

## Vacation assignment

### Class 1X(tipu sir)

1)  $A = 4^{2p+1}$ ,  $B = \frac{5^{m+1}}{(5^m)^{m-1}}$ ,  $C = \frac{25^{m+1}}{(5^{m-1})^{m+1}}$ ,  $D = 3^x + 3^{1-x}$

- If  $A=128$ , find the value of  $P$
- Prove that  $(B \div C) = \frac{1}{25}$
- Find the value of  $X$  when  $D=4$
- $\log 3 + \log 9 + \log 27 + \dots$

- What kind of series it is?
- Find the 5<sup>th</sup> and 10<sup>th</sup> term of the series.
- Determine the sum of first 12 terms

3)  $L, M, N$  are algebraic expression, where  $L = \frac{x^a}{x^b}$ ,  $M = \frac{x^b}{x^c}$ ,  $N = \frac{x^c}{x^a}$

- If  $L=1$ , then show that  $a=b$
- Prove that  ${}^{ab}\sqrt{L} \times {}^{bc}\sqrt{M} \times {}^{ca}\sqrt{N} = 1$
- Show that,  $\log_k L^{a+b} + \log_k M^{b+c} + \log_k N^{c+a} = 0$
- $X = (a^{-1} + b^{-1})^{-1}$  and  $Y = \frac{2^{n+1} \cdot 3^{2n-m} \cdot 5^{m+n} \cdot 6^m}{6^n \cdot 10^{m+2} \cdot 15^n}$

a) Now simplify  $X$

b) Find the value of  $Y$

c) Show that,  $\left(\frac{x^q}{x^r}\right)^{q+r-p} \times \left(\frac{x^r}{x^p}\right)^{r+p-q} \times \left(\frac{x^p}{x^q}\right)^{p+q-r} = 1$

#### 4. $\sqrt{2}$ and 2 are two real numbers.

- What is rational number? 2
- Find the two irrational number between  $\sqrt{2}$  and 2 4
- (a) Prove that  $\sqrt{2}$  is an irrational number 4

#### 5. $(x - \frac{1}{x}) = 4$ , $x-y=2$ and $xy = 63$ are three expressions

- Simplify:  $5874 \times 5874 + 3774 \times 3774 - 7548 \times 5874$  2
- What is the value of  $x^2 + y^2$  4
- Prove that  $x^4 + \frac{1}{x^4} = 322$  4

#### 6. Logarithm is used to find the values of exponential expressions. Logarithm is written in brief as 'Log'. Product, quotient etc. of large numbers of quantities can easily be determined by the help of log.

- Define logarithm with examples. 2
- Simplify  $7 \log_{10} \frac{10}{9} - 2 \log_{10} \frac{25}{24} + 3 \log_{10} \frac{81}{80}$  4
- Solve  $(\sqrt{3})^{x+1} = (\sqrt[3]{3})^{2x-1}$

**General Mathematics: MCQ      Subject Code:**

Time: 40 minutes

Marks: 40

*[N.B.: Answer **all** the questions. Each question carries **one** mark. Block fully, with a black ball-point pen, the circle of the letter that stands for the correct/ best answer in the Answer Sheet for Multiple Choice Questions Examination.]*

**Candidates are asked not to leave any mark or spot on the question paper.**

1. Which one of the following is irrational number?
  - a.  $\sqrt{2}$
  - b.  $\sqrt{3}$
  - c.  $\pi$
  - d. All of the above
  
2. Which one of the following is subset of {1, 2, and 3}?
  - a) {}
  - b) {4, 5}
  - c) {1,a}
  - d) None of the above
  
3. Which one of the following is a proper subset of {4,5,6}?
  - a) {}
  - b) {4, 5}
  - c) {4,5,6}
  - d) None of the above
  
4. Which one of the following is an improper subset of {10, 11, and 12}?
  - a) {}
  - b) {10, 11, 12}
  - c) {11}
  - d) a & b
  
5. If  $A=\{1, 2, 3\}$  then, which one of the following is the number of element of  $P(A)$ ?
  - a) 8
  - b) 16
  - c) 32
  - d) 64
  
6. If  $A \cap B=B$  and  $A \neq B$  then, which of the following is correct?
  - a) A is a subset of B
  - b) B is a subset of A
  - c)  $A \cup B=B$
  - d)  $A \in B$
  
7. If  $A=\{1, 2\}$  then, which of the following is the number of proper subset of A?
  - a) 2
  - b) 3
  - c) 5
  - d) 4
  
8. If  $B=\{2,3,4\}$  then, which of the following is the number of improper subset of B?
  - a) 2
  - b) 3
  - c) 7
  - d) 8
  
