AGLASEM.COM

MODEL QUESTION PAPER

II PUC

2024

II PUC BASIC MATHEMATICS

(English Version)

Instructions: 1. Write the question numbers legibly in the margin.
2. Answer for the questions should be continuous.
3. Only the first written answers will be considered for Part-A

TIME DURATION: 3hr 15 min **MAX.MARKS: 80**

Instructions:

i) The question paper has 5 Parts A, B, C, D and E. Answer all the Parts.

ii) Part - A carries 20 marks, Part - B carries 12 marks, Part - C carries 15 marks, Part - D carries 25 marks and Part - E carries 8 marks.

iii) Write the question number properly as indicated in the question paper.

PART-A

I. Choose the correct answer (Each question carries 1 mark): **5x1=5**

1. If A= $\begin{pmatrix} 1 & 2 & 4 \\ -1 & 3 & -2 \end{pmatrix}$ *and* B= $\begin{pmatrix} 3 & -4 & -1 \\ 1 & 5 & -2 \end{pmatrix}$ then, the value of A+B is

   a) $\begin{pmatrix} 4 & -2 & -3 \\ 0 & 6 & -4 \end{pmatrix}$ b) $\begin{pmatrix} 4 & -2 & 3 \\ 0 & 8 & -4 \end{pmatrix}$ c) $\begin{pmatrix} 4 & 2 & -3 \\ 0 & 8 & 4 \end{pmatrix}$ d) $\begin{pmatrix} -4 & -2 & -3 \\ 0 & 8 & -4 \end{pmatrix}$

2. If $P(A^1)$=0.63 then the value of P(A) is

   a) 0.47 b) 0.47

   c) 0.73 d) 0.37

3. The fourth proportional of 4,5,24 is

   a) 30 b) 28 c) 32 d) 26

4. If SinA=$\frac{3}{5}$ then the value of Cos2A is

   a) $\frac{7}{25}$ b) $\frac{8}{25}$ c) $\frac{6}{25}$ d) $\frac{9}{25}$

5. The value of $\lim_{x\to 1} \frac{x^3+4}{1+x}$ is a) $\frac{5}{2}$ b) $\frac{2}{5}$ c) $\frac{6}{5}$ d) $\frac{9}{5}$

II. Match the following

6.	(i) The value of $\begin{vmatrix} 8 & 2 \\ 7 & -2 \end{vmatrix}$	a) $\frac{a}{b}$
	(ii) If $^{n}C_8 = {}^{n}C_{12}$ then the value of n	b)12
	(iii)If 5:20=3:x then the value of x	c)32
	(iv) $\lim_{x\to 0}(\frac{\text{Sinax}}{\text{bx}})$	d)-30
	(v) If S= $t^3 - 6t^2 + 9t + 8$ then the initial velocity.	e)9
		f)20

schools.aglasem.com

aglasem.com

III For question numbers 7 to 11 choose the appropriate answer from the answers given below. (181440 , 12, (pvr) Λ ~q, $\frac{1}{2}(sin6A - sin2A)$, (p$\Lambda$r)$\Lambda$ ~q, 720) **5 X 1 = 5**

7. The number of arrangements that can be made with the letters of the word 'MONDAY' is _____
8. The number of of 10 different precious stones be set to form a necklace is_____
9. There are 4 routes to go from A to B and 3 routes to go from B to C then the number of ways to go from A to C via B is _____
10. The negation of "(pvr)→q" is_____
11. The sum or difference of trigonometric functions of Cos4A. Sin2A is_____

III. Answer the following questions. **(5 X 1 = 5)**

12. Find the value of $\tan 75^0$
13. If $\begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 1 & 0 & -1 \\ 2 & 0 & -1 \\ 0 & 1 & -2 \end{bmatrix} \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}$ Find x, y, z.
14. Write the triplicate ratio of 3:5.
15. $Find\ the\ value\ of \int 2x(x^2+3)^2 dX$
16. Evaluate: $\int_0^1 \frac{e^x+1}{e^x} dx$

