BRAINWARE UNIVERSITY

Term End Examination 2020 - 21

Programme – Bachelor of Computer Applications

Course Name – Classical Algebra, Geometry and Probability

Course Code - BCA304C

Semester / Year - Semester III

Time allotted : 85 Minutes Full Marks : 70

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question) 1 x 70=70

1. *(Answer any Seventy)*

(i) The quadratic polynomial whose sum of zeroes is 3 and product of zeroes is –2 is :

a) x2 + 3x – 2 b) x2 – 2x + 3

c) x2 – 3x + 2 d) x2 – 3x – 2

(ii) If p(x)=ax2+bx+c, then c/a is equal to

a) 0 b) 1

c) Sum of zeroes d) Product of zeroes

(iii) If p(x)=ax2+bx+c, then -b/a is equal to

a) 0 b) 1

c) Sum of zeroes d) Product of zeroes

(iv) A polynomial of degree n has

a) only 1 zero b) exactly n zeroes

c) atmost n zeroes d) more than n zeroes

(v) The polynomial px2 + qx + rx4 + 5 is of type

a) linear b) quadratic

c) cubic d) Biquadratic

(vi) If x + 2 is a factor of x3 – 2ax2 + 16, then value of a is

a) 3 b) 1

c) 4 d) 2

(vii) A quadratic polynomial whose one zero is 6 and sum of the zeroes is 0, is

a) x2 – 6x + 2 b) x2 – 36

c) x2 – 6 d) x2 – 3

(viii) The positive real root of the equation 3x4+12x2+5x-4=0 is

a) 1 positive b) 2 positive

c) 3 positive d) 4 positive

(ix) If f(x)=x3-3x2+4x-3 , then the value of f(1) is

a) 1 b) -1

c) 2 d) -3

(x) Every algebraic equation of degree ‘n’ has exactly

a) n roots b) n-1 roots

c) n+1 roots d) none of these

(xi) If a, b, c are the roots of the equation x3-px2+qx-r=0 , then ?a=

a) p b) -p

c) q d) -q

(xii) If ‘a’ be the root of the equation f(x)=0 , of multiplicity ‘r’, then ‘a’ is the root of the equation f’(x)=0 of multiplicity

a) r-1 b) r+1

c) t d) none of these.

(xiii) If f(x) and its its first (m-1) derived functions all vanish for x=a, then the factor of f(x)

a) (x-a)m
b) (x+a)m
c) xm
d) none of these

(xiv) The remainder when 4x4-10x2+1 is divisible by(x+2) is

a) 24
b) 25
c) 32
d) 2

(xv) The value of f(x+2) when f(x)=x5+3x2+1 is

a) x5+10x4+42x3+108x2+98x+57
b) x5+10x4+32x3+98x2+118x+57
c) x5+10x4+43x3+98x2+114x+57
d) x5+10x4+40x3+83x2+92x+42

(xvi) If ? be a multiple root of the polynomial equation f(x)=0 of order r, then ? be a multiple root of the polynomial equation fm(x)=0 of order

a) r-3
b) r
c) r-2
d) r-1

(xvii) If (x+1) is a factor of x2-3ax+3a-7 then the value of a is

a) -2
b) 0
c) 1
d) -1

(xviii) The value of the quadratic polynomial f(x)=2x2-3x-2 at x=-2 is

a) 12
b) 15
c) -12
d) 16

(xix) If the equation 7x2-6xy-y2+4x-4y-2=0 is transformed to the equation of the form AX2+BY2+C=0 , then the value of A and B are

a) 8,-2
b) -2,8
c) 8,-2 & -2,8
d) none of these

(xx) 4x2-5xy+y2+2x+y-2 =0 represents

a) a circle
b) a parabola

c) an ellipse
d) a pair of straight lines

(xxi) The radius of the circle r=3sin?+4cos? is

a) 3
b) 4
c) 5
d) None of these

(xxii) The polar form of the equation x2+y2=2ax is

a) r2=2acos?
b) r2=2asin?
c) r=2acos?
d) r=2asin?

(xxiii) To remove the term containing xy from ax2+bxy+cy2+px+qy+r=0 , the needed transformation is

a) translation
b) rotation
c) translation followed by rotation
d) none of these

(xxiv) If the origin is shifted to the point (-1,2) without changing the directions of the axes, the coordinates of (2,3) becomes

a) (1,-3)
b) (1,3)
c) (-1,-3)
d) (-1,3)

(xxv) Covert the rectangular equation to polar form x = 4

a) r sin ?=4
b) r =4 cosec ?
c) r =sec ?/4
d) r =4 sec ?