9.  $\frac{1}{\sqrt{2}}, -1, \sqrt{2}$  which one of the follow is the 4<sup>th</sup> term?
  - a) -2
  - b) 2
  - c)  $2\sqrt{2}$
  - d)  $-2\sqrt{2}$
  
10.  $1, \frac{2}{3}, \frac{3}{5}, \frac{4}{7}$  .....which one of the following is the r<sup>th</sup> term?
  - a)  $\frac{2r-1}{r}$
  - b)  $\frac{r}{2r-1}$
  - c)  $\frac{1}{2r-1}$
  - d)  $\frac{r}{r-1}$

11.  $1+2+4+8+16+\dots$  which one of the following is 7<sup>th</sup> term?

- a) 128 c) 64  
b) 32 d) 96

12. If  $U_n = \frac{1-(-1)^{3n}}{2}$  then, find the value of 10<sup>th</sup> term.

- a) 1 c) 0  
b) 2 d) -1

13.  $1 + \frac{1}{\sqrt{5}} + \frac{1}{5} + \frac{1}{5\sqrt{5}} + \dots$  find the 6<sup>th</sup> term.

- a)  $\frac{1}{25}$  c)  $\frac{1}{15\sqrt{5}}$   
b)  $\frac{1}{25\sqrt{5}}$  d)  $25\sqrt{5}$

14.  $1+2+4+8+16+\dots$  find the 6<sup>th</sup> term.

- a) 64 c) 32  
b) 63 d) 128

15.  $1+2+3+4+5+\dots$  which one of the following is the sum of n<sup>th</sup> term?

- a)  $\frac{n(n+1)}{2}$  c)  $\left\{\frac{n(n+1)}{2}\right\}^2$   
b)  $\frac{n(n+1)(2n+1)}{6}$  d)  $n^2$

16. If  $U_n = \frac{1-(-1)^{3n}}{2}$  then, find the value of 5<sup>th</sup> term.

- a) 0 c) 2  
b) 1 d) -1

17. If  $U_n = \frac{1-(-1)^n}{2}$  which one of the following is  $U_{15}$ .

- a) 0 c) 1  
b) -1 d) 2

18.  $1-1+1-1+1-\dots$  which one of the following is  $S_{15}$ ?

- a) 1 c) -1  
b) 0 d) 2

19.  $2+6+10+14+\dots$  which one of the following is common difference?

- a) 5 c) 3  
b) 4 d) 2

20. If  $n \in \mathbb{N}$  and  $a \neq 0$  then,

- (i)  $a^0 = 1$   
(ii)  $a^{-1} = \frac{1}{a}$   
(iii)  $a^n = \frac{1}{a^{(-n)}}$

Which one of the following is correct?

- a) i, ii c) i, ii, iii  
b) ii, iii d) i, iii

21. If  $a^2 \div a^1 = ?$

- a)  $a^2$  c)  $1a$   
b)  $1a^3$  d) All of the above

22. If  $2^x=8$  then,  $x=?$

- a) 1
- b) 2
- c) 3
- d) 4

23. If  $a \in R$  and  $x \in N$  then  $a^{x-1}=?$

- a)  $a^x \cdot a^{-1}$
- b)  $a^x + a^{-1}$
- c)  $a^x - a$
- d) none of the above

24.  $\left(\frac{x}{y}\right)^3 \times \left(\frac{x}{y}\right)^2=?$

- a)  $\left(\frac{x}{y}\right)^1$
- b)  $\left(\frac{x}{y}\right)^0$
- c)  $\left(\frac{x}{y}\right)^5$
- d)  $\left(\frac{x}{y}\right)^{-5}$

**If  $x^n=32$  then answer the following (25)**

25. If  $n=5$  then which of the following is correct?

- a)  $x=5$
- b)  $x=4$
- c)  $x=3$
- d)  $x=2$

26. Which one of the following is the value of  $10^0$ ?

- a) 10
- b) 0
- c) 1
- d) All of the above

27.  $\log_2 16=?$

- a) 5
- b) 2
- c) 3
- d) 4

28.  $\log_2 \frac{1}{64}=?$

- a) 6
- b) -6
- c)  $\frac{1}{6}$
- d)  $-\frac{1}{6}$

29.  $\log 1=?$

- a) 0
- b) 1
- c) 2
- d) None of the above

30.  $3 \log_2 2^5=?$

- a) 15
- b) 40
- c) 81
- d) 243

31.  $\frac{3^3 3^5}{3^6}=?$

- a) 3
- b) 9
- c) 27
- d) 81

32.  $\log_3 81=?$

- a) 4
- b) 5
- c) 6
- d) 7

