Roll No. _____ NLCS/10/Mathematics Basic (241)/45

Pre Board Exam 2025 – 2026

Time Allowed : 3 : 00 Hrs. **M M :** 80

General Instructions

Read the following instructions carefully and follow them:

1. This question paper contains 38 questions. All Questions are compulsory.
2. This Question Paper is divided into 5 Sections A, B, C, D and E.
3. In **Section A**, Question numbers 1-18 are multiple choice questions (MCQs) and question no.19 and 20 are Assertion- Reason based questions of 1 mark each.
4. In **Section B**, Question numbers 21-25 are very short answer (VSA) type questions, carrying 02 marks each.
5. In **Section C**, Question numbers 26-31 are short answer (SA) type questions, carrying 03 marks each.
6. In **Section D**, Question numbers 32-35 are long answer (LA) type questions, carrying 05 marks each.
7. In **Section E**, Question numbers 36-38 are case study-based questions carrying 4 marks each with sub parts of the values of 1, 1 and 2 marks each respectively.
8. There is no overall choice. However, an internal choice in 2 questions of Section B, 2 questions of Section C and 2 questions of Section D has been provided. An internal choice has been provided in all the 2 marks questions of Section E.
9. Draw neat and clean figures wherever required. **Take π = 22/ 7** wherever required if not stated.
10. Use of calculators is not allowed.

Section A

Q.1 **$2\sqrt{3}$ is**

(a) an integer (b) a rational number (c) an irrational number (d) a whole number

Q.2 **HCF of 144 and 198 is**

(a) 9 (b)18 (c) 6 (d) 12

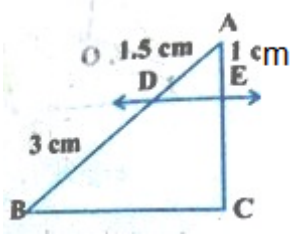
Q.3 **If 2 is a zero of a quadratic polynomial $kx^2 + 3x + k$ is 2, then value of k is**

(a) $\frac{5}{6}$ (b) $\frac{-5}{6}$ (c) $\frac{6}{5}$ (d) $\frac{-6}{5}$

Q.4 **If zeros of $P(x) = 2x^2 – 7x + k$ reciprocal of each other, value of k is**

(a) 1 (b) 2 (c) 3 (d) -7

Q.5 **In the given figure DE || BC, The value of EC is**



(a) 1.5 cm (b) 3 cm (c) 2 cm (d) 1 cm

Q.6 **If $\frac{6}{5}$, a, 4 are in AP then value of a is**

(a) $\frac{13}{3}$ (b) $\frac{13}{6}$ (c) $\frac{13}{5}$ (d) $\frac{13}{7}$

Q.7 **The pair of linear equation y = 0 and y = -7 has**

(a) one solution (b) two solution (c) infinitely many solution (d) no solution

Q.8 **If cosA = $\frac{4}{5}$, then the value of tanA is**

(a) $\frac{3}{5}$ (b) $\frac{3}{4}$ (c) $\frac{4}{3}$ (d) $\frac{5}{3}$

Q.9 The shape of ice-cream cone is a

(a) sphere + cylinder (b) sphere + cone (c) Hemisphere + cylinder (d) Hemisphere + cone

Q.10 Find the probability that the month of April has exactly 5 Monday is

(a) $\frac{4}{7}$ (b) $\frac{5}{7}$ (c) $\frac{3}{7}$ (d) $\frac{2}{7}$

Q.11 One card is drawn from a well shuffled dick of 52 cards. Find the probability of getting a king or red colour.

(a) $\frac{1}{26}$ (b) $\frac{2}{13}$ (c) $\frac{1}{13}$ (d) $\frac{3}{26}$

Q.12 If the value of mean and mode are respectively 30 and 15, then median is

(a) 22.5 (b) 24.5 (c) 25 (d) 26

Q.13 If the angle between two radii of a circle is 130°, the angle between the tangents at the ends of the radii is

(a) 90° (b) 50° (c) 70° (d) 40°

Q.14 From the top of a 7 cm high building the angle of elevation of a top of a cable tower is 60° the angle of depression of its foot is 45°. The height of the tower in meter is

(a) $7(\sqrt{3}+1)$ (b) $7(\sqrt{3}-1)$ (c) $7+\sqrt{3}$ (d) $7\sqrt{3}+1$

Q.15 $\frac{1-tan^2\theta}{1+tan^2\theta}$ **=**

(a) 1 (b) $cos^2\theta - sin^2\theta$ (c) $sin^2\theta$ (d) $cos^2\theta$

Q.16 If $sin\,\theta = \frac{5}{13}$**, then value of tanθ is**

(a) $\frac{5}{13}$ (b) $\frac{5}{12}$ (c) $\frac{12}{13}$ (d) $\frac{8}{13}$

Q.17 How many three digit numbers are divisible by 7

(a) 117 (b) 143 (c) 128 (d) 158

Q.18 A quadratic polynomial, whose zeroes are -2 and 4 is

(a) $x^2 - 2x + 8$ (b) $x^2 + 2x + 8$ (c) $x^2 - 22x - 8$ (d) $2x^2 + 2x - 24$

In questions no. 19 and 20 statement of Assertion (A) is followed by statement of Reason (R). Choose the correct answer of these questions from the four options (a),(b),(c) and (d) given below :

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the assertion (A).
(b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of the assertion (A).
(c) Assertion (A) is true but reason (R) is false.
(d) Assertion (A) is false but reason (R) is true

Q.19 Assertion (A) :The value of n, if a = 10, d = 5, a_n **= 95.**

Reason (R) : The formula of general term of an AP is $a_n = a + (n-1)d$**.**

Q.20 Assertion (A) : If in a circle, the radius of circle is 3 cm and distance of a point from the centre of a circle is 5 cm, then length of tangent will be 4 cm.

