

Model Question paper
Functions and Graphs 3

11th Standard

Maths

Reg.No. :

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I. Answer all the questions.

II. Use blue pen only.

Time : 00:50:00 Hrs

Total Marks : 35

5 x 1 = 5

Part - A

- 1) Identify the correct statement.
(a) The set of real numbers is a closed set (b) The set of all non-negative real numbers is represented by $(0, \infty)$
(c) The set $[3, 7]$ indicates the set of all natural numbers between 3 and 7 (d) $(2, 3)$ is a subset of $[2, 3]$
- 2) Which of the following is not one-to-one?
(a) $f: \mathbb{R} \rightarrow \mathbb{R}; f(x) = x+1$ (b) $f: \mathbb{R} \rightarrow \mathbb{R}; f(x) = x^2+1$ (c) $f: \mathbb{R} \rightarrow \{1, -1\}; f(x) = x-1$ (d) $f: \mathbb{R} \rightarrow \mathbb{R}; f(x) = -x$
- 3) The true statements of the following are _____.
(i) The composition of function fg and the product of functions fg are same.
(ii) For the composition of functions fg , the codomain of g must be the domain of f
(iii) If $f \circ g, g \circ f$ exist, then $f \circ g = g \circ f$
(iv) If the function f and g are having same domain and codomain, then $fg = gf$
(a) All (b) (ii), (iii) and (iv) (c) (iii) and (iv) (d) (ii) and (iv)
- 4) Let $f: \mathbb{R} \rightarrow \mathbb{R}$ be defined by $f(x) = 6x+11$, then $f(3)$ is
(a) 11 (b) 29 (c) 53 (d) 40
- 5) If $f: \mathbb{R} \rightarrow \mathbb{R}, g: \mathbb{R} \rightarrow \mathbb{R}$ defined by $f(x) = x+7, g(x) = x-7$, then $g \circ f(7)$ is
(a) 7 (b) 8 (c) -6 (d) -7

Part - B

5 x 2 = 10

- 6) If $f, g: \mathbb{R} \rightarrow \mathbb{R}$, defined by $f(x) = x+1$ and $g(x) = x^2$, define $(f+g)(x)$
- 7) If $f, g: \mathbb{R} \rightarrow \mathbb{R}$, defined by $f(x) = x+1$ and $g(x) = x^2$ define $(gf)(x)$
- 8) Solve the following inequation:
 $x^2 + x - 12 < 0$
- 9) Solve the following inequation:
 $\frac{x-2}{3x+1} > \frac{x-3}{3x-2}$
- 10) For the functions f, g , as defined in (1), define
(i) $(f+g)(x)$ (ii) $\left(\frac{f}{g}\right)(x)$ (iii) $(fg)(x)$ (iv) $(f-g)(x)$ (v) $(gf)(x)$

Part - C

4 x 5 = 20

- 11) A classroom consists of 7 benches. The strength of the class is 35. Capacity of each bench is 6. Show that the relation 'sitting' between the set of students and the set of benches is a function. If we interchange the sets, what will be happened?
- 12) Find the domain of the rational function $f(x) = \frac{x^2+x+2}{x^2-x}$
- 13) Solve the inequality $x^2 - 7x + 6 > 0$
- 14) Solve: $\frac{x+1}{x-1} > 0, x \neq 1$
