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unit - 2 Annual
10th Standard
Maths


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Exam Time : 03:00:00 Hrs

## I. ANSWER ALL QUESTION

1) Euclid's division lemma states that for positive integers a and $b$, there exist unique integers $q$ and $r$ such that $a=b q+r$, where $r$ must satisfy
(a) $1<$ r $<$ b
(b) $0<$ r $<$ b
(c) $0 \leq \mathrm{r}<$ b
(d) $0<r \leq b$
2) Using Euclid's division lemma, if the cube of any positive integer is divided by 9 then the possible remainders are
(a) $0,1,8$
(b) $1,4,8$
(c) $0,1,3$
(d) $0,1,3$
3) If the HCF of 65 and 117 is expressible in the form of $65 \mathrm{~m}-117$, then the value of m is
(a) 4
(b) 2
(c) 1
(d) 3
4) The sum of the exponents of the prime factors in the prime factorization of 1729 is
(a) 1
(b) 2
(c) 3
(d) 4
5) The least number that is divisible by all the numbers from 1 to 10 (both inclusive) is
(a) 2025
(b) 5220
(c) 5025
(d) 2520
6) $7^{4 \mathrm{k}} \equiv$ $\qquad$ $(\bmod 100)$
(a) 1
(b) 2
(c) 3
(d) 4
7) Given $\mathrm{F}_{1}=1, \mathrm{~F}_{2}=3$ and $\mathrm{F}_{\mathrm{n}}=\mathrm{F}_{\mathrm{n}-1}+\mathrm{F}_{\mathrm{n}-2}$ then $\mathrm{F}_{5}$ is
(a) 3
(b) 5
(c) 8
(d) 11
8) The first term of an arithmetic progression is unity and the common difference is 4 . Which of the following will be a term of this A.P.
(a) 4551
(b) 10091
(c) 7881
(d) 13531
9) If 6 times of $6^{\text {th }}$ term of an A.P. is equal to 7 times the $7^{\text {th }}$ term, then the $13^{\text {th }}$ term of the A.P. is
(a) 0
(b) 6
(c) 7
(d) 13
10) An A.P. consists of 31 terms. If its $16^{\text {th }}$ term is $m$, then the sum of all the terms of this A.P. is
(a) 16 m
(b) 62 m
(c) 31 m
(d) $\frac{31}{2} \mathrm{~m}$
11) In an A.P., the first term is 1 and the common difference is 4 . How many terms of the A.P. must be taken for their sum to be equal to 120?
(a) 6
(b) 7
(c) 8
(d) 9
12) If $\mathrm{A}=2^{65}$ and $\mathrm{B}=2^{64}+2^{63}+2^{62}+\ldots+2^{0}$ Which of the following is true?
(a) B is $2^{64}$ more than A
(b) A and B are equal
(c) $B$ is larger than $A$ by 1
(d) A is larger than B by 1
13) The next term of the sequence $\frac{3}{16}, \frac{1}{8}, \frac{1}{12}, \frac{1}{18}, \ldots .$. is
(a) $\frac{1}{24}$
(b) $\frac{1}{27}$
(c) $\frac{2}{3}$
(d) $\frac{1}{81}$
14) If the sequence $t_{1}, t_{2}, t_{3} \ldots$ are in A.P. then the sequence $t_{6}, t_{12}, t_{18}, \ldots$ is
(a) a Geometric Progression
(b) an Arithmetic Progression
(c) neither an Arithmetic Progression nor a Geometric Progression
(d) a constant sequence
15) The value of $\left(1^{3}+2^{3}+3^{3}+\ldots+15^{3}\right)$ w(w.w.Patassatait.Nep $)$ is
(a) 14400
(b) 14200
(c) 14280
(d) 14520
16) Three numbers $a, b$ and $c$ will be in A.P. if and only if $\qquad$
(a) $2 \mathrm{a}=\mathrm{b}+\mathrm{c}$
(b) $2 \mathrm{~b}=\mathrm{a}+\mathrm{c}$
(c) $2 \mathrm{c}=\mathrm{a}+\mathrm{b}$
(d) none of these
17) If $t_{n}$ is the $n^{\text {th }}$ term of an A.P., then $t_{8 n}-t_{n}$ is:
(a) $(8 n-1) d$
(b) $(8 n-2) d$
(c) $(7 n-2) \mathrm{d}$
(d) (7nd)
II. ANSWER ALL QUESTION
18) We have 34 cakes. Each box can hold 5 cakes only. How many boxes we need to pack and how many cakes are unpacked?
19) Show that the square of an odd integer is of the form $4 q+1$, for some integer $q$.
20) A man has 532 flower pots. He wants to arrange them in rows such that each row contains 21 flower pots. Find the number of completed rows and how many flower pots are left over.
21) ' $a$ ' and ' $b$ ' are two positive integers such that $a^{b} x b^{a}=800$. Find ' $a$ ' and ' $b$ '
22) If $13824=2^{a} \times 3^{b}$ then find $a$ and $b$.
23) Find the number of integer solutions of $3 x \equiv 1(\bmod 15)$.
24) Kala and Vani are friends. Kala says, "Today is my birthday" and she asks Vani, "When will you celebrate your birthday?" Vani replies, "Today is Monday and I celebrated my birthday 75 days ago". Find the day when Vani celebrated her birthday.
25) Today is Tuesday. My uncle will come after 45 days. In which day my uncle will be coming?
26) Find the next three terms of the sequences.
$\frac{1}{2}, \frac{1}{6}, \frac{1}{10}, \frac{1}{14}, \ldots .$.
27) Find the general term for the following sequences.
$3,6,9, \ldots$,
28) Find $a_{8}$ and $a_{15}$ whose $n^{\text {th }}$ term is
$\mathrm{a}_{\mathrm{n}}=\left\{\begin{array}{lll}\frac{n^{2}-1}{n+3} ; n \text { is even, } & n \in N \\ \frac{n^{2}}{2 n+1}, n & \text { is odd, } & n \in N\end{array}\right.$
29) if $a_{1}=1, a_{2}=1$ and $a_{n}=2 a_{n-1}+a_{n-2} n \geq 3, n \in N$, then find the first six terms of the sequence
30) Write an A.P. whose first term is 20 and common difference is 8 .
31) Which term of an A.P. $16,11,6,1, \ldots$ is -54 ?
32) If $3+k, 18-k, 5 k+1$ are in A.P. then find $k$.
33) In a theatre, there are 20 seats in the front row and 30 rows were allotted. Each successive row contains two additional seats than its front row. How many seats are there in the last row?
34) Find $x$ so that $x+6, x+12$ and $x+15$ consecutive terms of a Geometric Progression.
35) If $1+2+3+\ldots+n=666$ then find $n$.
36) If $1+2+3+\ldots+k=325$, then find $1^{3}+2^{3}+3^{3}+\ldots \mathrm{K}^{3}$.
37) If $1^{3}+2^{3}+3^{3}+\ldots k^{3}=44100$ then find $1+2+3+\ldots+k$
38) Which of the following sequences are in G.P.?
$4,44,444,4444, \ldots$
39) Find the sum of first $n$ terms of the G.P

