**SR GLOBAL SCHOOL**

**PRE BOARD EXAM-I (2022-23)**

**CLASS-XII**

 **SUBJECT- MATHS (041)**

**TIME- 3 hrs M.M.- 80 Marks**

**GENERAL INSTRUCTION:**

* **This question paper contains five sections A,B,C,D and E.**
* **Each section is compulsory. However there are internal choices in some questions.**

**SECTION-A**

**Multiple choice questions (Each carries 1 mark).**

**Q1.** The area bounded by the curves y=sin x between the ordinates x=0, x= and the x-axis is.

1. 2 sq. units (b) 4 sq. units (c) 3 sq. units (d) 1 sq. units

**Q2.** The function has-

1. only one maxima (b) only one minima
2. no maxima or minima (d) none of these.

**Q3.** The area between the hyperbola xy=c2 , then x axis and the ordinates at a and b with a>b is:

1. (b)
2. (c) none of these (d)

**Q4.** The direction cosines of x-axis are-

1. (0,1,1) (b) (0,0,1) (c) (1,0,0) (d) (0,1,0)

**Q5.** Find and , if . = 8 and = 8-

1. (b) , (c) , (d) ,

**Q6.** Let A and B be independent events with P(A) = 0.3 and P(B) = 0.4 Find P(A|B)-

1. 0.27 (b) 0.3 (c) 0.2 (d) 0.33

**Q.7** General solution of is-

 (a) (b) (c) (d)

**Q8.** The area bounded by and the x-axis in square units is-

1. 4 (b) 6 (c) 8 (d) 7

**Q9.**

 (a) (b)

 (c) (d) None of these.

**Q10.** The value of is

1. (b)

(c) (d)

**Q11.** General solution of is-

1. +c (b)+c

(c) +c (d) +c

**Q12.** The area of a parallelogram with vertices A,B,C,D is given by-

1. (b)

(c) (d)

**Q13.** The value of for which the vectors and 2are parallel is-

1. (b)

(c) (d)

**Q14.** equals-

1. 0 (b) (c) 2 (d)

**Q15.** is equal to-

1. (b)

(c) (d)

**Q16.** Corner points of the feasible region for an LPP are (0,2), (3,0), (6,0), (6,8) and (0,5). Let

 be the objective function. Then max

1. 60 (b) 48 (c) 42 (d) 18

**Q17.** If P(A)= Then P is equals-

1. (b) (c) (d)

**Q18.** The value of K for which the function is continuous at is-

1. 0 (b) -1 (c) 1 (d) 2

**ASSERTION-REASON BASED QUESTIONS**

**Choose the correct answer out of the following choices .**

1. **Both A and B are true and R is the correct explanation of A.**
2. **Both A and R are true but R is not the correct explanation of A.**
3. **A is true but R is false.**
4. **A is false but R is true.**

**Q19.** Assertion (A): If A= , Then =

 Reason (R): A= , Then =

**Q20.** Assertion (A): The function is strictly increasing in the internal (2,

 Reason (R): The function is strictly decreasing in the internal (

 **SECTION-B**

 **(Very short answer type questions of 2 marks each)**

**Q21.** Evaluate:

**Q22.** Write the sum of order and degree of the differential equation

**Q23.** In the determinant Verify that a11 c31+a12c32+a12c33=0

 **OR**

 Find the matrix X satisfying the equation.

**Q24.** If is the angle between two vectors find sin.

**Q25.**  If .

 **SECTION-C**

 **(Short answer type question of 3 marks each)**

**Q26.** Find :

**Q27.** Probability of solving a specific problem independently by A and B are respectively. If both

 try to solve the problem independently . Find the probability that-

1. The problem is solved
2. Exactly one of them solves the problem.

 **OR**

Two cards are drawn successively with replacement from a well shuffled pack of 52 cards. Find the probability distribution of the number of kings.

**Q28.** Evaluate:

 **OR**

Evaluate:

**Q29.**  Solve the differential equation:

 **OR**

 Solve the differential equation:

**Q30.** Solve the following LPP graphically :

 Maximize subject to

**Q31.** Find

 **SECTION-D**

**(Long answer type questions of 5 marks each)**

**Q32.** Find the area of the region

**Q33.** Define the relation R in the set NN as follows:

 For (a,b), (c,d) Prove that R is an equivalence relation in

 **OR**

If R=. Find the domain and range of the relation R. Also verify Whether R is reflexive, symmetric and transitive.

**Q34.** Find the shortest distance between two lines whose Cartesian equations are:

 **OR**

Find the foot of the perpendicular drawn from the point (2 to the line (11

 Also , Find the length of perpendicular.

**Q35.** If A= Find A-1 . Use A-1 to solve the following system of equations 2x-3y+5z=11, 3x+2y-4z=-5, x+y-2z=-3.

**SECTION-E**

**(This section comprises of 3 case-study based questions of 4 marks each)**

**Q36.** Case study 1: Mrs Maya is the owner of a high-rise residential society having 50 apartments. When he set rent at / month , all apartments are rented. If he increases rent by month, one

 fewer apartment is rented. The maintenance cost for each occupied unit is month.

1. If P is the rent price per apartment and N is the number of the rented apartments, Then find the profit.
2. If X represents the number of apartments which are not rented , then express profit as a function of X.
3. Find the number of apartments which are not rented so that profit is maximum.

**OR**

 Verify that profit is maximum at critical value of x by second derivative test.

**Q37.** Case study 2: The temperature of a person during an intestinal illness is given by being a constant, where

 is the temperature in at x days.

1. Is the function differentiable in the internal (0,12)? Justify your answer.
2. If 6 is the critical point of the function , then find the value of the constant m.
3. Find the internals in which the function is strictly increasing / strictly decreasing.

**Q38.**  **Read the text carefully and answer the questions:**

The Government declare that farmers can get300 per quintal for their onions on 1st july and after that the price will be dropped by per quintal per extra day. Govind’s father has 80 quintals of onions in the field on 1st july and he estimates that the crop is increasing at the rate of 1 quintal per day.

1. If x is the number of days after 1st july, then express price and quantity of onion and the revenue as a function of x.
2. Find the number of days after 1st july, when Govind’s father attains maximum revenue.
3. On which day should Govind’s father harvest the onions to maximize his revenue?