Directions of Test

Test Name	LPU CA PEA 305 - 01 (A)	Total Questions	30	Total Time	40 Mins

Section Name	No. of Questions	Marks per Question	Negative Marking
Paper 1	15	1	1/4
Paper 2	15	1	1/4

Section : Paper 1

QNo:- 1 ,Correct Answer:- *C*

Explanation:-
The question can be solved by calculating remainder cycle for each of the options.
The remainders when powers of 57 are divided by 6 are always 3.
So the remainder for 57^{127} ÷ 6 is 3.
The remainders when powers of 23 are divided by 9 are 5, 7, 8, 4, 2 and 1.
Since the length of the remainder cycle is 6, 2011 ÷ 6 gives remainder 1.
So the remainder for 23^{2011} ÷ 9 is 5 .
The remainders when powers of 43 are divided by 13 are 4,3,12, 9, 10 and 1.
Since the length of the remainder cycle is 5, 345 ÷ 6 gives remainder 3.
So the remainder for 43^{345} ÷ 13 is 12.
The remainders when powers of 29 are divided by 11 are 7, 5, 2, 3, 10, 4, 6, 9, 8 and 1.
Since the length of the remainder cycle is 10, 1999 ÷ 10 gives remainder 9. So the remainder for 29^{1999} ÷ 11 is 8.
Hence option 3.

Alternate Solution: Since we want a remainder of 12, the divisor must be greater than 12.
The only possibility is option C

QNo:- 2 ,Correct Answer:- *C*

Explanation:-
Let X = (4 + 44 + 444 + ... 9 terms)
X = 4(1 + 11 + 111 + ... 9 terms)
Now,
1 + 11 = 12 (2 terms)
1 + 11 + 111 = 123 (3 terms)
Similarly,
1 + 11 + 111 + ... 9 terms = 123456789
X = 4(123456789) = 493827156
Sum of digits of X is 45.
S = 45
We need to find out maximum power of 5 that exactly divides 45!
$[45/5] + [45/5^2] = 9 + 1 = 10$
10th power of 5 divides 45!
Hence, option 3.

QNo:- 3 ,Correct Answer:- B

Explanation:-
$10^{25} - 7 = (10^{25} - 1) - 6$
The number $10^{25} - 1 = 99.....9$ (25 digits) is divisible by 3 and 9.
Therefore, $(10^{25} - 1) - 6$ = (24 nines and unit digit is 3) = 99.....93.
This number is only divisible by 3 (from the given choices).

QNo:- 4 ,Correct Answer:- B

Explanation:-
$4320 = 2^5 \times 3^3 \times 5^1$
So to make it a perfect cube, we can divide it by $2^2 \times 5^1 = 20$

QNo:- 5 ,Correct Answer:- A

Explanation:-
Take it as $(3)^{99}$ because we have to see only the unit's place digit
Now, $(3)^{99}$
$= (3^4)^{24} . 3^3$
$= 1.7$
$=7$
So Ans. is option 1

QNo:- 6 ,Correct Answer:- C

Explanation:- HCF of 403 = 13 × 31, 465 = 15 × 31, 496 = 16 × 31, is 31
Now, 31 gallons is the maximum quantity of oil that can be filled without mixing in each bottle.
So, number of least possible bottles = 13 + 15 + 16 = 44

QNo:- 7 ,Correct Answer:- B

Explanation:-
Let 5 terms which are in G.P.= a/r^2, a/r, a , ar , ar^2. Taking product of five terms= a^5.
3^5= 243. Thus answer is 2nd option.

QNo:- 8 ,Correct Answer:- A

Explanation:-
The money given to Shyam = Rs (100 + 200 + 400 + 800……).
This series is a G.P. with $r = 2$ and no. of terms = 8. So sum = $\frac{a(r^n - 1)}{(r - 1)} = \frac{100(2^8 - 1)}{(2 - 1)}$
= Rs 25,500. Option 1.