256, 64, 16, $\qquad$
40) Find the sum of
$1+3+5+. .+55$
41) If $p^{2} \times q^{1} \times r^{4} \times s^{3}=3,15,000$ then find $p, q, r$ and $s$.

## III. ANSWER ALL QUESTION

42) Find the HCF of $396,504,636$.
43) If $p_{1}^{x_{1}} \times p_{2}^{x_{2}} \times p_{3}^{x_{3}} \times p_{4}^{x_{4}}=113400$ where $\mathrm{p}_{1}, \mathrm{p}_{2}, \mathrm{p}_{3}, \mathrm{p}_{4}$ are primes in ascending order and $\mathrm{x}_{1}, \mathrm{x}_{2}, \mathrm{x}_{3}, \mathrm{x}_{4}$ are integers, find the value of $\mathrm{p}_{1}, \mathrm{p}_{2}$,

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\mathrm{p}_{3}, \mathrm{p}_{4} \text { and } \mathrm{x}_{1}, \mathrm{x}_{2}, \mathrm{x}_{3}, \mathrm{x}_{4}
$$

44) Find the greatest number consisting of 6 digits which is exactly divisible by $24,15,36$ ?
45) Find the remainders when 70004 and 778 is divided by 7
kindly send me your key Answers to our email id - padasalai.net @gmail.com

