# THE UNIVERSITY OF CHENAB



Department of Physical Sciences
Bachelor of Sciences in Mathematics

**Address:** Adjacent Chenab Riverside, N-5 GT Road Gujrat

**Contact No**: +92- 053 111 243 622,
**Web**: www.uchenab.edu.pk **Email**: admissions@uchenab.edu.pk

| Programs Offered by the Department of Physical Sciences (Mathematics) | |
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| **Degree Name** | **Degree Details/Eligibility Criteria** |
| **Bachelor of Science in Mathematics** | The Bachelor of Science in Mathematics is of 4-years duration program, spread over 8 regular semesters, consisting of 134 credit hours after completing 12 years of education, Higher School Secondary Certificate /intermediate, FSc, ICS, (with Mathematics), DAE (Diploma in Associate Engr.) with minimum 45%. Pass institutional admission test. |
| **Associate Degree Program in Mathematics** | ADP program is of 2-years duration, spread over 4 regular semesters, and consisting of 68 credit hours after completing 12 years of education, Higher School Secondary Certificate /intermediate, FSc, ICS, (with Mathematics), DAE (Diploma in Associate Engr.) with minimum 45%. Pass institutional admission test. |
| **Bachelor of Science in Mathematics (5th Semester Induction)** | For Students with an ADP Degree:<br>ADP in Mathematics:<br>▪ Direct admission to the 5th semester.<br>▪ Minimum CGPA: 2.0/4.0.<br>▪ Total number of credit hours # 68.<br>ADP in Other Disciplines:<br>▪ Must have studied Mathematics in FA/FSc or equivalent.<br>▪ Minimum 60% marks in Mathematics in FA/FSc or equivalent.<br>▪ Required to complete a bridge semester to address deficiencies.<br>▪ Total number of credit hours # 78.<br>For Students with BA/BSc or Equivalent Degree:<br>▪ Must have completed a BA/BSc or equivalent 14-year education.<br>▪ Minimum 45% marks in BA/BSc.<br>▪ Must have studied Mathematics in FA/FSc or equivalent.<br>▪ Minimum 60% marks in Mathematics in FA/FSc Mathematics or equivalent.<br>▪ Required to complete a bridge semester to address deficiencies.<br>▪ Total number of credit hours # 78. |
| **MASTER OF PHILOSOPHY IN MATHEMATICS** | Master of Philosophy is a 2-year program with 30 credit hours. 24 credit hours consist of course work and 6 credit hours are related to research work. Eligibility criteria is<br>❖ 16 years of education with Mathematics as a |

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| | major subject having at least 2.0/4.0 CGPA or 50% marks in annual system.<br>❖ Secure at least 50% marks in the test conducted at university or in GAT test.<br><br>For the interdisciplinary programs it is as follows:<br>a. The applicant has a strong interest in pursuing an MPhil degree in mathematics.<br>b. The applicant must pass GRE-Subject or equivalent test held in the university with minimum 50% marks.<br>c. The applicant needs to take 6-9 CH of deficiency courses of level 5 and 6 decided by the Departmental admission committee. |
| **PhD Mathematics** | Prior to entry into a Ph.D. program, the student should have been awarded MS/M.Phil. or equivalent degree with mathematics as a major subject along with research thesis.<br>Intra-disciplinary Qualifications<br>A student can enroll into Ph.D. Mathematics Program if he/she has completed his/her M.Phil./M.S. degree in any other discipline after fulfilling the following criteria:<br>i. The university policy allows, and<br>ii. The applicant has a strong interest in pursuing a Ph.D. degree in a different discipline.<br>iii. The applicant has passed GRE-Subject with minimum 70% marks in mathematics and has taken 6-9 Credit Hours of deficiency courses of level 7.<br>iv. The admissions committee is satisfied that the applicant's knowledge of primary area (level 7) has sufficiently prepared him or her to undertake the course of studies of the doctoral program (or, in the opinion of the admissions committee, the preparation can be deemed satisfactory by taking a few additional courses after starting the program).<br>a) Minimum CGPA Requirement. For admission in Ph.D. programs, a minimum CGPA of 3.0 (out of 4.0 in the semester system) or First Division (in the annual system) in the most recent degree obtained is required, whether such degree was obtained from Pakistani or foreign universities.<br>b) In case of foreign degree, if the CGPA/Grade is not mentioned on the transcript, the candidate must produce equivalent weightage from the parent university.<br>c) The students having strong demonstrated pursuit for Ph.D. degree, but their CGPA is below 3.00 (out of 4.0 in the semester system) or Second Division (in the annual system) in |

