SHIKSHA CLASSES

Subject : Maths - II	**Question Paper**	**Total Marks :20**
Class : XI	**8 : Continuity**	**Time : 1 Hour**

SECTION - A

Q.1 : Choose the correct option :   4

i) $f(x) = \dfrac{32^x - 8^x - 4^x + 1}{4^x - 2^{x+1} + 1}$ for $x \neq 0 = k$,

for $x = 0$, is continuous at $x = 0$, then value of ' k ' is

a) 6   b) 4   c) (log2)(log4)   d) 3log4

ii) If $f(x) = f(x) = \dfrac{(\sin 2x)\tan 5x}{(e^{2x} - 1)^2}$, for $x \neq 0$ is continuous at $x = 0$, then $f(0)$ is

a) $\dfrac{10}{e^2}$ b) $\dfrac{10}{e^4}$ c) $\dfrac{5}{4}$ d) $\dfrac{5}{2}$

Q.2 : Solve the following questions: 2

i) Say true or false .Every Continuous function is always differentiable.

ii) Show that there is a root for the equation x3 - x -1 = 0 between 1 and 2

Section B

Solve the following : (ANY 3)   6

Q.3 : Discuss the continuity if the function :

$f(x) = [2x + 3]$, at $x = -\dfrac{3}{2}$

Q.4 : Identify discontinuities for the following functions as either a jump or a removable discontinuity.

$f(x) = 4 + \sin x$, for $x < \pi$

$= 3 - \cos x$, for $x > \pi$

Q.5 : Discuss the continuity of the following functions at the points indicated against them.

$f(x) = \dfrac{4^x - 2^{x+1} + 1}{1 - \cos 2x}$ for $x \neq 0$

$= \dfrac{(\log_2)^2}{2}$,   for $x = 0$, at $x = 0$

Section C

Solve the following : (ANY 2)   6

Q.6 : Identify discontinuous if any for the following functions as either a jump of a removable discontinuity in their respective domains.

$f(x) = \dfrac{x^2 + x + 1}{x + 1}$,   for $x \in [0,3]$

$= \dfrac{3x + 4}{x^2 - 5}$,   for $x \in [3, 6]$

Q.7 : $f(x) = \dfrac{1 - \cos[7(x - \pi)]}{5(x - \pi)^2}$,

for $x \neq \pi$ and at $a = \pi$

find $f(a)$, if f is continuous at $x = a$.

Q.8 : $f(x) = ax^2 + bx + 1$,   for $|2x - 3| \geq 2$

$= 3x + 2$ for $\dfrac{1}{2} < x < \dfrac{5}{2}$

find a and b if following functions are continuous at the points or on the interval

indicated against them.

Section D

Solve the following : (ANY 1)   4

Q.9 : Discuss the continuity of the following functions at the point (S) or no. the interval indicated against them.

$$f(x) = \frac{\cos 4x - \cos 9x}{1 - \cos x}, \qquad \text{for } x \neq 0$$

$$f(0) = \frac{68}{15}, \text{ at } x = 0 \text{ on } -\frac{\pi}{2} \leq x \leq \frac{\pi}{2}$$

Q.10 : Test the continuity of the following functions at the points or interval indicated against them.

$$f(x) = \frac{(27 - 2x)^{\frac{1}{3}} - 3}{9 - 3(243 + 5x)^{\frac{1}{5}}} \qquad \text{for } x \neq 0$$

$$= 2 \qquad \text{for } x = 0, \text{ at } x = 0$$

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