(xxvi) The equations of y-axis in space are

a) x = 0, y = 0
b) x = 0, z = 0
c) y = 0, z = 0
d) y = 0

(xxvii) The line joining the points (0, 5, 4) and (1, 3, 6) meets XY-plane at the point

a) (0,2,9)
b) (2,0,9)

c) (-2,9,0) d) (-2,-9,0)

(xxviii) The distance of the point (3, – 5, 12) from the x-axis is

a) 11 b) 12

c) 13 d) 14

(xxix) The x-coordinate of a point on the line joining the points P(2, 2, 1) and Q(5, 1, -2) is 4. Its z-coordinate is

a) 1 b) -1

c) 0 d) 2

(xxx) Which of the following divides a group of data into four subgroups?

a) Percentiles b) Deciles

c) Median d) Quartiles

(xxxi) The A.M of 2,4,6,……2n is

a) n+1 b) n(n+1)

c) (n+1)/2 d) n(n+1)/2

(xxxii) The median of the scores of 9 students 9,8,4,6,7,4,11,13,10 is

a) 9 b) 8

c) 8.5 d) None of these

(xxxiii) The Arithmetic Mean of x-2,10,x+3,7 is 9.Then the value of x is

a) 10 b) 9

c) 0 d) 1

(xxxiv) The mode of the observations 2,1,1,2,3,5,2,1,2,6,4,4,21,3 is

a) 3 b) 4

c) 2 d) 1

(xxxv) The standard deviation of the datas -3,-6,-1,-4,-8,-11,-15 is a positive no

a) True
b) False
c) Both True & False
d) None of these

(xxxvi) SD of 4 bolts in mm are 6.1,6.0,6.2,6.3 is

a) 0.012 mm
b) 0.1095 mm
c) 6.15 mm
d) none of these

(xxxvii) The variance of 1,5,6 is

a) 4.67
b) 9.1
c) 0.067
d) 3.67

(xxxviii) The mean and median of the observations : 7,4,10,15,7,3,5,2,9,12 are

a) 7.4 and 7
b) 8.4 and 7
c) 7.4 and 15
d) 8.5 and 7

(xxxix) The average age of 06 persons living in a house is 23.5 years. Three of them are majors and their average age is 42 years. The difference in ages of the three minor children is same. What is the mean of the ages of minor children?

a) 3 years
b) 4 years
c) 5 years
d) 6 years

(xl) What is the weighted mean of first 10 natural numbers whose weights are equal to the corresponding number?

a) 7
b) 5.5
c) 4
d) 4.5

(xli) In a class of 45 students a boy is ranked 20th. When two boys joined, his rank was dropped by one. What is his new rank from end?

a) 25th
b) 26th
c) 27th
d) 28th

(xlii) The mean age of combined group of men and women is 25 years. If the mean age of group of men is 26 and that of group of women is 21, then percentage of men and women in the group respectively is:

a) 60,40 b) 80,20

c) 30,70 d) 50,50

(xliii) Sum of mode and median of the data 12, 15, 11, 13, 18, 11, 13, 12, 13

a) 26 b) 31

c) 36 d) 25

(xliv) The arithmetic mean (average) of the first ten whole numbers is

a) 5.5 b) 5

c) 4 d) 4.5

(xlv) Find the mean of these set of numbers: 100, 1050, 320, 600 and 150.

a) 333 b) 444

c) 440 d) 320

(xlvi) If F(x) is the distribution function of a random variable , then

a) F(x) is continuous at all points b) F(x) is monotonic decreasing

c) F(-?)=1 d) F(?)=1

(xlvii) The probability of any event A satisfies

a) P(A) ? 1 b) P(A) < 0

c) 0 ?P (A) ? 1 d) None of these

(xlviii) In rolling two fair die, the probability of getting equal numbers or numbers with an even product is

a) 5/6 b) 1/6

c) 3/4 d) none of these

(xlix) The probability that a leap year selected at random will contain 53 Wednesdays is

a) 3/4 b) 2/7

c) 1/3 d) 6/7

(l) A die is thrown once , then the probability of obtaining a ‘six’ is

a) 1/3 b) 1/2

c) 1/6 d) none of these

(li) What is probability of drawing two clubs from a well shuffled pack of 52 cards?

a) 13/51 b) 1/17

c) 1/26 d) 13/17

(lii) There is a pack of 52 cards and Rohan draws two cards together, what is the probability that one is spade and one is heart ?

a) 11/102 b) 13/102

c) 11/104 d) 11/102

(liii) From a pack of 52 cards, two cards are drawn together, what is the probability that both the cards are kings

a) 2/121 b) 2/221

c) 1/221 d) 1/13

(liv) A box contains 20 electric bulbs, out of which 4 are defective. Two bulbs are chosen at random from this box. The probability that at least one of these is defective is

a) 7/19 b) 6/19

c) 5/19 d) 4/19

(lv) In a box, there are 8 red, 7 blue and 6 green balls. One ball is picked up randomly. What is the probability that it is neither blue nor green?

