Kathmandu University
School of Science and School of Engineering

Kathmandu University Common Admission Test (KUCAT)

Information on

KUCAT Computer Based Test (KUCAT-CBT)

July 2017

Kathmandu University Common Admission Test (KUCAT)

All candidates willing to study in the undergraduate programs of School of Science and School of Engineering shall appear in the KUCAT and have obtained good scores.Candidates are tested for their abilities in either PCM (Physics, Chemistry, and Mathematics) or PCB (Physics, Chemistry, and Biology) depending on the program of choice for offering admission based upon their results in KUCAT CBT. Admission is offered in merit basis in the categories described in the call for application.

In order to be fully eligible for application, candidates must have **passed 10+2 level or equivalent with a minimum of 50% marks in aggregate**and with the additional requirements of 50% aggregate marks in PCM or PCB or PMCs (Physics, Chemistry, and Computer Science) depending on the program of choice. One should carefully read the application call notice for making sure that he/she is qualified for the application to the specific program.

The Schools offer the following programs and test group for particular program is indicated in the table. One should be clear about the choice before selecting the test group.

School	Program and subject area	Seat			Additional +2 level result requirement for application	Admission test group
		Open merit	Quota	Total		
Engineering	BE in Electrical and Electronics Engineering (Communication)	27	3	30	Minimum 50% in Physics, Chemistry and Mathematics (PCM) in aggregate **(See note *)**	Physics, Chemistry and Mathematics **(PCM)**
	BE in Electrical and Electronics Engineering (Power and Control)	27	3	30		
	BE in Mechanical Engineering (Automobile)	27	3	30		
	BE in Mechanical Engineering (Design and Manufacturing)	27	3	30		
	BE in Mechanical Engineering (Energy Technology)	27	3	30		
	BE in Mechanical Engineering (Hydropower)	27	3	30		
	BE in Civil Engineering (Specialization in Hydropower)	54	6	60		
	BE in Chemical Engineering	27	3	30		
Science	BTech in Environmental Engineering	32	3	35		
Engineering	BE in Computer Engineering	54	6	60	Minimum 50% in PCM or Physics, Mathematics and Computer Science (PMCs)in aggregate **(See note *)**	
	BE in Geomatics Engineering	27	3	30		
	BArch in Architecture	27	3	30		
Science	BSc in Applied Physics	22	2	24		
	BSc in Computer Science	36	4	40		
	BSc in Computational Mathematics	27	3	30		
Science	Bachelor of Pharmacy	54	6	60	Minimum 50% in PCM or Physics, Chemistry and Biology (PCB)in aggregate	PCM or PCB
	BSc in Environmental Science	36	4	40		
	BTech in Biotechnology	32	3	35		
	BSc in Human Biology	22	2	24	Minimum 50% in PCB in aggregate	**PCB**

Note: Students who have completed +2 in biology stream must have taken additional mathematics course and passed it with cumulative PCM of 50% for eligibility in indicated program groups.

Under the current system, one cannot appear for both PCM and PCB examinations.

The Schools replaced Paper Based Test (PBT) with Computer Based Test (CBT) in 2014 as CBT can offer a number of advantages over PBT, such as larger score range, reduction of risk of unfair practice, automatic scoring, and flexibility in conducting tests.

Although KUCAT is designed to conduct the test throughout the year, currently the test is conducted only after the call for admission and at KU Dhulikhel (Main) Campus ONLY. Moreover, the candidates can get better prepared for the application if he/she carefully refers to the information provided in this document.

This document describes the CBT procedure in brief and outlines the syllabus for various subjects. For updated information, one should always check KU website http://www.ku.edu.np and http://apply.ku.edu.np/ .

A. Overview of KUCAT-CBT

- KUCAT-CBT is two hours long and has 120 multiple choice questions in total.
- There are 40 multiple choice questions in each part. The questions are distributed uniformly across the topics of the syllabi for KUCAT.
- Questions are categorized into five difficulty levels from 1 to 5; 1 being the easiest and 5 being the toughest.
- Each part of the exam starts with a difficulty level 1 question. If a candidate answers a question of difficulty level 1 to 4 correctly, the difficulty level of the subsequent question will be increased by 1. Similarly, if a candidate answers a question of difficulty level 2 to 5 incorrectly, the difficulty level of the subsequent question will be decreased by 1. However, answering a difficulty level 5 question correctly or a difficulty level 1 question incorrectly will not change the difficulty level of the subsequent question.
- The candidates are not allowed to skip any questions or go back to the submitted questions but are allowed to switch between the subjects.
- CBT scores range from 0 to 2220, 0 being the score for attempting all the questions and answering all of them incorrectly and 2220 being the score for answering all the questions correctly. A difficulty level 1 question effectively carries a score of 11. The score increases by 2 for each of the higher difficulty level.
- The **score of 528** is benchmarked as the **PASS MARK** in KUCAT-CBT. A candidate shall at least get this score for being eligible to be offered admission in any program.
- The candidates will be able to view their KUCAT scores at the end of their tests.