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| | the most recent degree obtained, may be admitted to a Ph.D. program fulfilling the following requirements:<br>i. Shall have published one research article in 'X' category journal as a first author. OR<br>ii. Shall have studied additional courses of 9-12 Credit Hours of level 7 and have scored a minimum 3 out of 4 CGPA. And<br>iii. The admissions committee is satisfied that the applicant's knowledge of primary area (level 7) has sufficiently prepared him or her to undertake the course of studies of the doctoral program.<br>Admission Test<br>Applicants to Ph.D. program shall be required to fulfill the following testing requirements:<br>i. The Graduate Record Examination (GRE)/GAT subject test, administered by the Education Testing Service recognized by HEC with a passing score 60% OR<br>ii. Conduct the test equivalent to GRE/GAT/HAT General developed at the University, with the passing score of 70%.<br><br>Statement of Purpose<br>As part of the application for admission to Ph.D. programs, applicants shall be required to submit a statement of purpose, which shall form an integral part of the application. The admissions committee shall use the information provided to ascertain the preparedness and interest of the candidate in pursuing doctoral studies, and whether the department has their quasit resources to train and supervise the doctoral candidate in the subspecialty the applicant is interested in. |

**Sample - Entry Test for Bachelor of Science in Mathematics**

**Department of Physical Sciences**

## Multiple Choice Questions

## English (20 Questions)

**1.** Meaning of the idiom: talking twenty to the dozen.

A) Talking too much
B) Talking out of turn
C) Talking rapidly and without stopping
D) Talking without making any sense

**2.** Meaning of the idiom: Make a beeline.

A) Go straight to
B) Stand in a queue
C) Look for freebies
D) Put the bees in line

**3.** Change the following sentence from Indirect to Direct Speech: "My friend requested me to bring him a sandwich."

A) 'Please bring me a sandwich,' said my friend.
B) He said, 'My friend, please bring me a sandwich.'
C) "Please bring my friend a sandwich," said he.
D) My friend said, 'Will you bring me a sandwich?

**4.** Change the following sentence from Indirect to Direct Speech: "The porter respectfully assured the lady that he would take care of her luggage while she bought her tickets."

A) The porter said, "I would take care of your baggage while you buy your ticket, Madam."
B) The porter said, "I will take care of your baggage while you buy your ticket, Madam."
C) The porter said, "I would take care of your baggage while you bought your ticket, Madam."
D) The porter said to the lady, "I would take care of your baggage while you buy your ticket."

**5.** Hear & See, Flower & Flour, Sell & Cell are examples of:

A) Homophone
B) Homonym
C) Egocron
D) Oxymoron

**6.** Which one of the following sentences is grammatically wrong?

A) I gave Sarah a ride to work this morning.
B) My friend Ismail and me went to the party.
C) Farah and I said goodbye to the host before we left.
D) Samra accidentally hit me with her bag.

**7.** The _____ reply of my sister conveyed the clear message that she was not happy with me.

A) Vivacious
B) Sinuous
C) Gentle
D) Terse

**8.** One-word substitution: Matter written by hand:

A) Ascription
B) Conscript
C) Manuscript
D) Conscript

**9.** Which only one word is correctly spelt

A) promiscous
B) promiscuous
C) promiscuuous
D) promisscuous

**10.** Choose the correct spelling of the following word?

A) Auxuliary
B) Auxilliary
C) Auxiliary
D) Auxuiliarye

**11.** What is the synonym of "vocation"?

A) Hobby
B) Profession
C) Pastime
D) Avocation

**12.** Synonym of "PLACATE"?

A) Rouse
B) Harass
C) Pacify
D) None of the above

**13.** Complete the sentence: "She will be a doctor __ next year."

A) On
B) In
C) At
D) By

**14.** Please, stop _____ so many mistakes.

A) To making
B) Making
C) Makes to
D) Make

**15.** My grandmother died _____ 7p.m. _____ 12 August 1989.

A) in; on
B) at; in
C) by; during
D) at; on

## Analytical Reasoning (10 Questions)

**16.** If 1=3, 2=3, 3=5, 4=4, 5=4, Then, 6= ?

A) 6
B) 4
C) 3
D) 5

**Question 17-20**

In the internal mailing department of a large corporation there are six employes (A, B, C, D, E, F) who deal with new mail, which are either personal mail or corporate mail. Personal mail is initially handled by A, C or B and corporate mail is initially handled by A, C or D. if an employee has a problem finding the address of mail, it will be passed on to another employee until the address is found. Rules governing the passing order are limited to the following.

A to C if the mail is personal. A to D if the mail is corporate. C to D if the mail is personal. C to E if the mail is corporate. B to either A or C. D to either C or E. E to F. F will resolve all addresses.

