Mixed Maths Questions for SBI PO Pre, IBPS PO Pre, IBPS Clerk Mains and SBI Clerk Mains Exams.

Bank PO Maths Quiz 18

Direction: Study the following questions carefully and choose the right answer.

1. Rajesh deposit Rs. 3200000 amount in Post office at deposit fund and after some years post office returns Rs. 4084101 at 5% compound interest, then what is the time period?

A. 2 years B. 3 years C. 4 years D. 5 years E. None of these

2. In IIT Dhanbad 121 students do not participate in Dancing, 134 students do not participate in singing and 136 students do not participate in modelling. 178 students do not participate in exactly one of the three activities. If 271 students do not participate in at least one of the three activities, then how many students do not participate in exactly two of the activities?

A. 22 B. 33 C. 66 D. 44 E. None of these

3. The ratio between the length and the breadth of a rectangular Nehru park in Delhi is 5 : 3. If CM of Delhi rounding in car along the boundary of the park at the speed of 30 km/hr completes one round in 4 minutes, then what is the area of Nehru park?

A. 234375 m^2 B. 234370 m^2 C. 234365 m^2 D. 234360 m^2 E. None of these

4. A chemistry lab instructor store H_2SO_4 and HSO_4 in cone shape and cylindrical shape flask respectively, the base of a cone shape flask just coincides with the top surface of a cylindrical flask of height 20 cm and diameter 14 cm. The cone shape flask is surmounted on the cylindrical flask. The vertex of the cone flask is 48 cm from the base of the cylinder flask. Find the volume difference of HSO_4 and H_2SO_4 ?

A. 1642.67 cm_3 B. 1250.23 cm^3 C. 5412 cm^3 D. 1067.67 cm^3 E. None of these

5. The ratio of age between A and B is 6 : 5 and age of each C and D is 9/10 times that of B. Age of F is less than A but greater than B. The ratio of ages between B and E is 2 : 3 also age of A is 3 years less than E. What is the ratio of ages of A and F if all the ages are in integers?

A. 12 : 11 B. 9 : 7 C. 24 : 19 D. 12 : 13 E. None of these

6. Pipe P can fill a Tank with water in 24 hours. Pipe Q can fill the Tank with 24% pure alcohol in 16 hours. If both the pipes are opened alternately for one hour, starting from pipe P, what will be the alcohol concentration in the tank when it is full?

A. 10% B. 11% C. 12% D. 14% E. None of these

7. If the cost of raw materials of a shoe increases by 20%, the manufacturing cost increases by 30% and the selling price of the shoe thus increases by 70%. The raw material and the manufacturing cost, originally, formed 40% and 60% of the total cost respectively. If the original profit was 20% find the approximate new profit percentage of.

A. 62% B. 52% C. 20% D. 50% E. None of these

8. A fuel station owner mixes two litres of Kerosene with six litres of Petrol and sells the mixture at the cost price of Petrol and earns a profit of 14.28% on selling eight litres, again owner mixes two litre of Kerosene with six litres of Diesel and sell the mixture at the cost price of Diesel and earns a profit of 20% on selling eight litres, then find the difference between price of one litre of Kerosene in both mixture, given that the price of one litre of Petrol is Rs.100. and price of one litre of Diesel oil is Rs.200.

A. 20 B. 25 C. 17 D. 32 E. None of these

9. Nita distributes a sum of money among five beggar in Mahavir Temple Patna such that the second beggar gets Re.1 more than the first, and for i = 3, 4, 5, the ith beggar gets Rs. (i – 1) more than the amount received by the first (i – 1) beggar's. The amount received by the fifth person is Rs.93. Nita's husband distributes a sum of money among five beggar in Mahavir Temple Patna such that the second beggar gets Re.1 more than the first, and for i = 3, 4, 5, the ith beggar gets Rs (i – 1) more than the amount received by the preceding beggar. The amount received by the fifth beggar is Rs.100. Find the total amount distributed by Nita and his husband?

