SRM

SRM Institute of Science and Technology
Delhi- NCR Campus, Modinagar
Department of Computer Science and Engineering
SET-II

Mode of Exam
OFFLINE

Academic Year: 2022-23 **(ODD)**

Test: Theory CLA-1 **Date: 19/09/2022**
Course Code &Title: 18MAB201T & Transform and Boundary Values Problems **Duration: 1 hour**
Year & SEM: 2nd & 3rd **Max. Marks: 30**

Course Articulation Matrix: *(to be placed)*

Part – A (MCQ)
(10*1 = 10 Marks)
Instructions: Answer all questions

Q. No	Question	Marks	CO	PO	BL
1	The PDE formed by eliminating arbitrary function from $z = f(x^2 + y^2)$ is (A) $py = qx$ (B) $xy = pq$ (C) $xp = yq$ (D) $x + y = p + q$	1	1	2	1
2	The complementary function of $\left(D^2 + DD' - 2D'^2\right)z = x^2y$ is (A) $z = f_1(y - x) + f_2(y - 2x)$ (B) $z = f_1(y + x) + f_2(y + 2x)$ (C) $z = xf_1(y + x) + f_2(y + 2x)$ (D) $z = f_1(y + x) + f_2(y - 2x)$	1	1	2	2
3	The particular integral of $D^2z = x^3y$ is (A) $\frac{1}{20}x^5y$ (B) $\frac{1}{5}x^5y$ (C) $\frac{1}{10}x^5y$ (D) x^5y	1	1	2	1
4	The solution of $\frac{\partial^3 z}{\partial x^3} = 0$ is (A) $z = (1 + x + x^2)f(y)$ (B) $z = f_1(y) + xf_2(y) + x^2f_3(y)$ (C) $z = (1 + y + y^2)f(x)$ (D) $z = f_1(x) + yf_2(x) + y^2f_3(x)$	1	1	2	1
5	Find the particular integral of $\left(D^2 - 2DD' + D'^2\right)z = \sin x$ is (A) $\sin x$ (B) $-\sin x$ (C) $\cos x$ (D) $-\cos x$	1	1	2	1
6	The complete integral of $\left(D^2 - 3DD' + 2D'^2\right)z = 0$ is (A) $z = \phi_1(y + x) + \phi_2(y - 2x)$ (B) $z = \phi_1(y + x) + \phi_2(y + 2x)$ (C) $z = \phi_1(y - x) + \phi_2(y + 2x)$ (D) $z = \phi_1(y + x) - \phi_2(y + 2x)$	1	1	2	1
7	The solution of the linear PDE $\left(D^2 + 4DD' - 5D'^2\right)z = 0$ is (A) $z = f_1(y + x) + f_2(y + 5x)$ (B) $z = f_1(y - x) + f_2(y - 5x)$ (C) $z = f_1(y + x) + f_2(y - 5x)$ (D) $z = f_1(y - x) + f_2(y + 5x)$	1	1	2	1

8	The complete integral of $z = px + qy + pq$ is (A) $z = px + qy + ab$ (B) $z = ax + by + pq$ (C) $z = ax + by + ab$ (D) $z = ax + by$	1	1	2	1
9	The solution of $p + q = z$ is (A) $f(x + y, y + \log z) = 0$ (B) $f(xy, y \log z) = 0$ (C) $f(x - y, y - \log z) = 0$ (D) $f(xy, y - \log z) = 0$	1	1	2	2
10	A solution got by giving particular values to the arbitrary constants in a complete integral is called a (A) Complete integral (B) Particular integral (C) Singular integral (D) General integral	1	1	2	1
	Part – B (Long Answer) **(4*5 = 20 Marks)** **Instructions: Answer all questions.**				
11	Form the partial differential equation by eliminating the arbitrary constants a and b from $z = (x^2 + a)(y^2 + b)$. **OR**	5	1	2	2
	Form the partial differential equation by eliminating f from $z = xy + f(x^2 + y^2 + z^2)$.	5	1	2	2
12	Solve $p = 2qx$. **OR**	5	1	2	2
	Compute the complete integral of $p^2 + q^2 = x + y$.	5	1	2	1
13	Solve $x(y - z)p + y(z - x)q = z(x - y)$. **OR**	5	1	2	2
	Find the solution of $z(x - y) = x^2p - y^2q$.	5	1	2	1
14	Solve $(D^2 - 2DD' + D'^2)z = \cos(x - 3y)$. **OR**	5	1	2	2
	Solve $(D^2 - DD')z = \sin x \sin 2y$.	5	1	2	2