NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute)

Affiliated to Dr. A.P.J. Abdul Kalam Technical University, Uttar Pradesh, Lucknow

B.Tech

FIRST YEAR (SEMESTER-II) THEORY EXAMINATION   (2020-2021)

(Subjective Type)

Subject Code: AAS0204   **Max. Mks. : 30**

Subject: Mathematical Foundations – II   **Time   : 50 Minutes**

General Instructions:

All questions are compulsory.

Question No. 1 to 15 are subjective type question carrying 3 marks each. Attempt any 10 out of 15 questions.

Q.No	Question Content	Question Image	Category	Sub Category	Marks	Options Randomization	Type	Difficulty
1		Evaluate the integral $\int_0^1 \int_0^1 \frac{dx\, dy}{\sqrt{1-x^2}\sqrt{1-y^2}}$	Attempt any 10 questions	10 x 3=30	3		Subjective	Brilliant
2		Change the order of integration $\int_0^1 \int_0^x f(x,y)\,dy\,dx$.	Attempt any 10 questions	10 x 3=30	3		Subjective	Brilliant
3		Evaluate $\int_0^1 x^4(1-x)^3\,dx$	Attempt any 10 questions	10 x 3=30	3		Subjective	Brilliant
4		Find the differential equation of the family of curves $y = a\,e^{Ax} + b\,e^{-x}$ where a and b are arbitrary constants.	Attempt any 10 questions	10 x 3=30	3		Subjective	Brilliant
5		the independent variable.	Attempt any 10 questions	10 x 3=30	3		Subjective	Brilliant

Q.No	Question Content	Question Image	Category	Sub Category	Marks	Options Randomization	Type	Difficulty
6		Solve the partial differential equation $D(D-2D'-3)z = e^{x+2y}$.	Attempt any 10 questions	10 x 3=30	3		Subjective	Brilliant
7		Solve the partial differential equation $(D^2 - 6DD' + 9D'^2)z = 12x^2$.	Attempt any 10 questions	10 x 3=30	3		Subjective	Brilliant
8		Solve the partial differential equation $\dfrac{y^2 z}{x}p + xzq = y^2$.	Attempt any 10 questions	10 x 3=30	3		Subjective	Brilliant
9		Express the following function in terms of unit step function $f(t) = \begin{cases} \sin t & 0 < t < \pi \\ \sin 2t & \pi < t \end{cases}$	Attempt any 10 questions	10 x 3=30	3		Subjective	Brilliant
10		Find the inverse Laplace transform of the function $f(s) = \dfrac{1}{s^3} - \dfrac{3}{s^2+4}$	Attempt any 10 questions	10 x 3=30	3		Subjective	Brilliant
11		Find Laplace transform of the function $F(t) = t^2 \sin at$.	Attempt any 10 questions	10 x 3=30	3		Subjective	Smart
12	If A $ B means A is the brother of B; A @ B means A is the wife of B; A # B means A is the daughter of B and A * B means A is the father of B, which of the following indicates that U is the father-in-law of P?		Attempt any 10 questions	10 x 3=30	3		Subjective	Brilliant
13	There are two containers of equal capacity. The ratio of milk to water in the first container is 3:1, in the second container 5:2. If they are mixed up, then find the ratio of milk to water in the mixture?		Attempt any 10 questions	10 x 3=30	3		Subjective	Brilliant
14	Divide ₹ 600 among A,B and C so that ₹ 40 more than 2/5th of A's share, ₹ 20 more than 2/7 of B's share and ₹10 more than 9/17th of C's share are all equal. What is A's share?		Attempt any 10 questions	10 x 3=30	3		Subjective	Brilliant
15		Find the complementary function of the second order linear differential equation $x^2 y'' - 3xy' + 5y = x \log x$	Attempt any 10 questions	10 x 3=30	3		Subjective	Brilliant