(15E/16E)

Mathematics
(English Version)
Part A and B

Time: 3 hours 15 Minutes **Max Marks: 80**

Instructions:

1. **Read and understand the Question Paper.**
2. **Answer the questions under Part-A on a separate answer book.**
3. **Write the answers to the questions under Part-B on the question paper itself and attach it to the answer book of Part – A**
4. **Part-A contains three sections I, II, III.**
5. **Write the answers following the instructions given in the each section**

Part-A

Section – I

6x2=12 Marks

i) **Answer <u>any six</u> questions choosing <u>three</u> from each of the following two groups i.e., A and B.**

ii) **Each question carries 2 marks.**

<u>Group – A</u>

1. Find H.C.F. and L.C.M. of 220 and 284 by Prime factorisation method.
2. Check whether A $\{x: x^2 = 25$ and $6x = 15\}$ is an empty set or not? Justify your answer.
3. The sum of zeroes of a quadratic polynomial $Kx^2 - 3x + 1$is 1, find the value of K.
4. Find two numbers where sum is 27 and product is 182.
5. Formulate a pair of linear equations in two variables "3 pens and 4 books together cost Rs.50 whereas 5 pens and 3 books together cost Rs. 54".
6. Verify that the points (1, 5), (2, 3) and (– 2, – 1) are collinear are not?

<u>Group - B</u>

7 Find the mode of the data 5, 6, 9, 6, 12, 3 , 6. 11, 6 and 7.

8 Express tanα in terms of sinα.

9. A doctor observed that the pulse rate of 4 students is 72, 3 students is 78 and 2 students is 80. Find the mean of the pulse rate of the above students.

10. Find the area of required cloth to cover the heep of grain in conical shape, of whose diameter is 8m and slant height of 3m.

11. A die is thrown at once. Find the probability of getting an even prime number.

12. Write the formula of median for a grouped data? Explain the symbols in words.

Section – II

Marks: 4x4=16

1. **Answer <u>any four</u> of the following eight questions.**
2. **Each question carries 4 mark.**

13. Check whether the given pair of linear equations represent intersecting, parallel orco-incident lines. Find the solution if the equations are consistent.

(i) $3x + 2y = 5$ $\quad\quad$ $2x - 3y = 7$

(ii) $2x - 3y = 5$ $\quad\quad$ $4x - 6y = 15$

14.The number of bacteria in a certain culture triples every hour. If there were 50 bacteria present in the culture originally, what would be the number of bacteria in 3^{rd} hour? 5^{th} hour? 10^{th} hour? 11^{th} hour?

15. Find the area of triangle formed by the points (8, –5) (–2, –7) and (5, 1).

16. Find the zeros of the quadratic polynomial x^2+5x+6 and verify the relationship between the zeroes and coefficients.

17. Metallic spheres of radius 6 cm, 8cm and 10 cm. respectively are melted to form a single solid sphere. Find the radius of the resulting sphere.

18. If $\sec\beta + \tan\beta = P$ then find the value of $Sin\beta$ in terms of 'P'.

19. One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting
(i) a king of red colour (ii) a face card (iii) a red face card (iv) the jack of hearts

20. The following table shows marks scored by students in an examination of a certain paper

Marks	0-10	10-20	20-30	30-40	40-50
Number of students	20	24	40	36	20

Calculate the average Marks by using deviation method.

Section – III

Marks: 4x8=32

1. **Answer any four questions choosing <u>two</u> from each of the following two groups i.<u>e. A</u> and B.**
2. **Each question carries 8 marks.**

<u>Group – A</u>

23. Draw the graph of $P(x) = x^2 - 6x + 9$ and find zeroes. Verify the zeroes of the polynomial.
24. Prove that $\sqrt{3}+\sqrt{5}$ is an irrational number.
25. A boat goes 30km upstream and 44km down stream in 10hrs. in 13hrs it can go 40kms upstream 55km down stream . Determine the speed of the stream and that of the in still water. Formulate the following problem as pair of equations and then find the solution.
26. Find the coordinates of the points of trisection of the line segment joining the points A(2,-2) and B(-7,4)

<u>Group – B</u>

27. Draw a pair of tangents to a circle of radius 5cm which are inclined to each other at an angle $60^{0.}$
28. A right circular cylinder has base radius 14cm and height 21cm. Find its
(i) Area of base (area of each end) (ii) curved surface area
(iii) Total surface area (iv) Volume

29. If the median of 60 observations, given below is 28.5 find the value of x and y

Class interval	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	5	x	20	15	y	5

30.Two men on either side of a temple of 30 meter height observe its top at the angles of elevation 30^0 and 60^0 respectively. Find the distance between the two men

Mathematics

(English Version)

Part B

Time: 30 minutes **Max Marks: 20**

Part – B

Note: 1. All questions are to be answered.
2. Each question carries 1mark
3. Answers are to be written in the question paper only.
4. Marks will not be given for over - writing, re-writing or erased answers.