A. 652 B. 452 C. 850 D. 500 E. None of these

10. In Delhi University a committee of 6 professors is to be selected from a group of 7 ladies professors and 6 gents' professors. In how many ways can this be done, If the gents should not be outnumbered?

A. 251 B. 1058 C. 2542 D. 1010 E. None of these

Correct Answers:

1	2	3	4	5	6	7	8	9	10
D	C	A	A	A	D	A	C	A	B

Explanations:

1. We know,
The formula of for annual compound interest, including principal sum is:

$A = P\left(1+\frac{r}{100}\right)^{n}$

Where, P = Principal, r = rate of interest, n= time period

Let Post office returns Rs. 4084101 after n years

From question,

$4084101 = 3200000\left(1+\frac{5}{100}\right)^{n}$

$\left(1+\frac{5}{100}\right)^{n} = \frac{4084101}{3200000}$

$\left(\frac{105}{100}\right)^{n} = \frac{4084101}{3200000}$

$\left(\frac{21}{20}\right)^{n} = \frac{4084101}{3200000}$

$\left(\frac{21}{20}\right)^{n} = \left(\frac{21}{20}\right)^{5}$

Hence, after 5 years Post office returns.

Therefore, option (D) is correct.

---

2. Let the number of students who do not participate in exactly one activities, exactly two activities and exactly 3 activities be a, b, c respectively.

Number of students who do not participate in Dance =121
Number of students who do not participate in singing = 134
Number of students who do not participate in modelling = 136
Given a = 178 and a + b + c = 271
Now a + 2b+ 3c= 121 + 134+ 136 = 391 **… (I)**
And a + b + c = 271 **…. (II)**
From I, 2b + 3c = 213
From II, b + c = 93
∴ c = 27 and b = 66.
Hence, option (C) is correct.

3.

Total distance cover by CM = $30 \times \frac{4}{60}$ = 2km = 2000 meter

According to question total distance cover by CM = Perimeter of Nehru park

Now Let as per question length is 5x and breadth is 3x

We know perimeter of rectangle is 2(Length + width)

So, 2(5x + 3x) = 2000

x = 125

So Length = 125 × 5 = 625 meter

and breadth = 125 × 3 = 375 meter

Since required Area = length × breadth = 625 × 375 = 234375 m^2

Hence, option A is correct.

---

4. The height of cone = The vertex of the cone flask from the base of the cylinder flask – height of cylindrical flask

= 48 – 20 = 28 cm

Diameter of cone = the diameter of the cylinder = 14 cm

∴ Volume of cone = $\frac{1}{3}\pi r^2 h = \frac{1}{3}\left(\frac{22}{7}\right)(7)\,(7)\,(28) = 1437.33\ cm^3$

Height of cylinder = 20 cm

Volume of cylinder = $\pi r^2 h = \left(\frac{22}{7}\right)(7)\,(7)\,(20) = 3080\ cm^3$

Required difference = 3080 – 1437.33 = 1642.67 cm^3

Hence, option (A) is correct.

5. Given,

$\frac{A}{B} = \frac{6}{5}$

or $B = \frac{5}{6}A$ **...(i)**

and $C = D = \frac{9}{10}B$ **...(ii)**

also $= \frac{B}{E} = \frac{2}{3}$

or $= B = \frac{2}{3}E$ **...(iii)**

and $E - A = 3$ **...(iv)** From Eqn. (i) and (iii) , we get

$\frac{2}{3}E = \frac{5}{6}A$

$E = \frac{5}{4}A$ **.....(v)**

Now, from eqn. (iv) and (v), we get

$\frac{5}{4}A - A = 3$

$\Rightarrow \frac{A}{4} = 3$

or A = 12 years

$\therefore$ E = 15 years and B = 10 years Also C = D = 9 years

and F = 11 years, since B < F < A and F is integer.

$\therefore$ A : F = 12 : 11

Hence, option (A) is correct.

