SUDITI GLOBAL ACADEMY, MAINPURI

SAMPLE QUESTION PAPER FOR TERM-1 2021-22

SUBJECT-MATHEMATICS M. M-40

TIME-90 MIN.

EACH QUESTION CARRY 1 MARK

GENERAL INSTRUCTIONS

This question paper contains three sections – A, B and C. Each part is compulsory. 2. Section - A has 20 MCQs, attempt any 16 out of 20. 3. Section - B has 20 MCQs, attempt any 16 out of 20 4. Section - C has 10 MCQs, attempt any 8 out of 10. 5. There is no negative marking. 6. All questions carry equal marks(1 mark).

SECTION-A

Q.1 For any set A, (A')' is equal to

a) A'

b) A

c) 2A

d) none

Q.2 Let A and B be subsets of a set then A-B is equal to

a) A$\cap B$

b)A$\cup B$

c) A$\cap B'$

d) None

Q.3 If A and B are two sets such that n(A)=70,n(B)=60, n(AUB)=110 then n(A$\cap B) is$

a) 50

b) 40

c) 20

d) 240

Q.4 A function f(x) is said to be an odd function if
(a) f(-x) = f(x)
(b) f(-x) = -f(x)
(c) f(-x) = k * f(x) where k is a constant
(d) None of these

Q.5 Let A = {1, 2, 3} then total number of element in A x A is

(a) 3

(b) 6

(c) 9

(d) 12

Q.6 The domain of the function f = {(1, 3), (3, 5), (2, 6)} is

(a) 1, 3 and 2

(b) {1, 3, 2}

(c) {3, 5, 6}

(d) 3, 5 and 6

Q.7 If f (x) is a function such that f (x + y) = f (x) f (y) and f (3) = 125 then f (x) =

(a) 5

(b) x^5

(c) 5^x

(d) 5x

Q.8 Let R be the relation in the set N given by R = {(a, b): a = b – 2, b > 6}. Choose the correct answer.

(a) (2, 4) ∈ R

(b) (3, 8) ∈ R

(c) (6, 8) ∈ R

(d) (8, 7) ∈ R

Q.9 Two functions f and g are said to be equal if f

(a) the domain of f = the domain of g

(b) the co-domain of f = the co-domain of g

(c) f(x) = g(x) for all x

d) None of these

Q.10 **The relation R defined on the set of natural numbers as {(a, b) : a differs from b by 3}is given**
(a) {(1, 4), (2, 5), (3, 6),…..}
(b) {(4, 1), (5, 2), (6, 3),…..}
(c) {(1, 3), (2, 6), (3, 9),…..}
(d) none of these

Q.11 **If A × B = { (5, 5), (5, 6), (5, 7), (8, 6), (8, 7), (8, 5)},then the value A.**
(a) {5}
(b) {8}
(c) {5, 8}
(d) {5, 6, 7, 8}

Q.12 The value of $\sqrt{(-16)}$ is
(a) -4i
(b) 4i
(c) -2i
(d) 2i

Q.13 The value of $\sqrt{(-25)} + 3\sqrt{(-4)} + 2\sqrt{(-9)}$ is
(a) 13i
(b) -13i
(c) 17i
(d) -17i

Q.14 The least value of n for which $\{(1 + i)/(1 - i)\}^n$ is real, is
(a) 1
(b) 2
(c) 3
(d) 4

Q.15 The value of i^{-999} is
(a) 1
(b) -1
(c) i
(d) –i

Q.16 If a, b, c are in AP then
(a) b = a + c
(b) 2b = a + c
(c) $b^2 = a + c$
(d) $2b^2 = a + c$

Q.17 Three numbers form an increasing GP. If the middle term is doubled, then the new numbers are in Ap. The common ratio of GP is
(a) $2 + \sqrt{3}$
(b) $2 - \sqrt{3}$
(c) $2 \pm \sqrt{3}$
(d) None of these

Q.18 If $1/(b + c)$, $1/(c + a)$, $1/(a + b)$ are in AP then
(a) a, b, c are in AP
(b) a^2, b^2, c^2 are in AP
(c) $1/a$, $1/b$, $1/c$ are in AP
(d) None of these

Q.19 The third term of a geometric progression is 4. The product of the first five terms is
(a) 4^3
(b) 4^5
(c) 4^4
(d) none of these

Q.20 The sum of the roots of the quadratic equation $ax^2 + bx + c = 0$ is equal to the sum of the squares of their reciprocals, then a/c, b/a, c/b are in
(a) A.P.
(b) G.P.
(c) H.P.
(d) A.G.P.

SECTION-B

Q.21 The first term of a GP is 1. The sum of the third term and fifth term is 90. The common ratio of GP is
(a) 1
(b) 2
(c) 3
(d) 4

Q.22 The sum of AP 2, 5, 8, …..up to 50 terms is
(a) 3557
(b) 3775
(c) 3757
(d) 3575

Q.23 If a is the A.M. of b and c and G_1 and G_2 are two GM between them then the sum of their cubes is
(a) abc
(b) 2abc
(c) 3abc
(d) 4abc

Q.24 If the sum of the first 2n terms of the A.P. 2, 5, 8, ….., is equal to the sum of the first n terms of the A.P. 57, 59, 61, ….., then n equals

(a) 10
(b) 12
(c) 11
(d) 13

Q.25 The locus of a point, whose abscissa is twice it's ordinate is
(a) $x + y + 1 = 0$
(b) $x - 2y = 0$
(c) $x + y = 1$
(d) none of these.