I Write the Capital letters of the correct answer in the brackets provided against each question. **20 x 1 = 20 marks**

1. One of the following is an irrational number. ( )
A) 2/3 B) √(16/25) C) √8 D) √0.04

2. The product of zeroes of the cubic polynomial $2x^3 - 5x^2 - 14x + 8$ is ( )
A) – 4 B) 4 C) –7 D) 2 5

3. A pair of Linear equations which satisfies dependent system ( )
A) 2x + y – 5 = 0 ; 3x – 2y – 4 = 0 B) 3x + 4y = 2 ; 6x + 8y = 4
C) x + 2y = 3 ; 2x + 4y = 5 D) x + 2y – 30 = 0 ; 3x + 6y + 60 = 0

4. The n term of G.P. is $a_n = ar^{n-1}$ where 'r' represents ( )
A) Firs terms B) Common difference C) Common ratio D) Radius

5. The number of two digit numbers which are divisible by 3 ( )
A) 30 B) 20 C) 29 D) 31

6. The equation of the line which intersects X-axis at (3, 0) is ( )
A) x + 3 = 0 B) y + 3 = 0 C) x – 3 = 0 D) y – 3 = 0

7. The coordinates of the centre of the circle if the ends of the diameter are (2, – 5) and (–2, 9) ( )
A) (0, 0) B) (2, –2) C) (–5, 9) D) (0, 2)

8. The point of intersection of the lines x = 2014 and y = 2015 is ( )
A) (2015, 2014) B) (2014, 2015) C) (0, 0) D) (1, 1)

9. Which of the following vertices form a triangle ( )
A) (1, 2), (1, 3), (1, 4) B) (5, 1), (6, 1), (7, 1) C) (0, 0), (–1, 0), (2, 0) D) (1, 2), (2, 3), (3, 4)

10. The slope of a ladder making an angle 300 with the floor ( )
A) 1 B) 1/√3 C) √3 D) ½

11. The distance between the points (cosα , 0) , (0, sinα) ( )
A) 1 B) -1 C) 0 D) -1

12.The A.M. of 30 students is 42. Among them two got zero marks then A.M. of remaining students ( )
A) 40 B) 42 C) 45 D) 28

13.The probability of getting kind or green card from the play cards (1 deck) ( )
A) 1/52 B) 1/13 C) 45 D) 28

14. Which of the following is incorrect ( )
A) The ratio of surface areas of cylinder and core is 1:1
B) The ratio SA (Surface Area) of sphere and hemisphere is 2:1
C) The ratio TSA (Total Surface Area) of sphere and hemisphere is 2:1
D) The ratio of volumes of cylinder and core is 3:1

15.$\cos 23^0$ – $\text{sine}67^0$/ $\tan 26^0$. $\tan 64^0$ ( )
A) sin 90° B) tan 30° C) tan 0° D) cot 30°

16. Among the numbers 1, 2, 3, ... 15 the probability of choosing a number which is a multiple of 4 ()
A) 4/15 B) 2/15 C) 1/5 D) 5

17. Gita said that the probability of impossible events is 1. Pravallika said that probability of sure events is 0 and Atiya said that the probability of any event lies in between 0 and 1. In the above with whom you will agree. ( )
A) Gita B) Pravallika C) AtiyaD) All the three

18.The sum of first 100 natural numbers ( )
A) 55 B)505 C)5050 D)5500

19.ΔABC is similar to ΔDEF and their area are respectively 64 sq.cm and 121 sq.cm .if EF=15.4cm, then the value of BC ( )

A) 11.2cm B) 9.6cm C) 8.4cm D)10.2cm

20. If a quadrilateral ABCD is drawn to circumscribe a circle, then AB+CD is equal to ( )

A)AC+BD B)AD+BC C)AB+AD D)AC+BD+BC