**17.** Which of the following employees must have worked on all the emails that F has worked on?

A) A
B) B
C) C
D) E

**18.** A corporate mail could pass through which people before reaching F?

A) C, B and D
B) C, A, D and E
C) A, D and E
D) A, C and D

**19.** At least how many people, besides F, must have handled a mail that reaches F ?

A) 1

B) 2

C) 3

D) 5

**20.** Which employee can receive the same mail a second time?

A) A

B) B

C) C

D) D

**21.** Which of the following would be an appropriate unit to measure sugar for a cookie recipe?

A) liters

B) cups

C) quarts

D) kilogram

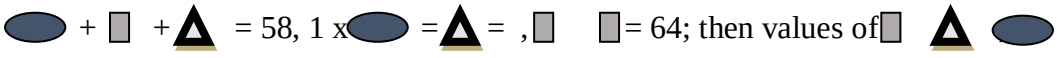
**22.** 2 ___1 ___ 6 ___ 6 ___ = 48. Fill the blanks with +. -. x, and ÷

A) x, +, x

B) +, +, x

C) x, +, +

D) x, -, x

**23.**  = 58, 1 x = = , = 64; then values of

A) 25, 8, 25

B) 24, 26, 8

C) 8, 25, 25

D) 23, 26, 9

**24.** T x T x T = 216, B ÷ C = T, C x B = 54, then the values of T, B, and C are

A) 6, 18, 3

B) 8, 9 18

C) 6, 9, 54

D) 6, 3, 18

**25.** A + B = 76, A – B = 38, A ÷ B = ?

A) 3

B) 4

C) 5

D) 8

## Subject Base (25 Questions)

**26.** The set {1, -1} possesses closure property w.r.t._____

A) Addition

B) Multiplication

C) Subtraction

D) None of these

**27.** Conjugate of 2 + 3i is _____

A) 2 + 3i

B) -2 + 3i

C) 2 – 3i

D) -2 - 3i

**28.** The value of $(-i)^{19}$ will be equal to _____

A) 1

B) -*i*

C) -1

*D) i*

**29.** What is called a matrix of order *m* x 1

A) Vector

B) Row vector

C) Identity matrix

D) Column vector

**30.** The numbers show the sum is -10 and the product is 24 are _____

A) 2, -12

B) – 4, -6

C) – 2, 12

D) 4, 6

**31.** The circle passing through the vertices of a triangle is called a/an _____

A) Circum-circle

B) Ex-circle

C) Semi-circle

D) In-circle

**32.** If sin $\alpha < 0$ and cos $\alpha > 0$, then $\alpha$ lies in _____

A) First quadrant

B) Second quadrant

C) Third quadrant

D) Fourth quadrant

**33.** The set of natural numbers does not satisfy closure property w.r.t

A) Division

B) Addition

C) Multiplication

D) None of these

**34.** If A and B are non-singular matrices, then $(AB)^{-1}$

A) $A^{-1}\ B^{-1}$

B) $B^{-1}\ A^{-1}$

C) $1/AB$

D) $1/BA$

**35.** If $a_{n-3} = 2n - 5$, then the $n^{th}$ term of the sequence is _____

A) $2n+1$

B) $2n+3$

C) $2n-1$

D) $3n-2$

**36.** The distance between points A (3, 8) and B (5, 6)

A) $2\sqrt{2}$

B) $2\sqrt{3}$

C) $3\sqrt{2}$

D) 2

**37.** What is the sum of the product and quotient of 8 and 8.

A) 16

B) 65

C) 63

D) 17

**38.** The derivative of $x \sin\alpha$ w.r.t. $x$ is_____

A) $x \cos\alpha$

B) $\sin \alpha$

C) $\sin\alpha + x \cos\alpha$

D) $-x \cos \alpha + \sin a$

**39.** If today is Saturday, what day will it be in 500 days?

A) Friday

B) Saturday

C) Monday

D) Tuesday

**40.** If the sum of three consecutive integers is less than 75, what is the greatest possible value of the smallest one?

A) 23

B) 24

C) 26

D) 25

**41.** If $2^x = 32$, what is $x^2$?

A) 5

B) 10

C) 25

D) 100

**42.** If $3^a \times 3^b = 3^{100}$, what is the average (arithmetic mean) of a and b.

A) 100

B) 50

C) 105

D) 55

**43.** What is the circumference of a circle whose area is $10\pi$

A) $5\pi$

B) $2\pi\sqrt{10}$

C) $10\pi$

D) $\pi\sqrt{10}$

**44.** For how many positive integers, $a$, is it true that $a^2 \leq 2a$?

A) 1

B) 2

C) 4

D) More than 4

**45.** A force of magnitude 10N acting on a body produces a displacement of 3m. if the force and displacement are in the opposite direction, then their dot product will be

A) 30 Nm

B) 7 Nm

C) – 30 Nm

D) 13 Nm

**46.** Which of the following lists the fractions 2/3, 5/8, and 13/20 in order from least to greatest?

A) 2/3, 5/8, 13, 20

B) 5/8, 2/3, 13/20

C) 13/20, 2/3, 5/8

D) 5/8, 13/20, 2/3

**47.** What is the value of 6! /8!

A) 1/56

B) 1/48

C) 3/4

D) 1/8

**48.** If 4/7 of the 350 sophomores at Monroe High School are girls, and &/8 of them play on a team, how many sophomore girls do not play on a team?

A) 35

B) 175

C) 25

D) 200

**49.** What fraction part of a week is 98 hours?

A) 7/24

B) 7/12

C) 12/7

D) 1/7

**50.** 5/8 of 24 is equal to 15/7 of what number?

A) 7

B) 8

C) 7/25

D) 15