B. Registering for the Test

- Wait for the call for admission or call for KUCAT-CBT.
- Fill the online application form available at http://apply.ku.edu.np/cbt. A valid email id is required for online application. Confirmation link and confirmation code will be sent by email. Be sure to click on the confirmation link and enter the confirmation

code for online application. Use the login credentials provided to log into the online application system and complete online admission form.

- Pay the required application processing fee to KU; fee amount and bank account detail will be given at the call for application notice. Keep the voucher as payment record. The bank voucher is needed to be submitted to the admission or KUCAT office.
- Visit undergraduate program admission or KUCAT office in KU Main Campus Dhulikhel with personal photo identification and **its copy** (citizenship or passport or card issued by relevant authority), 3 recent PP size photographs, and the bank deposit voucher.
- Get the document verified, obtain date and time for KUCAT CBT and collect Admission Card.
- For avoiding near deadline rush, obtain date and time for KUCAT CBT and collect Admission Card at the earliest possible.

C. Appearing in theTest

- KUCAT CBT is conducted only in **KU Main Campus Dhulikhel**. It is NOT AVAILABLE online on the Internet.
- Appear in KUCAT CBT on the date and time mentioned in the admit card.
- The candidates are required to appear at the examination hall **at least 15 minutes before** the commencement of the examination.
- The candidates shall bring their **ADMISSION CARD AND PHOTO IDENTIFICATION** documents along with them.
- Wrist watches, pens, pencils, and simple scientific calculators are allowed. Other electronic items and written materials are not permitted inside the examination hall.
- Simple scientific calculators may be allowed. Be sure to erase any formula or data written on the cover of your calculator or in its internal memory before bringing it to the examination room. **Programmable calculators** and calculators with functionality that may lead in finding answer directly from question **will not be allowed**. If your calculator is not permitted, candidate will have to use calculator available on the desktop of the computer.
- Attempting to cheat in the entrance exam, by any means, or failing to comply with invigilators' instructions may disqualify the candidates from the admission process.
- The candidates are advised to wait quietly outside their respective examination halls for invigilator's instruction to enter the examination hall.
- After verifying the admit cards and photo IDs, the candidates will be provided with the login credentials for CBT. The candidates are required to leave their bags and belongings at the front of the examination halls before taking seats at their respective computers.
- The candidates can login to their tests, using the credentials provided, after the invigilator's indication to do so. The candidates shall verify their names on the screen and make sure that they are presented with a list of subjects according to their choice i.e., PCM or PCB.
- The candidates can start with one of the three subjects from the list. The exam starts as soon as the candidate clicks on one of the subjects. Time remaining to finish the exam is shown on the screen.

- If the candidates face any difficulties or have queries during the test, they can call the invigilators by raising their hands. The candidates are not allowed to communicate with or look at the screens of peer candidates at any point of time during the test.
- After completing the test, the candidates are required to view their results, show it to one of the invigilators and log out from the CBT system, before leaving the examination hall.

D. Online Practice Test

An online practice test is made available to the candidates before the entrance exam or KUCAT-CBT. The online practice test is intended to make the candidates familiar with the Computer Based Test. The number of questions, topics and difficulty levels do not reflect the actual computer-based entrance test. The online practice test is available at http://apply.ku.edu.np/opt .

E. KUCAT Syllabi

KUCAT syllabi for test subjects are provided in the subsequent pages.