Reason (R) : $(hypo)^2 = (Base)^2 + (Height)^2$

Section B

Q.21 Express 98 as a product of its primes.

Q.22 Prove that the tangents drawn at the ends of a diameter of a circle are parallel.

Q.23 E and F are points on the sides PQ and PR respectively of a ΔPQR. If PE = 3.9 cm, PF = 3.6 cm, FR = 2.4 cm. state whether EF || QR.

Q.24 Find the radius of circle whose circumference is equal to the sum of the circumference of two circles of radii 15 cm and 18 cm.

OR

The circumference of two circles are in the ratio 2 : 3. Find ratios of areas.

Q.25 Solve $x - \frac{1}{x} = 3\ \{x\ \neq 0\}$

OR

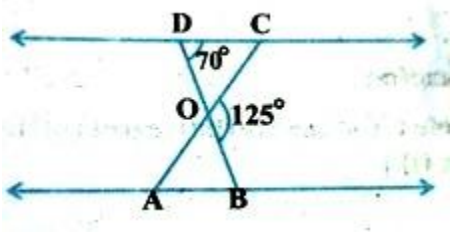
Find value of k for each of the quadratic equation kx(x – 2) + 6 = 0, so that they have two equal roots.

Section C

Q.26 Prove $2 + \sqrt{3}$ is irrational number.

Q.27 If k, 2k – 1 and 2k + 1 are three consecutive terms of an AP, then find value of k.

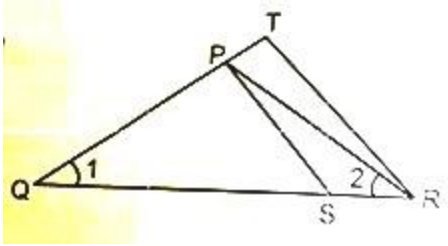
Q.28 In figure ΔODC ~ ΔOBA, ∠BOC = 125° and ∠CDO = 70°



Find ∠DOC, ∠DCO and ∠OAB

OR

In figure $\frac{QR}{QS} = \frac{QR}{PR}$ and ∠1 = ∠2. Show ΔPQS ~ ΔTQR



Q.29 Find the ratio in which line segment A(1, -5) and B(-4, 5) is divided by x-axis. Also find the coordinates of point of division.

Q.30 Solve x + y = 5, 2x – 3y = 4 by elimination and substitution method.

Q.31 3 different coins are tossed together.

Find the probability of getting

(a) exactly two heads (b) at least two heads (c) at least two tails

OR

One card is drawn from well shuffled deck of 52 cards. Find probability of getting

(i) a king of red colour (ii) a face card (iii) a red card

Section D

Q.32 A tent is in the right circular cylinder surmounted by a cone. The total height and diameter of the base are 13.5 m and 28 m. If height of cylindrical portion is 3 m. Find total surface area of tent.

Q.33 The angles of depression of the top and bottom of 8 m tall building from top of multi storeyed building are 30° and 45°. Find height of multi storeyed building and distance between two.

OR

Tree breaks due to storm and broken part bends so that the top of tree touches the ground making an angle 30° with ground. The distance between the root of the tree to the point where the top touches the ground.

Q.34 The area enclosed between two center circles is 770 cm^2. If rad of outer circle is 21 cm. find rad of inner circle.

Q.35 No. of seats occupied during 100 heights are Determine the mean number of seats.

No. of seats	100-104	104-108	108-112	112-116	116-120
Frequency	15	20	32	18	15

Section E

Q.36 A carpenter used to make and sell different kinds of wooden pen stands like rectangular cuboidal, cylindrical, Annav conical went to his shop and asked to make pen stand having cubical shapes with three conical depression. The dimensions of cuboidal part must be 20 cm x 15 cm x 5 cm and radius and depth of conical depression must be 6 cm and 2.1 cm.

(i) Volume of 3 cuboidal part
(ii) Total Volume of conical depressions
(iii) Volume of wood used in centre stand

OR

(iii) If cost of wood used is Rs. 0.05 per cm^3, total cost of making pen stand.

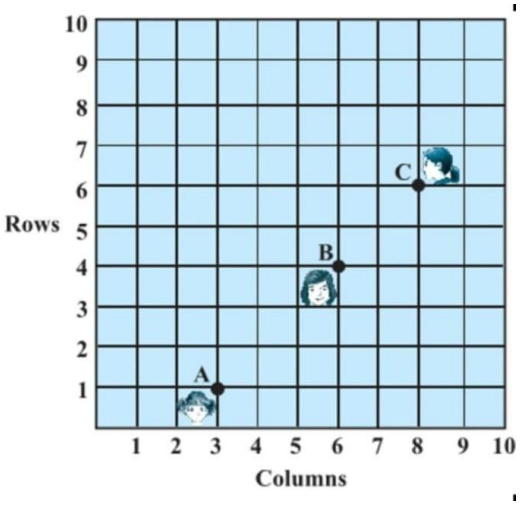
Q.37 John Jivanti are playing with the marbles in the playground. They together have 45 marbles and John has 15 marbles more than Jivanli

(i) The number of marbles Jivanti had
(ii) No. of marbles John had
(iii) If 45 is replaced by 55 in above, then number of marbles Jivanti have

OR

(iii) No. of marbles John have as Per question iii.

Q.38 There is a function in the school Ashima Bharti and camella are standing in rectangular grounds at points A,B,C respectively as shown in figure. They ready to perform an aerobic dance.



(i) How far is camella from y – axis.

(ii) Find distance between Ashima and Bharti

(iii) Check whether AB + BC = AC.

OR

(iii) What are corrdinates of B and C

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