INFINITY THINK BEYOND.....

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VIII

Maths Craft Power Play

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INSTRUCTIONS TO THE STUDENT.

1.Read each question carefully before attempt.

2. The mark for each question is mentioned in front of it.

3. Show all necessary steps in your answer.

S.NO	Questions	Mark
1	What will be the thickness of a paper of initial thickness 0.001 cm after it is folded 10 times? (a)0.1024 cm (b)1.024 cm (c)10.24 cm (d)102.4 cm	1
2	After 30 folds, what is the approximate thickness of the paper? (a)1.3km (b)262 cm (c)10.7 km (d)107 km	1
3	Which of the following is exponential form 5×5×7×7×7? (a)5^2+7^3 (b)$5^2\ 7^3$ (c)$(5\times7)^3$ (d)5^3+7^2	1
4	The value of $(13^{(-2)})^{(-3)}$ is : (a)13^6 (b)$13^{(-5)}$ (c)$13^{(-6)}$ (d)13^2	1
5	(a)Evaluate (i)2^{-2} (ii)$(-2)^{-2}$ (iii)$(3/2)^{-5}$ (b)Find the value of (i)$(4^0+4^{-1})\times2^2$ (ii)$(3^{-1}\times9^{-1})\div3^{-2}$ (iii)$(11^{-1}+12^{-1}+13^{-1})^0$	2
6	Find the multiplicative inverse of (i)3^{25} (ii)4^{-3} (iii)$(2/3)^{-2}$	2
7	If the mass of the Earth is 5.97×10^{24}kg and the mass of the Moon is 7.35×10^{22}kg , which is heavier and by how much?	2
8	The diameter of earth is 1.2756×10^7m and diameter of sun is 1.4×10^9m .How many times is the diameter of the sun to the diameter of the Earth?	2
9	True & False (i)Very small numbers can be expressed in standard form using negative exponents (ii)$a^p\times b^q=(ab)^{pq}$ (iii)$0.0567=5.67\times10^{-3}$ (iv)$1/(8)^{-3}=2^9$ (v)$4^0=4$ (vi)$(-1)^3=1$	3

	(vii)The multiplicative inverse of $(-2)^{-2}$ is $(2)^2$	
10	(i)Simplify : $(4^2 \times 2^{-3}) \div \left(\frac{1}{10}\right)^{-2}$ (ii)Simplify : $(4^0 + 2^0)^0 \div \left(\frac{1}{2}\right)^{-2}$ (iii)$7^4 \times 3^2$ (iv)$(-3)^3 \times (-4)^2$ (v)$2^2 \times 10^4$ (vi)$(-2)^4 \times (4)^2$	3
11	Simplify and write in exponential form (i)$(-8)^{-5} \times (-8)^{-2}$ (ii)$(-7)^5 \div (-7)^{-10}$ (iii)$a^{-5} \times a^{-2} \times a^9$	3
12	Simplify the following (i)$1+\left[\left(\frac{1}{3}\right)^{-3} - \left(\frac{1}{2}\right)^{-3}\right] \div 38$ (ii)$\frac{1}{1+p^{a-b}} + \frac{1}{1+p^{b-a}}$	3
13	Simplify : $(3)^{-5} \times \left(\frac{1}{3}\right)^2 \times \left(\frac{1}{3}\right)^{-4}$	3
14	Simplify : $\left[\left(\frac{2}{7}\right)^{-2}\right]^4 \times \left[\left(\frac{7}{2}\right)^4\right]^{-2}$	3
15	Simplify : $\frac{5^{-3} \times 6^{-5} \times 81 \times 4}{3^{-7} \times 10^{-3}}$	3
16	Write the following in expanded from using exponents of 10 (a)425.2394 (b)76.359898	3
17	(i)Write $(81)^{-2}$ as power with the base 3. (ii)Write the exponential form of 2500 (iii)Expand the number 3462 in power of 10 Write the following in expanded from using exponents of 10 (a)425.2394 (b)76.359898	3
18	Write the following numbers in standard (i)0.0000000635 (ii)31820000 (iii)Express 5329800000 in standard form (iv)Find the standard form of 0.00006 +0.00132 (v) Find the standard form of 0.00006 +0.00132	3
19	Express the numbers used in the following facts in scientific notation. (a)The speed of light is 300000000 m/s (b)The distance from the Earth of the Moon is 384400000 m.	3
20	Express the following in exponential form, (i)5×5×5×5 (ii)$x \times x \times x$ (iii)3×3×5×5×5 (iv) $x \times x \times y \times y \times z \times z \times z$	3
21	Express the height of a bundle of 500 papers placed on each other if the thickness of one paper is 0.0016cm , in the standard form .	3
22	Express the number appearing in the following statements in standard form (i)The population of a city is 650000	3