Syllabus for Physics

A. Mechanics:
   1. Physical Quantity
   2. Kinematics
   3. Dynamics
   4. Energy
   5. Rotational motion
   6. Gravitation
   7. Structure and Properties of Matter
   8. Elasticity
   9. Viscosity
   10. Surface tension

B. Heat & Thermodynamics:
   11. Heat and temperature
   12. Transmission of heat
   13. Basic assumption of kinetic theory of gasses
   14. Thermodynamics

C. Optics:
   15. Reflection
   16. Refraction
   17. Speed of light
   18. Dispersion of light
   19. Optical Instrument
   20. Photometry

D. Waves:
   21. Wave motion
   22. Sound
   23. Electromagnetic waves

E. Electrostatics and D. C. Circuits:
   24. Simple Electrostatic Phenomenon
   25. Charge flow
   26. Resistance
   27. Effect of Current
   28. Capacitors

F. Magnetic field and Current:
   29. Magnetic field
   30. Force on conductor
   31. Magnetic materials
   32. Electromagnetic induction
   33. Alternating current

G. Modern Physics:
   34. Electron
   35. Photons
   36. Electronic
   37. Atoms
   38. Nucleus
   39. Radioactivity
   40. Elementary particles

Syllabus for Chemistry

A. General & Physical Chemistry:
   1. Language of Chemistry
   2. Gaseous state of matter
   3. Liquid state of matter
   4. Solid state of matter
   5. Laws of Stoichiometry
   6. Avogadro's Hypothesis and its important applications
   7. Atomic structure
   8. Quantum numbers
   9. Chemical bonding
   10. Oxidation and Reduction
   11. Periodic Table
   12. Acids, Bases and Salts
   13. Acidimetry and Alkalimetry
   14. Electrochemistry
   15. Electrode potential
   16. Chemical Kinetics
   17. Chemical Equilibrium
   18. LeChatelier's Principle
   19. Chemical Thermodynamics
   20. Entropy and spontaneity

B. Inorganic Chemistry:
   21. Hydrogen, Oxygen and Nitrogen
   22. Carbon
   23. Sulphur and its compound
   24. Halogen and halogen acids
   25. Introduction to Metals
   26. Alkali and alkaline earth metals
   27. Coinage metals
   28. Heavy metals

C. Organic Chemistry:
   29. Introduction to Organic Chemistry
   30. Hydrocarbons
   31. Organic halogen compounds
   32. Alcohols
   33. Ethers
   34. Carbonyl Compounds
   35. Carboxylic Acids
   36. Amines
   37. Aromatic Hydrocarbons
   38. Aniline and Nitrobenzene
   39. Carbohydrates, Proteins, Nucleic Acids, Lipids
   40. Polymers, Pesticides, Dyes and Drugs.

Syllabus for Mathematics

1. Representation of Data
2. Measures of Location and Spread
3. Probability
4. Permutation and Combination
5. Probability Distributions
6. Binomial Distributions
7. Expectation and Variance of a random variable
8. Normal Distribution
9. Surds and indices
10. Functions and Graphs
11. Quadratics and Inequalities
12. Differentiation
13. Application of Differentiation
14. Sequences
15. Binomial Theorem
16. Trigonometry
17. Extending Differentiation
18. Vectors
19. Geometric Sequences
20. Second Derivative
21. Integration
22. Volume of revolution
23. Polynomial
24. The Modulus function
25. Exponential and Logarithmic function
26. Differentiating Exponential and Logarithmic functions
27. Differentiating Trigonometric Function
28. Determinants
29. Matrices
30. Equation of Straight Lines
31. A pair of lines
32. System of linear equations
33. System of Linear Inequalities and Graphs
34. Complex Numbers
35. Limits and Continuity
36. Coordinate Space
37. Plane
38. Concept of Sets
39. Relation
40. Functions

Syllabus for Biology

1. Introduction to Biology
2. Cell, cell-division and life components
3. Origin of Life
4. Theory of Evolution by Natural Selection
5. Human Evolution
6. Heredity and variation
7. Regulation of replication, transcription, translation and expression of genetic material
8. Concept of Taxonomy
9. Monera
10. Viruses
11. Protista
12. Mycota
13. Plantae
14. Morphology, Reproduction, Growth and Development of Flowering Plant
15. Photosynthesis
16. Transpiration
17. Animalia
18. Study of Earthworm
19. Study of Frog
20. Animal Tissues
21. Animal Nutrition and Digestive system
22. Respiratory system
23. Circulation of body fluids
24. Excretion and osmoregulation
25. Nervous system
26. Endocrine system
27. Animal reproduction and embryonic development
28. Aminocentesis
29. Growth, Repair, Regeneration, Ageing and Death
30. Animal Behaviour
31. Concept of ecosystem
32. Environmental pollution
33. Green-house effect and global warming
34. Conservation of Natural resources
35. Pesticides
36. Bio-fertilizers and biological pest control
37. Biotechnology
38. Domestication of plants and crop improvements
39. Bioenergy
40. Mental health, addiction and community health

All the Best!