QNo:- 9 ,Correct Answer:- *D*

Explanation:-
Difference in temperature= {57-53}=4 degrees.
1 degrees rise happens in 2 hours ,
so 4 degrees rise would happen in 4 x 2 = 8 hrs, so it will be 8 hrs after 5 A.M. i.e. 1 P.M.

QNo:- 10 ,Correct Answer:- *C*

Explanation:-
Clearly, it's a question of A.P. where n = 12 S_n= 330000 d =1500. Let a be the savings of January's month
*S_n = n/2(2a + (n-1)d) = 6(2a + 11*1500) = 330000*
a = Rs 19250

QNo:- 11 ,Correct Answer:- *B*

Explanation:-
The total with actual marks will decrease by 18. So average will decrease by
$\frac{18}{50} = 0.36$. So new average = $64 - 0.36 = 63.64$.

QNo:- 12 ,Correct Answer:- *A*

Explanation:-
The average age of 44 students is 18 years. Now if the age of the teacher is included then the average increases by 4 months i.e. the total increases by 45 × 4 = 180 months i.e. 15 years. So the age of teacher is 18 + 15 = 33 years.
Option A

QNo:- 13 ,Correct Answer:- *A*

Explanation:-
Let the third no. be 'C'
Therefore, 2nd and 1st no. will be 2C & 4C respectively
Now, according to the given statement,
$\frac{4C+2C+C}{3} = 154$
C = 66
Therefore, 1st no = 4C = 4 × 66 = 264
So answer is option A

QNo:- 14 ,Correct Answer:- *C*

Explanation:-
The average of first 11 terms is 6th term which is equal to x. Now the average of next 15 terms will be 8th term from 11th term i.e. the 19th term from start which is equal to x + 26.

QNo:- 15 ,Correct Answer:- D

Explanation:-
Let there be 'x' papers
A.T.Q 63x+20+2=65x
⇒ x = 11

Section : Paper 2

QNo:- 16 ,Correct Answer:- D

Explanation:-
In case of successive discounts, in the discount option, in which the difference between the discounts is maximum, the net discount will be maximum (provided their sum is same). e.g. Let the succesive discount option are 40% + 30% and 60% + 10%. The sum in both the cases is same but in the first case, the net discount is 58% whereas in second case the net discount is 64%. Based on this concept we can say that the discount will be maximum if x = k and y = 0 or y = k and x = 0.

QNo:- 17 ,Correct Answer:- C

Explanation:-
We have the formula as
Single discount = 1 - (1 - p_1)(1 - p_2)(1 - p_3)....
where p_1, p_2, p_3 are successive discounts
Therefore, single discount = 1 - (1 - 0.10)(1 - 0.20) = 1 - 0.72 = 0.28 or 28%

QNo:- 18 ,Correct Answer:- C

Explanation:- Let the income of Bimala is Rs. 100. So income of Amala is Rs. 120 and that of Kamala is Rs. 150. In second case, the income of Bimala becomes Rs. 110 and that of Kamala, it becomes Rs. 144.

$$\text{Required \%age} = \frac{144-110}{110}\times 100 = \frac{34}{110}\times 100 = 30.9 \approx 31\%$$

QNo:- 19 ,Correct Answer:- B

Explanation:-
Let the original price of apples be Rs. x/ dozen

$$\therefore \text{New price} = \text{Rs. } \frac{4x}{5}\text{/dozen}$$

$$\Rightarrow 54\left(\frac{5}{4x}-\frac{1}{x}\right)=\frac{5}{6}$$

$$\Rightarrow 54\left(\frac{5-4}{4x}\right)=\frac{5}{6}$$

$$\Rightarrow \frac{5x}{4x}=\frac{5}{6}\Rightarrow 4x=\frac{54\times 6}{5}$$

$$\therefore \frac{4x}{5}=\frac{54\times 6}{5\times 5}=\text{Rs.}12.96$$

QNo:- 20 ,Correct Answer:- *B*

Explanation:-
Price of petrol before the hike = Rs. 28 per liter
Price of petrol after the hike = Rs. (1.07 x 28) per liter
= Rs. 29.96 per liter
For traveling 2400 kms, total quantity of petrol consumed =
$\frac{2400}{18} = 133.33 \text{ liters}$

