Makawanpur Multiple Campus
First Terminal Examination-2080

Grade:11 (Science) **First Term Exam-2080** **F.M: 37.5**
Sub: Mathematics. **P.M: 13**
Group:A **(5x1=5)**

Write the correct answer.

1) A The conjunction p∧q is true only when
a) p is true b) q is true c) both p and q are true d) none

2) The domain of the function $y = \sqrt{x}$ is
a) $(0,\infty)$ b) $(0,1)$ c) $[0,\infty)$ d) $(-\infty, 0)$

3) The number of non empty proper subsets of the set S = { 1,2,3,4 } is
a) 12 b) 13 c) 14 d) 16

4) The function f: N→ N defined by f (x) = 3x is
a) one - one b) onto c) both d) none

5) The limit of the function: $\lim_{x\to 0} \frac{|x-5|}{x-5}$ is
a) 1 b) - 1 c) 0 d) does not exist

Group:B **(5x5 = 25)**

6 a) For any three sets A, B and C, prove that A–(B–C) = (A–B) ∪ (A ∩ C).
b) State and prove De morgan's law.

7 a) Draw the truth table of $(\sim p \vee \sim q) \Rightarrow q$.
b) Define tautology. Show that the statement (pvq)Λq⇨p is a tautology.

8 a) Solve the inequality: $\frac{x(x+2)}{(x-1)} \leq 0$.
b) Solve the inequality. Ix + 3I ≥ 4.

9 a) Show that the function f: R → R defined by f(x)=2x+3 is one–one and onto
b) If $\frac{lnx}{y-z} = \frac{lny}{z-x} = \frac{lnz}{x-y}$ then prove that xyz = 1.

10 Find the domain and range of a) $y = \frac{Ix-1I}{x-1}$ b) $y = \sqrt{x+2}$.

Group:C **(7.5x1=7.5)**

11) a) Evaluate the limit: $\lim_{y\to x} \frac{ysecy - xsecx}{y-x}$.

b) Define the continuity of a function at a point. A function f(x) is defined by

$$f(x) = \begin{cases} 3+2x & for \quad -3/2 \leq x < 0 \\ 3-2x & for \quad 0 \leq x < 3/2 \\ -3-2x & for \quad x \geq 3/2 \end{cases}$$

Show that f(x) is continuous at x = 0.

All the Best!

p ⇒ q
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