6. Let the volume of the tank = 48 liters

Water filled by Pipe P in one hour = $\frac{48}{24}$ = 2 liters

24% pure Alcohol filled by Pipe Q in one hour = $\frac{48}{16}$ = 3 liters

Volume filled in 2 hours = 2 + 3 = 5 litres

Total Volume filled in 18 hours = 45 liters

In the 19th hour Pipe P will fill the tank

So, remaining volume = 48 – 45 – 2 = 1 liters

The remaining volume will be filled by Pipe Q in (1/3) hour

Quantity of Water in the tank = 10 × 2 = 20 liters

Quantity of 24% alcohol in the tank = 9 × 3 + 3 × (1/3) = 28 liters

Total volume of alcohol in the tank = 28 × (0.24) = 6.72 liters

Therefore, concentration of alcohol in the tank

$100 \times \frac{6.72}{48}$ = 14%

Hence, option (D) is correct.

7. Let the total initial cost of the shoe be 100.

∴ Manufacturing cost = 60

∴ Raw materials cost = 40

Also original selling price = 100 + 20 = 120

New raw materials cost = 40 + 20% of 40 = 48

New manufacturing cost = 60 + 30% of 60 = 78

∴ New cost of the product = 126

New selling price = 120 + 70% of 120 = 204

∴ New profit percentage = $\frac{78}{126}(100)\%$ = 62%

Hence option A is correct.

8. As the cost price of one litre of Petrol = Rs100, cost price of 6 litres = Rs600.
∴ Selling price of 8 litres = Rs.800
Let the cost of one litre of Kerosene be Rs.x

$$\text{Selling price} = \frac{\text{cost price (100 + profit percentage)}}{100}$$

$$800 = \frac{800}{7(100)}(600 + 2x) \Rightarrow x = 50$$

As the cost price of one litre of Diesel = Rs.200, cost price of 6 litres = Rs1200.
∴ Selling price of 8 litres = Rs.1600
Let the cost of one litre of Kerosene be Rs.y.

$$\text{Selling price} = \frac{\text{cost price (100 + profit percentage)}}{100}$$

$$1600 = \frac{(1200 + 2y)(120)}{100}$$

y = 67 Required difference = 67 – 50 = 17
Hence option C is correct.

9. Distribution by Nita, All the amounts are in rupees. If the first beggar get x,
Then the second beggar gets x + 1
Third beggar gets = 2x + 1 + 2 = 2x + 3
Fourth beggar gets = 4x + 4 + 3.
Fifth beggar gets = 8x + 11 + 4 = 8x + 15
Given 8x + 15 = 93

$$\Rightarrow x = \frac{78}{8}$$

$$\therefore \text{Total distributed amount} = 16x + 26 = 16\left(\frac{78}{8}\right) + 26 = 182$$

Distribution by Nita's husband, all the amounts are in rupees. If the first beggar get x,

Then the second beggar gets x + 1
Third beggar gets = x + 1 + 2 = x + 3
Fourth beggar gets = x + 3 + 3 = x + 6
Fifth beggar gets = x + 6 + 4 = x + 10
Given x + 10 = 100 ⇒ x = 90

∴ Total distributed amount = (x) + (x + 1) + (x + 1 + 2)(x + 1 + 2 + 3)(x + 1 + 2 + 3 + 4)
= (5x + 20) = (450 + 20) = 470
Hence total amount distributed = (182 + 470) = Rs. 652
Hence option A is correct.

10. Since the gents should not be outnumbered,

The number of ladies can at the most be equal to the number of gents so,

The possibilities are**:**

6 gents, 0 ladies ${}^{6}C_{6}{}^{7}C_{0} = 1(1) = 1$

5 gents, 1 ladies ${}^{6}C_{5}{}^{7}C_{1} = 6(7) = 42$

4 gents, 2 ladies ${}^{6}C_{4}{}^{7}C_{2} = 15(21) = 315$

3 gents, 3 ladies ${}^{6}C_{3}{}^{7}C_{3} = 20(35) = 700$

Total number of ways = 1,058

Hence option B Is correct.