*Increase in expenditure = Rs. (29.96 – 28) *133.33*
= Rs. 261.32 = Rs. 262

QNo:- 21 ,Correct Answer:- *A*

Explanation:- *Let the no. of Jelly beans be 100. 30 are red. 12 are cherry. Of 18 25% i.e. 4.5 are Raspberries.*
∴ In all 16.5 % are either cherry or raspberries

QNo:- 22 ,Correct Answer:- *A*

Explanation:- *Since, 60% workers are males, then 40% workers are females.*
Now 40% of total = 800
∴ 60% of total = 800/40×60 = 1200
Hence option 1

QNo:- 23 ,Correct Answer:- *C*

Explanation:-
Let the marked price be Rs. x.
Then, cost price is $\frac{1}{1.2}x = \text{Rs.}\frac{5}{6}x$
And the selling price is $\frac{90}{100}x = \text{Rs.}\frac{9}{10}x$
∴ Profit percentage
$= \frac{\text{S.P.} - \text{C.P.}}{\text{C.P.}} \times 100 = \frac{\frac{9}{10}x - \frac{5}{6}x}{\frac{5}{6}x} \times 100 = 8\%$
Alternate Solution:
$20 - 10 - \frac{20 \times 10}{100} = 8\%$

QNo:- 24 ,Correct Answer:- *C*

Explanation:-
Let the CP be Rs. 100.
If selling price be Rs. x, then
$\frac{100-x}{x}\times 100 = 20$
500 " 5x = x
6x = 500
$\Rightarrow x = \frac{500}{6} = \text{Rs.}\frac{250}{3}$
∴ Required loss per cent
$= 100 - \frac{250}{3} = \frac{50}{3} = 16\frac{2}{3}\%$

QNo:- 25 ,Correct Answer:- *C*

Explanation:-

	Raw Material	Wages	Total
Original Cost	x = 6	2x = 12	3x = Rs. 18
Present Cost	7/3 × x = 14	9/4 × 2x = 27	14 + 27 = Rs. 41

QNo:- 26 ,Correct Answer:- *A*

Explanation:-

$$\text{The Amount} = P\left(1+\frac{R}{100}\right)^t$$

$$\text{Hence in this case the amount will be} = 100\left(1+\frac{6}{100}\right)^5 = 100(1+0.06)^5.$$

QNo:- 27 ,Correct Answer:- *C*

Explanation:- *Let the amount divided between Sachin and Ashok is Rs x and Rs y respectively. We have*

$$x\left(1+\frac{5}{100}\right)^9 = y\left(1+\frac{5}{100}\right)^{11}$$

$$\Rightarrow \frac{x}{y} = \frac{441}{400}$$

$$\text{Hence Sachin's share} = \frac{441}{841}\times 5887 = Rs\,3087.$$

QNo:- 28 ,Correct Answer:- *B*

Explanation:- *P = 8000, R = 12/4 = 3% per quarter and T = 5 quarters*
$A = P\,(1 + R/100)^T = 8000\,(1 + 3/100)^5 = 9274.20$
Alternatively,
Amount (approximately) = 8000 + (5 × 240) + (10 × 7.2) + (10 × 0.216) +... ≈ 9274

QNo:- 29 ,Correct Answer:- *C*

Explanation:- *Let the sum = P*

$$P + \frac{P \times 13.5 \times 4}{100} = 2502.50 \Rightarrow P = \text{Rs } 1625$$

QNo:- 30 ,Correct Answer:- *A*

Explanation:- $S.I = \frac{P \times R \times T}{100}$

Let sum borrowed = x Rs.

$$\text{So, } \frac{x \times 8 \times 4}{100} + \frac{x \times 6 \times 10}{100} + \frac{x \times 5 \times 12}{100} = 24320$$

$$\Rightarrow \frac{152x}{100} = 24320$$

⇒ x = Rs. 16000