a) 2/3 b) 8/21

c) 3/7 d) 9/22

(lvi) Two dice are thrown simultaneously. What is the probability of getting two numbers whose product is even ?

a) 3/4 b) 1/4

c) 7/4 d) 1/2

(lvii) What is the probability of getting a sum 9 from two throws of dice.

a) 1/3 b) 1/9

c) 1/12 d) 2/9

(lviii) In a throw of dice what is the probability of getting number greater than 5

a) 1/2 b) 1/3

c) 1/5 d) 1/6

(lix)

The zeroes of the polynomial $f(x) = 4x^2 - 12x + 9$ are:

a) $\frac{3}{2}, \frac{3}{2}$ b) $-\frac{3}{2}, -\frac{3}{2}$

c) <table border="0" cellpadding="0" cellspacing="0" width="211" style="border-collapse: d) <table border="0" cellpadding="0" cellspacing="0" width="211" style="border-collapse:

(lx) <table border="0" cellpadding="0" cellspacing="0" width="125" style="border-collapse:

a) 2

b) 3

c)

$\frac{2}{5}$

d)

$-\frac{5}{2}$

(lxi)

If $p(x) = ax^2 + bx + c$ and $a + c = b$, then one of the zeroes is

a)

$\frac{b}{a}$

b)

$\frac{c}{a}$

c)

$\frac{-c}{a}$

d)

$\frac{-b}{a}$

(lxii)

The quotient of the polynomial f(x)= $x^4+5x^3+4x^2+8x-20$ when divided by (x-1) is

a) $x^3 + 6x^2 + 10x + 18$

b) $x^3 + 4x^2 + 10x + 18$

c) $x^3 + 6x^2 + 8x + 18$

d) None of these

(lxiii) <table border="0" cellpadding="0" cellspacing="0" width="125" style="border-collapse:

a) $4x^2 + 2x - 1$

b) $y+\frac{3}{y}$

c) $x^3 - 1$

d) $y^2 + 5y + 1$

(lxiv) <table border="0" cellpadding="0" cellspacing="0" width="125"

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a)

f(h)

b)

f(-h)

c)

f(0)

d) <table border="0" cellpadding="0" cellspacing="0" width="140" style="border-collapse:

(lxv)

The value of f(x+2)
when $f(x)=x^5+3x^2+1$
is

a)

$x^5+10x^4+42x^3+108x^2+98x+57$

b)

$x^5+10x^4+32x^3+98x^2+118x+57$

c)

d)

$x^5+10x^4+43x^3+98x^2$
$+114x+57$

$x^5+10x^4+40x^3$
$+83x^2+92x+42$

(lxvi) <table border="0" cellpadding="0" cellspacing="0" width="125" style="border-collapse:

a)

$$\frac{2}{9}(p-q)(2q-p)$$

b)

$$\frac{2}{9}(p-q)(2p-q)$$

c)

$$\frac{2}{9}(p-2q)(2q-p)$$

d)

$$\frac{2}{9}(2p-q)(2q-p)$$

(lxvii)

The angle through which the axes must be rotated to remove the xy term from $7x^2+4xy+3y^2=0$ is

a)

π

b)

π

c)

$\frac{\pi}{4}$

d)

$\frac{\pi}{4}$

(lxviii) <table border="0" cellpadding="0" cellspacing="0" width="125" style="border-collapse:

a)

$\frac{2}{7}, \frac{-3}{7}, \frac{6}{7}$

b)

$\frac{-2}{7}, \frac{3}{7}, \frac{-6}{7}$

c)

$\frac{-2}{7}, \frac{-3}{7}, \frac{6}{7}$

d)

$\frac{-2}{7}, \frac{-3}{7}, \frac{-6}{7}$

(lxix) <table border="0" cellpadding="0" cellspacing="0" width="125" style="border-collapse:

a)

$\frac{6}{7}, \frac{2}{7}, -\frac{3}{7}$

b)

$-\frac{6}{7}, \frac{2}{7}, -\frac{3}{7}$

c)

$\frac{6}{7}, \frac{2}{7}, \frac{3}{7}$

d)

$\frac{6}{7}, -\frac{2}{7}, -\frac{3}{7}$

(lxx) <table border="0" cellpadding="0" cellspacing="0" width="125" style="border-collapse:

a)

$$P(A \cup B) = P(A) + P(B)$$

b)

$$P(A \cap B) = P(A).P(B)$$

c)

$$P(A + B) = P(A).P(B)$$

d)

$$P(A \cap B) = P(A).P(B / A)$$