Mathematics - Paper – I(15E/16E)
(English Version)
Part A and B

Time: 3 hours 15 minutesMax Marks: 80

Instructions:

1. **Answer the questions under Part-A on a separate answer book.**
2. **Write the answers to the questions under Part-B on the question paper itself and attach it to the answer book of Part – A**

Part-A

Time: 2 hour30 Minutes Marks: 60

Section - I

Note:Marks: 6x2=12

1. **Answer <u>any six</u> questions choosing <u>three</u> from each of the follow-ing two groups, i.e., A and B.**
2. **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 whose sum is 27 and product is 182.
5. Formulate a pair of linear equations in two variables for the given data "3 pens and 4 books together cost Rs.50 whereas 5 pens and 3 books of same kind 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 dice is thrown at once. Find the probability of getting an even prime number on it's face?

12. Write the formula for finding the Median of grouped data? Explain each term in it.

Section – II

Note: **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, parallelor coincident lines. Find the solution, if the equations are consistent.

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

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

14.The 10^{th} term of an AP is 52 and 16^{th} term is 82 then find the 32^{nd} term?

15. Solve $2x^2 + 5x - 3 = 0$

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

17. A toy is in the form of a cone mounted on a hemisphere .The diameter of the base and the height of the cone are 6 cm and 4 cm respectively. Find the surface area of the toy? (Take $\pi = 3.14$)

18. If $\sec\beta + \tan\beta = P$ then express 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

Note: **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>

21. Draw the graph of $P(x) = x^2 - 6x + 9$ and find zeroes. Verify the zeroes of the polynomial.
22. Prove that $\sqrt{3}+\sqrt{5}$ is an irrational number.
23. The sum of the third and seventh terms of an AP is 6 and their product is 8. Find the sumof firstsixteen terms of the AP?
24. 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>

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

27. 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

28.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

Time: 30 minutes Marks: 20

Note: 1. All questions are to be answered.

2. Each question carries 1mark

3. Answer 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. Which 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 AP is $T_n = a+(n-1)\,d$ where 'd ' 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 centroid of the triangle whose vertices are (0,0) (3,0) and (0,3) is( )
A) (0,0)B) (1,1)C) (2,0)D) (0,4)
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 Discriminant of the Quadratic equation $x^2+x+1=0$is ( )
A) 2 B) -3 C) 3 D) -2
9. Which of the following points are the vertices of 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 30^0 with the flooris ( )

A) 1 B) 1/√3 C) √3 D) ½

11. The distance between the points (cosα , 0) , (0, sinα) is ( )

A) 1 B) -1 C) 0 D) -1

12.The Arithmetic mean of 30 students is 42. Among them two got zero marks then Arithmetic mean of remaining students( )

A) 40 B) 42 C) 45 D) 28

13.The probability of getting king or queen card from the deck of cards ( )

A) 1/52 B) 2/13 C) 3/26 D) 5/52

14. Which of the following statement is incorrect ( )

A) The ratio of surface areas of cylinder and cone is 1:1

B) The ratio Surface Areas of sphere and hemisphere is 2:1

C) The ratio Total Surface Area of sphere and hemisphere is 2:1

D) The ratio of volumes of cylinder and core is 3:1

15. The value of $\sin 30^0 + \cos 60^0$ is ( )

A) 1 B) 0 C) -1 D) 2

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 event 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 the first 100 natural numbers ( )

A) 55 B)505 C)5050 D)5500

19.The sides PQ and PR of right angle triangle PQR are such that PQ=5cm,PR=13cm.If $\angle Q = 90^0$then QR= ? ( )

A) 11.2cm B) 9.6cm C) 12cm 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

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Model Paper - Mathematics

Weightage Tables

Table :Weightage to Academic Standards

S.NO	Academic standards	Weightage(%)	Marks
1.	Problem solving	40	32
2.	Reasoning and proof	20	16
3.	Communication	10	8
4.	Connections	15	12
5.	Representation and visualisation	15	12
	Total	100	80