Q.26 The equation of straight line passing through the point (1, 2) and parallel to the line $y = 3x + 1$ is
(a) $y + 2 = x + 1$
(b) $y + 2 = 3 \times (x + 1)$
(c) $y - 2 = 3 \times (x - 1)$
(d) $y - 2 = x - 1$

Q.27 Two lines $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ are coincedent if
(a) $a_1/a_2 = b_1/b_2 \neq c_1/c_2$
(b) $a_1/a_2 \neq b_1/b_2 = c_1/c_2$
(c) $a_1/a_2 \neq b_1/b_2 \neq c_1/c_2$
(d) $a_1/a_2 = b_1/b_2 = c_1/c_2$

Q.28 The equation of the line passing through the point (2, 3) with slope 2 is
(a) $2x + y - 1 = 0$
(b) $2x - y + 1 = 0$
(c) $2x - y - 1 = 0$
(d) $2x + y + 1 = 0$

Q.29 The locus of a point, whose abscissa and ordinate are always equal is
(a) $x + y + 1 = 0$
(b) $x - y = 0$
(c) $x + y = 1$
(d) none of these

Q.30 If two vertices of a triangle are (3, -2) and (-2, 3) and its orthocenter is (-6, 1) then its third vertex is
(a) (5, 3)
(b) (-5, 3)
(c) (5, -3)
(d) (-5, -3)

Q.31 $\lim_{x \to 0} \log(1 - x)$ is equals to
(a) 0
(b) 1
(c) 1/2
(d) None of these

Q.32 The value of $\text{Lim}_{n\to\infty}$ (sin n/x) is
(a) 0
(b) 1
(c) -1
(d) None of these

Q.33 $\text{Lim}_{x\to 0}$ sin (ax)/bx is
(a) 0
(b) 1
(c) a/b
(d) b/a

Q.34 $\text{Lim}_{x\to 0}$ $(e^{x^2} - \cos x)/x^2$ is equals to
(a) 0
(b) 1
(c) 2/3
(d) 3/2

Q.35 Two cards from a pack of 52 cards are lost. One card is drawn from the remaining cards. If drawn card is diamond then the probability that the lost cards were both hearts is
(a) 143/1176
(b) 143/11760
(c) 143/11706
(d) 134/11760

Q.36 Three identical dice are rolled. The probability that the same number will appear on each of them is
(a) 1/6
(b) 1/36
(c) 1/18
(d) 3/28

Q.37 Two unbiased dice are thrown. The probability that neither a doublet nor a total of 10 will appear is
(a) 3/5
(b) 2/7
(c) 5/7
(d) 7/9

Q.38 Two numbers are chosen from {1, 2, 3, 4, 5, 6} one after another without replacement. Find the probability that the smaller of the two is less than 4.
(a) 4/5
(b) 1/15
(c) 1/5
(d) 14/15

Q.39 The sum of 10 items is 12 and the sum of their squares is 18. The standard deviation is
(a) 1/5
(b) 2/5

(c) 3/5
(d) 4/5

Q.40 If mode of a series exceeds its mean by 12, then mode exceeds the median by
(a) 4
(b) 8
(c) 6
(d) 12

SECTION-C

41) $\text{Lim}_{x\to -1}$ $[1 + x + x^2 + \ldots\ldots\ldots + x^{10}]$ is
(a) 0
(b) 1
(c) -1
(d) 2

42) The derivative of $[1+(1/x)] /[1-(1/x)]$ is
(a) $1/(x-1)^2$
(b) $-1/(x-1)^2$
(c) $2/(x-1)^2$
(d) $-2/(x-1)^2$

43) Let z be a complex number such that $|z| = 4$ and $\arg(z) = 5\pi/6$, then z =
(a) $-2\sqrt{3} + 2i$
(b) $2\sqrt{3} + 2i$
(c) $2\sqrt{3} - 2i$
(d) $-\sqrt{3} + i$

44) The complex numbers $\sin x + i \cos 2x$ are conjugate to each other for
(a) $x = n\pi$
(b) $x = 0$
(c) $x = (n + 1/2)\pi$
(d) no value of x

45) The curve represented by $\text{Im}(z^2) = k$, where k is a non-zero real number, is
(a) a pair of striaght line
(b) an ellipse
(c) a parabola
(d) a hyperbola

CASE STUDY

Father of Ashok is a builder,he planned a 12 story building in gurgaon sector 5. For this, he bought a plot of 500 square yards at the rate of Rs 1000 per square yards. The builder planned ground floor of 5 m height, first floor of 4.75 m and so on each floor is 0.25 m less than its previous floor.

Now answer the following questions:

46) What is the height of the last floor?
a) 2.5 m

b) 2.75 m
c) 2.25 m
d) 3 m

47) Which floor no is of 3 height?
a) 5
b) 7
c) 10
d) 9

48) what is the total heightnof the buildig
a) 43.5 m
b) 40 m
c) 30 m
d) 44 m

49) up to which floor the heigt is 33 m?
a) 8
b) 7
c) 10
d) 9

50) Which floor no. is half in the height of ground floor

a) 10

b) 9

c)12

d)11

Class xi mathematics

Syllabus-

a) sets theory

b) relation and function

c) complex numbers

d) sequence and series