 39$

$x^2+y^2 = 13$ when you divide all through by 3

$x^2+3^2 = 13$

$x^2+9 = 13$

$x^2 = 4$

$x = 2$

$\therefore Z = 2+3i$

$\bar{Z} = 2-3i$ or $-2+3i$ [when you multiply all through by minus]

[option C]

QUE 153: $Z = x+iy$ when $\arg = \pi/4$

$\frac{\pi}{4} = 45^\circ$ remember $\tan\theta = y/x$

$1 = y/x$

$x = y$

[option B]

QUE 154: $Z = r(\cos\theta + i\sin\theta)$ what is Z^n

from de moivre's theorem

$Z = r^n[\cos n\theta + i\sin n\theta]$

[option B]

QUE 155: Simplify $(5+4i)(3+7i)(2-3i)$

$\cancel{5(3+7i) + 4i(3+7i)}$

$\cancel{15 + 4i + 12i + 28i^2}$

$\cancel{[-13+16i][2-3i]}$

$\cancel{-13[2-3i] + 16i[2-3i]}$

$\cancel{-26 + 39i + 32i - 48i^2}$

$\cancel{-26 + 48 + 71i}$

$\cancel{22 + 71i}$

$5(3+7i) + 4i(3+7i)\,[2-3i]$

$15 + 35i + 12i + 28i^2\,[2-3i]$

$[-13+47i][2-3i]$

$-13[2-3i] + 47i[2-3i]$

$-26 + 39i + 94i - 141i$

$115 + 133i$ [option C]

QUE 156: $f(x) = 2x^2 - 2$

evaluate $f(a-1) + F(1)$

$F(a-1) = 2(a-1)^2 - 2$

$= 2(a^2 - 2a + 1) - 2$

$= 2a^2 - 4a + 2 - 2$

$= 2a^2 - 4a$

$F(1) = 2(1)^2 - 2$

$= 2 - 2$

$= 0$

$\therefore F(a-1) + F(1)$

$= 2a^2 - 4a$

by factorizing

$2a(a-2)$ [option A]

QUE 157: $z = x + iy$ - [Find] the locus is defined by $|z| = 5$

$z = \sqrt{x^2 + y^2}$

Square both side where $z = 5$

$5^2 = x^2 + y^2$

$25 = x^2 + y^2$ [option B]

QUE 158: Simplify $\frac{ix}{1+iy} = \frac{3x+4i}{x+3y}$

$x + 3y(xi) = 3x + 3xi + 4i - 4y$

$x^2 i - 3x = 4i - 4y$

$x^2 = 4$ --①

$x = \pm 2$

$-3x = -4y$ (ii)

$3x = 4y$

$y = 3x/4$

When x is 2 $y = 6/4 = 3/2$

" " " -2 $y = -6/4 = -3/2$

$\therefore x = \pm 2 \quad y = \pm 3/2$

[option D]

E 159: If α and β are roots of $3x^2 - 7x + 2 = 0$ Find the value of $1/\alpha^2 + \beta^2$

$+\beta = -b/a = 7/3$

$= c/a = 2/3$

$= \frac{1}{(\alpha+\beta)^2 - 2\alpha\beta}$

$= \frac{1}{\left(\frac{7}{3}\right)^2 - 2(2/3)}$

$= \frac{1}{\frac{49}{9} - 4/3}$

$= \frac{1}{\frac{37}{9}} = 9/37$

[option C]

QUE 160: $x^2 + px + q = 0$

$\alpha - \beta = 5$

$\frac{\alpha}{\beta} = 7/2$

Take the ratio which implies

$\alpha = 7$ and $\beta = 2$ $\quad \alpha\beta = 14$

equation from the root equal

$x^2 - 7x + 14 = 0$

$\therefore p = -7$ and $q = 14$

[option A]

QUE 161: $2x^2 + 5x + 3 = 0$

Find the reciprocal of $\frac{\beta}{\alpha} + \frac{\alpha}{\beta}$

$\frac{\beta}{\alpha} + \frac{\alpha}{\beta}$

$\frac{\beta^2 + \alpha^2}{\alpha\beta}$ $\quad$ reciprocal $= \frac{\alpha\beta}{\alpha^2 + \beta^2}$

$= \frac{\alpha\beta}{(\alpha+\beta)^2 - 2\alpha\beta}$

$\alpha + \beta = -b/a = -5/2$

$\alpha\beta = c/a = 3/2$

$= \frac{3/2}{\left(\frac{-5}{2}\right)^2 - 2(3/2)}$

$= \frac{3}{2} \times \frac{4}{13}$

$= 6/13$

QUE 162: $U = \{x : 0 < x \leq 18\}$

$U = \{1, 2, 3, 4, 5 \cdots 18\}$

This mean Zero is not included while 18 is included but the values must not exceed 18

QUE 163: $U = \{1, 2, 3, 4 \cdots 18\}$

$A = \{2, 4, 6, 8\}$

$B = \{3, 4, 5, 6\}$

$A^c = \{1, 3, 5, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18\}$

$B^c = \{1, 2, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18\}$

$A^c \cap B^c = \{1, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18\}$

[option C]

QUE 164: $U:\{1,2,3,4,5,6,7,8 \cdots 18\}$

$A:\{2,4,6,8\}$

$B:\{3,4,5,6\}$

find $A-B$

$A-B=\{2,8\}$ [option C]

QUE 165: $U:\{1,2,3,4,5,6 \cdots 18\}$

$A:\{2,4,6,8\}$

$B:\{3,4,5,6\}$

Evaluate $A \Delta B = [A-B] \cup [B-A]$

$A-B=\{2,8\}$

$B-A\{3,5\}$

$A \Delta B\{2,3,5,8\}$ [option B]

QUE 166: $P=\{-5,-4,-3,-2,-1,0,1,2,3,4\}$

$Q=\{-2,-1,0,1,2,3,4,5,6,7,8,9\}$

$P \cap Q = \{-2,-1,0,1,2,3,4\}$

[option A]

QUE 167: $n(x)=42$

$n(y)=?$

$n(x \cap y)=84$

$n(X \cup Y)=36$

$n(X \cup Y)=n(X)+n(Y)-n(X \cap Y)$

$36=42+n(Y)-84$

$36=-42+n(Y)$

$n(Y)=78$ [option C]

QUE 168: Sub set of $S=\{a,b,c\}$

$=\{\phi\}\{a\}\{b\}\{c\}\{a,b\}\{b,c\},\{a,c\}\{a,b,c\}$

[option C]

QUE 169: Complement of a set is the set of element found in a universal set but absent in its own set

e.g $U=\{a,b,c\}$

$B=\{a,c\}$

$\therefore B^c=\{b\}$ complement of set B is $[b]$ because it is present in universal set but absent in its own set

QUE 170: $A=\{-3,-2,-1,1\}$

$B=\{1,-2,3\}$

$C=\{1,3,-3\}$

$D=\{-1,-2,-3\}$

$n(A) \neq n(B)$

no of element in A is not the same as that of element in B

because $n(A)=4$ while $n(B)=3$.