	(ii)The distance between Earth and sun is about 93000000 miles (iii)A petri dish contains 0.000045 g of bacteria (iv)The mass of a hydrogen atom is approximately 0000000000000000000000167 g (v)Express the product of 1.5×10^3 and 2.5×10^{-5} in the standard form	
23	Express the following numbers in usual form (i)6.671×10^5 (ii)5.332×10^{-6} (iii)5×10^{-4} (iv)Express 0.0000053 in scientific notation.	3
24	(i)Express 12,35,400 in scientific notation form . (ii)If $(12)^2$ is 144 , what is $(0.12)^2$? (iii)Simplify the following expression : $\left[\left(-\frac{2}{3}\right)^2 \times \left(-\frac{2}{3}\right)^4\right] \div \left[\left(-\frac{2}{3}\right)^2\right]^2$	3
25	Express the following numbers in the standard forms (a)162000000 (b)0.00000078	4
25	Write the following numbers in the usual form (a) 11.003×10^9 (b)6.89×10^{-5}	4
26	What is the multiplicative inverse of $(64)^{2/3} \times \left(\frac{1}{4}\right)^{-3}$	4
27	If $\left(\frac{x}{y}\right) = \left(\frac{3}{2}\right)^{-2} \div \left(\frac{3}{7}\right)^0$, find the value of $\left(\frac{x}{y}\right)^{-3}$	4
28	Solve the following $(81)^{-4} \div (729)^{2-x} = 9^{4x}$	4
29	Simplify $\frac{(x^{m+n})^2 \times (x^{n+p})^2 \times (x^{p+m})^2}{(x^m . x^n . x^p)^3}$	4
30	Simplify the following (i)$\left\{\left(\frac{1}{4}\right)^{-3} - \left(\frac{1}{3}\right)^{-3}\right\} \div \left(\frac{1}{4}\right)^{-2}$ (ii) $\left(\frac{2}{3}\right)^{-6} \times \left(\frac{3}{2}\right)^{-4}$	4
31	Simplify : (i)$(4^{-1} + 8^{-1})^{-1}) \div \left(\frac{2}{3}\right)^{-3}$ (ii)$\left[\left(\frac{1}{3}\right)^{-3} - \left(\frac{1}{2}\right)^{-3}\right] \div \left(\frac{1}{4}\right)^{-3}$ (iii)$\{5^{-1} \times 3^0 + 4^{-1}\}^{-1} \div \left(\frac{3}{2}\right)^{-3}$ (iv) $\left(\frac{1}{2}\right)^{-2} + \left(\frac{2}{3}\right)^{-2} + \left(\frac{3}{4}\right)^{-2}$	4
32	Simplify using law of exponents (a) $7^{\frac{1}{2}} \times 7^{\frac{3}{2}}$ (b)$\left[(11)^{\frac{1}{2}}\right]^4$ (c) $100^{\frac{3}{2}} \div 100^{\frac{1}{2}}$ (d)$4 \times 36^{-\frac{1}{2}}$	4
33	Evaluate : (a) $(.04)^{\frac{3}{2}}$ (b) $(.008)^{\frac{2}{3}}$ (c) $(6.25)^{\frac{3}{2}}$ (d) $(.000064)^{\frac{5}{6}}$	4
34	By what number should be 5^{-3} be multiplied so that the product is 125?	4
35	By what should $(6)^{-1}$ be multiplied so that the product is 9^{-1}?	4
36	By what should $\left(\frac{-2}{3}\right)^{-3}$ be divided so that the quotient is $\left(\frac{4}{27}\right)^{-2}$?	4
37	Find the value of x in each of the following :	4

	(a) $\left(\frac{7}{12}\right)^{-4} \times \left(\frac{12}{7}\right)^{3x} = \left(\frac{7}{12}\right)^{-5}$ (b)$\left(\frac{-5}{6}\right)^{\frac{3}{4}} \div \left(\frac{-5}{6}\right)^{\frac{-1}{6}} = \left(\frac{-6}{5}\right)^{7-x}$ (c)6^{3x-1} =1	
38	Find the value of y in each case : (i)7×49^{-1}=y (ii) $3^3 \times (2y)^3$=216	4
39	Find the value of x if $(-3)^{3x+1} \times (-3)^4 = (-3)^8$	4
40	Find the value of k if $(-2)^{kx+1} \times (-2)^3 = (-2)^7$	4
41	Find the value of P if $\left(\frac{2}{5}\right)^3 \times \left(\frac{3}{2}\right)^{-4}$	4
42	If $\frac{5^m \times 5^3 \times 5^{-2}}{5^{-5}} = 5^{12}$ find m	4
43	By what number should $(-8)^{-3}$ be multiplied so that the product may be equal to -6^{-3}	4
44	A child was reading about cells of which livings things are made of , while reading he finds the size of red blood cell to be 0.000007 that of a plant cell size of 0.0000129m . Based on above situation answer the following questions (i)Express the size of both cells in standard form (ii)Can we see the cells by naked eyes? (iii)Compare the sizes of cell?	4
45	A space research center records signal strength using exponential values. Signal A = 53 units and Signal B = 5^2 units. (a)Calculate total signal strength as a single exponential expression. (b)If another signal with strength 54 units is added, then what is the total strength and simplify.	4