**SINDHI HIGH SCHOOL, HEBBAL**

**Annual Examination [2024-25]**

**SUB: MATHEMATICS-041 Class: 11 Reading Time: 8:30 a.m-8:45a.m**

**Date: 12.02.2025 Writing Time: 8:45 a.m-11:45a.m**

**No of Sides: 05**

**GENERAL INSTRUCTIONS:**

* This Question Paper has 5 Sections A, B, C, D and E. Each section is compulsory However,there are internal choices in some questions.
* **Section A** has 18 MCQs and 02 Assertion and Reason based questions carrying 1 mark each
* **Section B** has 5 questions carrying 02 marks each.
* **Section C** has 6 questions carrying 03 marks each.
* **Section D** has 4question carrying 05 marks each.
* **Section E** has of 3 source based/case based/passage based/integrated units of assessment

(4 marks each) with sub parts.

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|  | **Section A** |  |
|  | **Section A consists of 20 questions of 1 mark each.** |  |
| 1 | If A= {x: x is a multiple of 3 less than 20} and  B = {x: x is a prime number less than 20 then n(AB) is .  (a) 0 (b) 1 (c) 2 (d) 3 | 1 |
| 2 | The number of non-empty subsets of A= {1,4,5} is  (a) (b) (c)3 (d) 8 | 1 |
| 3 | If then the value of x + 2y + 2z is  (a) (b) (c) (d) | 1 |
| 4 | Range of the function is  (a) (b) (c) (d) | 1 |
| 5 | If then set B is | 1 |
| 6 | Given that the general term of a sequence is represented by  , then the 15th term of the sequence is   1. 240 (b) 255 (c) (d) | 1 |
| 7 | An arc of circle of length cm makes an angle of at the centre of the circle. The radius of the circle is   1. 10 cm (b) 20 cm (c) cm (d) 22 *cm* | 1 |
| 8 | The complex number lying on x axis is  (a) 2i (b) -5+0i (c) 4-3i (d)1+i | 1 |
| 9 | The value of:  (a) (b) (c)(d) | 1 |
| 10 | The multiplicative inverse of is  (a) (b) (c) (d) | 1 |
| 11 | Solve: for real values of x.  (a) (b) (c) (d) | 1 |
| 12 | If , then the value of ‘x’ is  (a) 100 (b)90 (c) 110 (d) 121 | 1 |
| 13 | The quadratic equation whose A.M is and G.M is is  (a) (b)  (c)0 (d)0 | 1 |
| 14 | The intercept form of the equation of line is  (a) (b) (c) (d) | 1 |
| 15 | Equation of the directrix of the parabola is  (a) (b) (c) (d) | .  1 |
| 16 | Image of the point in XY plane is  (a) (b) (c) (4,-7,6) (d) | 1 |
| 17 | Mean deviation of 1, 3, 2, 5, 4 about mean is  (a) 0.8 (b) 1 (c) 1.1 (d) 1.2 | 1 |
| 18 | In a leap year, the probability of having 53 Sundays or 53 Wednesdays is  a) 4/7 b) 2/7 c) 1/7 d)3/7 | 1 |
| 19 | **In the following questions, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.**  (a) Both A and R are true and R is the correct explanation of A.  (b) Both A and R are true but R is not the correct explanation of A.  (c) A is true but R is false.  (d) A is false but R is true.  **Assertion:** The value of ‘p’ for which are in G.P is only.  **Reason**: If x, y, z are in G.P then | 1 |
| 20 | **Assertion**:  **Reason**: Derivative of a constant is zero. | 1 |
|  | **Section B**  **(consists of 5 questions of 2 marks each)** |  |
| 21 | If find: (i) | 2 |
| 22 | Find the points on x axis whose distance from the line are 4 units?  **OR**  Show that the points are vertices of a square. | 2 |
| 23 | Prove that: | 2 |
| 24 | Find the equation of a circle having (2, 4) and (8, 6) as end points of diameter of the circle | 2 |
| 25 | Evaluate:  **OR**  Differentiate: y= | 2 |
|  | **Section C**  **(consists of 6 questions of 3 marks each)** |  |
| 26 | Solve the system of inequalities in R and hence represent its solution on the real number line . | 3 |
| 27 | (c) Sketch the graph of f(x) for x | 3 |
| 28 | A committee of 8 students from 8 boys and 6 girls .In how many ways this can be done if each group consists of at least 3 boys and 3 girls. | 3 |
| 29 | Find the value of | 3 |
