

DM

Diploma in Nautical Science

Semester I Applied Mathematics Subject Code: UD11T5101

Max. Marks: 70

Pass Marks: 35

Date: 06.06.2022

Time: 2 hours

Note: Part A & B (20 Marks) – are compulsory.
Part C (50 Marks) - Answer any 5 questions from Q1 to Q7

i. **Part A – 10 MCQs (10 X 01 Mark)**

1. A spherical triangle in which at least one side equals to 90° is called as,
(a) Oblique triangle (b) Right angled spherical triangle
(c) Quadrantal spherical triangle (d) Polar triangle
2. The side of a spherical triangle is
(a) Greater than or equal to 180° (b) Greater than 180°
(c) Less than 180° (d) Equal to 180°
3. For the parabola $y^2 = -18x$ the length of latus rectum is,
(a) 8 (b) 4 (c) 18 (d) -18
4. The area of the circle centred at (1, 2) and passing through (4, 6) is
(a) 5π (b) 10π (c) 25π (d) 35π
5. The length of the latus rectum of the ellipse $3x^2 + 4y^2 = 12$ is ,
(a) 4 (b) 3 (c) 2 (d) 6
6. If the height of a circular cylinder is 20 cm and the radius of its base is 7 cm then the volume of the cylinder is,
(a) 8880 cm^3 (b) 8030 cm^3 (c) 3080 cm^3 (d) 8080 cm^3
7. The angle of depression of a car parked on the road from the top of a 150 m high tower is 30° . The distance of the car from the tower (in meters) is,
(a) $50\sqrt{3}$ (b) $150\sqrt{3}$ (c) $100\sqrt{3}$ (d) 75
8. The unit vector parallel to $3i + 4j$ is
(a) $\pm \frac{1}{5} (3i + 4j)$ (b) $\pm \frac{1}{15} (3i + 4j)$ (c) $\pm \frac{1}{25} (3i + 4j)$ (d) $(3i + 4j)$
9. Feasible region is the set of points which satisfy,
(a) The objective functions (b) Some the given constraints
(c) All of the given constraints (d) None of these
10. Lagrange's interpolation formula
(a) Equal intervals (b) Unequal intervals
(c) Both equal and unequal intervals (d) None of these

7.

(2 x 5 = 10 Marks)

(a) Using the table

X	0	1	2	3	4	5	6
F(x)	1	5	8	10	18	25	30

Evaluate $\int_0^6 f(x) dx$, by Simpson's $\frac{3}{8}$ th Rule.

(b) Find the polynomial interpolating data, by using Newton's forward interpolation formula.

x	0	1	2
y	0	5	2