Date	9th May 2022
Exam Time	2 pm to 3.30 pm

Section – A

Question 1:

(i) f sin2x/cosx ds is equal to:

(a) – 2x cos x + c

(b) 2cosx + c

(c) –cosx/2 + c

(d) cosx/2 + c

(ii) If A and B are two events such that P(A) = 4/5 and P(B/A) = 2/8 then P (A∩B) is equal to:

(a) 7/40

(b) 21/40

(c) 32/35

(d) 7/10

(iii) f e^{sinx} cosx dx is equal to:

(d) $e^{\sin 2x} + c$

(iv) The order and degree of the differential equation $d^2y/dx^3 + d^2y/dx^2 + (dy/dx)^2 = 3$ is:

(a) Order 3 and degree 1

(b) Order 1 and degree 3

(c) Order 2 and degree 1

(d) Order 2 and degree 2

(v) A bag contains 9 red, 7 white and 4 black balls. If two balls arc down at random without replacement, the probability that both balls are red will be:

(a) 11/95

(b) 18/95

(c) 18/85

(d) 18/23

(vi) f a^{3x+2} dx is equal to:

(a) $(a^{3x}/3\log e\ a) + c$

(b) $a^2x + (a^{3x}/3\log_e a) + c$

(c) $a^2\ (a^{3x}/3\log_e a) + c$

(d) $a^2\ (a^{3x}/\log_e a) + c$

Question 2:

(a) Evaluate: f $1/\sin^2 \times \cos^2 x$ dx

(a) Solve: dy/dx = sinx – x

(b) Solve: dy/dx + 2x = e^{3x}

Question 4:

Evaluate: f^{4}_{1}| x – 2 | dx

Question 5:

Two horses are considered for race. The Probability of selection of first horse is 1/5 and that of second is 2/3. Find the probability that

(i) Both will be selected

(ii) Only one of them will be selected

(iii) None of them will be selected

(iv) At least one of them will be selected

Question 6:

(a) Evaluate: f dx/x[$(logx)^2$ + 5logx + 6]

(b) Evaluate: f x tan^{-1} x dx

Question 7:

An insurance company insured 1000 scooter drivers, 2000 car drivers and 4000 truck drivers. The probability of accidents by scooter, car and truck drivers are 0.02, 0.05 and 0.03 respectively. If one of the insured persons meets with an accident, find the probability that he is a truck driver.

Question 8:

(a) Write a particular solution of the differential equation,

Section B:

Question 9:

(i) If the intercept form of the equation of the plane 2x – 3y + 4z = 12 is

x/a + y/b + x/c = 1, then the values of a, b, c are respectively.

(a) a= 6, b = -4, c = 3

(b) a = -6, b = -4, c = 3

(c) a = 6, b = 4, c = 3

(d) a = 6, b = 4, c = -3

(ii) The distance of the plane whose equation is given by 3x – 4y + 12z = 3, form the origin will be:

(a) 3/13

(b) -2/13

(c) -3

(d) 13/19

Question – 10

Find the equation of the plane passing through the points

(- 2, 6,6), (1, -1,0) and (1,2,-1)

Question -11

Find the area of the region bounded by the curves $y=x^2 + 2$, y = x, x= 0 and x=3.

The correlation coefficient (ρ) will be,

(a) 0.16

(b) -0.16

(c) 0.4

(d) -0.4

(ii) The line of regression of y on x is , 4x-5y + 33 = 0

And the line of regression of x on y is, 20x – 9y – 107=0

Then the value of x when y = 7 is,

(a) 8.5

(b) -8.5

(c) 0.5

(d) -0.5

Question – 13

The mean and standard deviation of the two variables x and

Y are given as x = 6, y= 8, σ_x = 4, σ_y = 12. The correlation

Coefficient is given as r = 2/3

Find the regression line of x on y.

Question – 14

A manufacturer has two machines x and y that may Run at the most 360 minutes in a day to produce Two types of toys A and B.

To produce each Toy. A, machines X and Y need to run at the most 12 minutes an d 6 minutes respectively.