46) In an A.P., sum of four consecutive terms is 28 and their sum of their squares is 276 . Find the four numbers.
47) A mother divides Rs. 207 into three parts such that the amount are in A.P. and gives it to her three children. The product of the two least amounts that the children had Rs. 4623. Find the amount received by each child.
48) The sum of three consecutive terms that are in A.P. is 27 and their product is 288 . Find the three terms.
49) The ratio of $6^{\text {th }}$ and $8^{\text {th }}$ term of an A.P is $7: 9$ Find the ratio of $9^{\text {th }}$ term to $13^{\text {th }}$ term
50) Priya earned Rs. 15,000 in the first month. Thereafter her salary increased by Rs. 1500 per year. Her expenses are Rs. 13,000 during the first year and the expenses increases by Rs. 900 per year. How long will it take for her to save Rs. 20,000 per month
51) The $13^{\text {th }}$ term of an A.P is 3 and the sum of the first 13 terms is 234 .Find the common difference and the sum of first 21 terms.
52) The houses of a street are numbered from 1 to 49 . Senthil's house is numbered such that the sum of numbers of the houses prior to Senthil's house is equal to the sum of numbers of the houses following Senthil's house. Find Senthil's house number?
53) The sum of first $n, 2 n$ and $3 n$ terms of an A.P are $S_{1}, S_{2}$ and $S_{3}$ respectively prove that $S_{3}=3\left(S_{2}-S_{1}\right)$
54) Find the sum of all natural numbers between 602 and 902 which are not divisible by 4.
55) If $S_{1}, S_{2}, S_{3}, \ldots S_{m}$ are the sums of $n$ terms of $m$ A.P.s Whose first terms are $1,2,3, \ldots . m$ and whose common differences are $1,3,5, \ldots$, $(2 m-1)$ respectively, then show that $S_{1}+S_{2}+S_{3}+. .+S_{m}=\frac{1}{2} m n(m n+1)$.
56) 

Find the sum $\left[\frac{a-b}{a+b}+\frac{3 a-2 b}{a+b}+\frac{5 a-3 b}{a+b}+\ldots\right.$ to 12 terms $]$
58) In a Geometric progression, the $4^{\text {th }}$ term is $\frac{8}{9}$ and the 7 th term is $\frac{64}{243}$. Find the Geometric Progression.
59) The product of three consecutive terms of a Geometric Progression is 343 and their sum is $\frac{91}{3}$. Find the three terms.

60 ) In a G.P. the $9^{\text {th }}$ term is 32805 and $6^{\text {th }}$ term is 1215 . Find the $12^{\text {th }}$ term
61) In a G.P. the product of three consecutive terms is 27 and the sum of the product of two terms taken at a time is $\frac{57}{2}$. Find the three terms.
62) A man joined a company as Assistant Manager. The company gave him a starting salary of Rs. 60,000 and agreed to increase his salary $5 \%$ annually. What will be his salary after 5 years?
63) Sivamani is attending an interview for a job and the company gave two offers to him.

Offer A: Rs. 20,000 to start with followed by a guaranteed annual increase of $6 \%$ for the first 5 years.
Offer B: Rs. 22,000 to start with followed by a guaranteed annual increase of $3 \%$ for the first 5 years.
What is his salary in the $4^{\text {th }}$ year with respect to the offers A and B?
64) If $a, b, c$ are three consecutive terms of an A.P. and $x, y, z$ are three consecutive terms of G.P then prove that $x^{b-c} x y^{c-a} x z^{a-b}=1$
65) Find the sum to $n$ terms of the series $5+55+555+\ldots$
66) Find the sum to $n$ terms of the series
$0.4+0.44+0.444+.$. to n terms
67) Use Euclid's Division Algorithm to find the Highest Common Factor (HCF) of 867 and 255
68) Use Euclid's Division Algorithm to find the Highest Common Factor (HCF) of 10224 and 9648
69) Use Euclid's Division Algorithm to find the Highest Common Factor (HCF) of 84, 90 and 120
70) If $1^{\text {th }}, m^{\text {th }}$ and $n^{\text {th }}$ terms of an A.P are $x, y, z$ respectively, then show that $(x-y) n+(y-z) 1+(z-x) m=0$
71) Find the sum to $n$ terms of the series
$3+33+333+\ldots$ to $n$ terms
72) Find the sum of the following series $10^{3}+11^{3}+12^{3}+\ldots+20^{3}$

## ALL THE BEST

