

Functions and their Graphs-1
Model Exam Question paper - 1

11th Standard

Business Maths

Reg.No. :

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I. Answer all the questions

Time : 00:35:00 Hrs

Total Marks : 25

Part-A

5 x 1 = 5

- 1) The point in the interval (3,5] is
(a) 3 (b) 5.3 (c) 0 (d) 4.35
- 2) Zero is not a point in the interval
(a) $(-\infty, \infty)$ (b) $-3 \leq x \leq 5$ (c) $-1 < x \leq 1$ (d) $[-\infty, -1]$
- 3) Which one of the following functions has the property $f(x) = f\left(\frac{1}{x}\right)$
(a) $f(x) = \frac{x^2+1}{x}$ (b) $f(x) = \frac{x^2-1}{x}$ (c) $f(x) = \frac{1-x^2}{x}$ (d) $f(x)=x$
- 4) For what value of x the function $f(x) = \sqrt{\frac{x}{2}}$ is not real value?
(a) $x < 0$ (b) $x \leq 0$ (c) $x < 2$ (d) $x \leq 2$
- 5) The domain of the function $f(x) = \frac{x-4}{x+3}$ is
(a) $\{x/x \neq -3\}$ (b) $\{x/x \geq -3\}$ (c) $\{\}$ (d) $\mathbb{R}$

Part-B

4 x 2 = 8

- 6) If $f(x) = \tan x$ and $f(y) = \tan y$ prove that $f(x-y) = \frac{f(x)-f(y)}{1+f(y)f(x)}$
- 7) If $f(x) = \frac{x+\tan x}{x+\sin x}$ prove that $f\left(\frac{\pi}{4}\right) = \frac{\pi+4}{\pi+2\sqrt{2}}$
- 8) If $f(x) = \sin x$; $g(x) = \cos x$
show that: $f(\alpha - \beta) = f(\alpha)g(\beta) - g(\alpha)f(\beta)$; $\alpha, \beta, x \in \mathbb{R}$
- 9) For $f(x) = \sqrt{x^2+4}$ write the expression $f(2x)$ and $f(0)$

Part-C

4 x 3 = 12

- 10) Find the domain and range of the function given by $f(x) = \log_{10}(1+x)$
- 11) Find the domain of the function $f(x) = \sqrt{x^2-7x+12}$
- 12) If $f(x) = \frac{1+x^2+x^4}{x^2}$ prove that $f\left(\frac{1}{x}\right) = f(x)$
- 13) If $f(x) = x^2 + 3x + 7$ find $\frac{f(x+h)-f(x)}{h}$