PART-B

IV **Answer any SIX of the following questions.** **(6 X 2 =12)**

17. In how many ways can 6 people be chosen out of 10 people if one particular person is always included?
18. Find the number of triangles that can be formed out of 20 points in which 8 are collinear.
19. From a well shuffled pack of 52 cards, one card is drawn at random. Find the probability of getting either a king or a queen card.
20. Three numbers are in the ratio 2:3:4. If the sum of their squares is 1856. Find the numbers.
21. If 16 men can construct a house in 90 days then how many days will 15 men construct a similar house?
22. BD and BG on a certain bill due after sometime are Rs.1250 and Rs. 50 respectively. Find the face value of the bill?
23. Find the equation to a parabola with vertex (0,0), focus (0, -3) and directrix is y = 3.
24. Find focus, length of latus rectum of the parabola $y^2 = 16x$
25. Evaluate: $\int_0^{\frac{\pi}{4}} sec^2 3x\ dx$
26. Evaluate: $\int_1^2 logx\ dX$
27. Find the area enclosed by the curve $y=x^2+2x$ between the ordinates x=0 and x=2

PART-C

V Answer any FIVE of the following questions. **(5 X 3 =15)**

28. $If\ A = \begin{pmatrix} 2 & -1 \\ -1 & 2 \end{pmatrix}$ then show that $A^2 - 4A + 3I = 0$ where I is an identity matrix of order 2x2 & 0 is a null matrix.
29. The banker's gain on a bill is $\frac{1}{9}^{th}$ of the banker's discount, rate of interest being 10% per annum. Find the unexpired period of the bill.
30. Sanjana invests Rs.3240 in a stock at 108 and sells when the price falls to 104. How much stock at 130 can Sanjana buy now?

schools.aglasem.com

aglasem.com

31. A shopkeeper bought a machine at a discount of 30% on the listed price of Rs. 24000. The shopkeeper offers a discount of 10% on listed price to the customer. If 10% VAT is levied, find (i) amount paid by the shopkeeper (ii) VAT to be paid by the shopkeeper.
32. If $x = at^2$ and $y = 2at$, then find $\frac{dy}{dx}$.
33. The volume of a spherical ball is increasing at the rate of $4\pi\ cc/sec$. Find the rate of increase of the radius of the ball when the volume is $288\pi\ cc$.
34. Evaluate: $\int \frac{3}{(x+1)(x+2)}dx$

PART-D

V Answer any FIVE of the following questions. (5 X 5 =25)

35. Solve the linear equations using the matrix method
$3x + y + 2z = 3,\ 2x - 3y - z = -3,\ x + 2y + z = 4$
36. Find the coefficient of x^{-7} in $\left(\sqrt{x} - \frac{4}{x^3}\right)^{21}$.
37. Resolve $\frac{x-1}{(x+2)^2(x+4)}$ into partial fractions.
38. Verify whether the proposition $(p \wedge \sim q) \wedge (\sim p \vee q)$ is a contradiction or not.
39. An aircraft manufacturer supplies aircraft engines to different airlines. They have just completed an initial order for 30 engines involving a total of 6000 direct labor hours at Rs. 20 per hour. They have been asked to bid for a prospective contract for a supply of 90 engines. It is expected that there will be 80% learning effect. Estimate the labor cost for the new order.
40. 55. Solve the LPP graphically: Maximize $Z = 6x + 8y$
Subject to constraints $4x + 2y \leq 20,\ 2x + 5y \leq 24 \quad x, y \geq 0$
41. $Prove\ that\ \frac{(Sin5A+SinA)+(Sin4A+Sin2A)}{(Cos5A+CosA)+Cos4A+Cos2A)}$ =tan3A
42. Find the equation of the circle passing through the points (1, 1), (-2,2), (-6,0)
43. Evaluate: $\lim_{x\to 3}\left[\frac{x^2-9}{\sqrt{3x+7}-\sqrt{5x+1}}\right]$

PART-E

V Answer any TWO of the following questions. (2 X 4 =8)

44. The observer from the top of a cliff, observes the angles of depression of two boats in the same vertical plane are 30^0 and 45^0 . If the distance between the boats is 100 meters,
find the height of the cliff.
45. If $y = \left(x + \sqrt{x^2+1}\right)^m$, show that $(x^2+1)y_2 + xy_1 - m^2y = 0$.
46. The total revenue(R) and the total cost(C) function of a company are given by
$R(Q) = 300Q - Q^2$ and $C(Q) = 20 + 4Q$ find the equilibrium output.

schools.aglasem.com
AglaSem Earn while Learn Program. Send your papers and get paid.
Contact: support@aglasem.com
aglasem.com