REV-00
BCA/60/70

2017/12

BCA
SEMESTER-1ST
MATHEMATICS

Duration: 3 Hrs. **Marks: 70**

Part : A (Objective) = 20
Part : B (Descriptive) = 50

[PART-B : Descriptive]

Duration: 2 Hrs. 40 Mins. **Marks: 50**

[Answer question no. One (1) & any four (4) from the rest]

1. What is definition of Arithmatic Progression?If a,b,c are respectively the sums of first p,q,r terms of an AP,prove that 2+8=10

$$\frac{a}{p}(q-r)+\frac{b}{q}(r-p)+\frac{c}{r}(p-q)=0$$

2. Write two difference of Matrix and Determinant?What is row matrix and Column matrix?Write six properties of Determinant. 2+6=10

3. Find the value of $Sin420^0$ and $Cos330^0$? Show that 2+8=10

$$\frac{CosA}{1-\tan A}+\frac{SinA}{1-CotA}=SinA+CosA$$

4. Find the Derivative of the following functions: 5+5=10

(a) $x^3+\sin xe^x+\log x.x^4$

(b) $\frac{CosA}{1-\tan A}+\frac{SinA}{1-CotA}=f(x)$

5. In what ratio does the X-axis devide the line segment joining the points (2,-4) and (-3,4).If the points (1,0),(0,1) and (a,b) are collinear show that a+b=1 3+7=10

6. Find the value of 5+5=10

(a) $\int\frac{3x^7-7x^5e^x-4}{x^5}dx$

(b) $\int Cos^2 xdx$

7. Prove that 10

$$\begin{vmatrix} a-b-c & 2a & 2b \\ 2b & b-c-a & 2b \\ 2c & 2c & c-a-b \end{vmatrix}=(a+b+c)^3$$

8. What is the definition of Combination? In how many ways a committee of 5 can be selected out of 8 person. 2+8=10

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[PART-A : Objective]

Choose the correct answer from the following: 1X20=20

1. If $A = \{x : 1 < x < 4\}, B = \{x : 2 < x < 4\}$,then $A \cap B$ =?
   a. 4
   b. 1
   c. 3
   d. 2

2. Sum of first n terms of an AP is
   a. $S_n = \frac{a(1-r^n)}{1-r}$
   b. $S_n = \{2a + (n-1)d\}$
   c. $S_n = \frac{n}{2}\{2a + (n-1)d\}$
   d. $S_n = \frac{a(1-r^n)}{1+r}$

3. For what value of x 1,2,x are in GP?
   a. 0
   b. 1
   c. 4
   d. 3

4. When we take 2 object out of 3 object, then no of Permutation is
   a. 6
   b. 5
   c. 4
   d. 2

5. If A=$\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ then $|A| = ?$
   a. 2
   b. -2
   c. 4
   d. 6

6. If 3 boys selected from 10 boys then no of combination
   a. 100
   b. 120
   c. 90
   d. 50

7. Row Matrix contains
   a. two column
   b. only one column
   c. only one row
   d. none of the above

8. Set is a collection of
   a. Infinite object
   b. Finite Object
   c. Distinct Object
   d. Distinct and Definite object

9. If 4,5,6 are in AP,then AM=?
   a. 6
   b. 4
   c. 2
   d. 5

10. Value of $Sin^2\theta + Cos^2\theta = ?$
    a. 3
    b. 2
    c. 0
    d. 1

11. $Sin30^0 = ?$
    a. $\frac{1}{2}$
    b. $\frac{1}{\sqrt{2}}$
    c. 1
    d. 0

12. Equation of Y-axis is
    a. $x = k$
    b. $x = 0$
    c. $y = 0$
    d. $y = k$

13. What is value of $\frac{d}{dx}(5) = ?$
    a. 2
    b. 1
    c. 0
    d. -1

14. $\frac{d}{dx}\{f(x) \pm g(x)\} = ?$
    a. $f(x) + g(x)$
    b. $f(x) - g(x)$
    c. $\frac{d}{dx}f(x) \mp \frac{d}{dx}g(x)$
    d. $\frac{d}{dx}f(x) \pm \frac{d}{dx}g(x)$

15. What is value of $\int dx = ?$

a. y
b. x
c. dx
d. dy

16. What is value of $\int Sinxdx = ?$

a. x
b. $Sinx$
c. $Cosx$
d. $-Cosx$

17. $a, ar, ar^2, ar^3, \ldots\ldots$ is called

a. HP
b. AP
c. GP
d. none of the above

18. The roots of a quadratic equations are real and equal if

a. $b^2 - 4a = 0$
b. $b^2 - 4ac = 0$
c. $b^2 - 4ac > 0$
d. none of the above

19. $Sin(-\theta) = ?$

a. $Sin\theta$
b. $Cos\theta$
c. $-Sin\theta$
d. $-Cos\theta$

20. When two column(row) of a determinant are equal then value of the determinant is

a. 0
b. 1
c. 3
d. -1

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UNIVERSITY OF SCIENCE & TECHNOLOGY, MEGHALAYA

[PART (A) : OBJECTIVE]

Duration : 20 Minutes

Serial no. of the main Answer sheet

Course : .....

Semester : ..... **Roll No :** .....

Enrollment No : ..... **Course code :** .....

Course Title : .....

Session : 2017-18 **Date :** .....

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Instructions / Guidelines

- The paper contains twenty (20) / ten (10) questions.
- Students shall tick (✓) the correct answer.
- No marks shall be given for overwrite / erasing.
- Students have to submit the Objective Part (Part-A) to the invigilator just after completion of the allotted time from the starting of examination.

Full Marks	Marks Obtained
20	

Scrutinizer's Signature *Examiner's Signature* *Invigilator's Signature*