| 30 | The sum of 3 terms in GP is and their product is .Find the common ratio and the terms. **OR**  Aman saw his younger brother playing with building blocks. He observed that he is playing in a pattern by making a tower of 32 blocks and then dividing into half a tower of 16 blocks and so on till he got a tower of 1 block.  a) What kind of pattern is brother making? Also, how many distinct towers  did the boy make?  b) How many total blocks does the boy carry with him? | 3 |
| 31 | Find the equation of the lines which passes through the point (3, 4) and cuts off intercepts from the coordinate axes such that their sum is 14.  **OR**  Find the equation of the line which is perpendicular to the line and passes through the midpoint of the line segment joining (1, 5) and (3,11). | 3 |
|  | **Section D**  **(consists of 4 questions of 5 marks each)** |  |
| 32 | Prove that  **OR**  (3)   1. Evaluate (2) | 5 |
| 33 | Find the (i) lengths of major and minor axes (ii) coordinates of the vertices (iii) coordinates of foci, (iv) eccentricity and (v) length of latus rectum of ellipse | 5 |
| 34 | If for  **OR**  Evaluate: (3)  Evaluate: : (2) | 5 |
| 35 | Calculate the Mean and Variance for the following data   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Class | 0-4 | 4-8 | 8-12 | 12-16 | 16-20 | | frequency | 4 | 6 | 8 | 5 | 2 | | 5 |
|  | **Section E**  **(consists of three case base study questions of 4 marks each)** |  |
| 36 | Nivrathi is a class XI student of a reputed school . She had been anxiously waiting for having a get together with her classmates as she could not be with them for a stretch of year due to Covid 19 and Board Exam of class X th. She invited four of her best friends Koyal, Ayushi, Prisha ,and Sanchi to her birthday party on 26th April. After cutting cake , her elder sister Khushali wants to take group photograph of all of them standing in a single row.    Using the above information, answer the following  i) How many distinct photographs can be clicked?  ii) In how many photographs Nivrathi will be standing in the middle?  iii) In how many photographs Nivrathi and Ayushi will not be standing  together? (2)  **OR**  In how many photograph Prisha would not be in the middle? (2) | 4 |
| 37 | From the employees of a company, 5 persons were shortlisted to represent them in the managing committee of the company. Particulars of the five persons are as given below:   |  |  |  |  | | --- | --- | --- | --- | | **Sl No.** | **Name** | **Gender** | **Age in years** | | 1 | Harish | M | 30 | | 2 | Rohan | M | 33 | | 3 | Sheetal | F | 46 | | 4 | Alice | F | 28 | | 5 | Salim | M | 41 |   A person has to be chosen as a company spokesperson. Using the above data, answer the following   1. What is probability of choosing a female candidate as company spokesperson? 2. What is probability that the person chosen as company spokesperson is not over 35 years? 3. What is probability that the person chosen as company spokesperson is either a male or over 35 years? (2)   **OR**  What is probability that the person chosen as company spokesperson is  either a female or below 40 years ? (2) | 4 |
| 38 | World is concerned about environmental changes as it affects our surroundings and health. So awareness changes as it affects our surroundings and health. So awareness drive is launched for cleanliness, environmental friendly etc. and often surveys are conducted. In one such survey  “In a group of 1000 persons, 750 persons are environmental friendly and 400 persons are concerned about saving natural resources.”  Using the above information, answer the following   1. How many are environmental friendly only? (2) 2. How many are environmental friendly or concerned about saving of   natural resources? (2) | 4 |

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