



کراچی یونیورسٹی
University of Karachi
Department of Mathematics
MATH 726: Anthromathematics II

Time Allowed: 3 hours • Maximum Marks: 80 • Date: Tuesday, June 18, 2013 • Paper Format: A

Student's Name _____ (in CAPITAL LETTERS using a "marker")

Each part of **Question 1** is of 4 marks. **Questions 2-7** are of 10 marks each. Note down the time spent on solving each part of question and time spent on revision by making the following "Time Chart" on the answer book front page (2 marks). Time spent on revision must be at least 10% of the total time.

Question No.	1a	1b	1c	1d	2	3	4	5	6	7	Revision
Time (minutes)											

a) DO NOT TURN PAPER AROUND unless the invigilator says: Start now

b) This is a closed-book examination. Deposit all BOOKS, NOTES, MOBILE PHONES (switched off), DIGITAL DIARIES and LAPTOPS in the designated area. Remove everything from your desk, except markers, pens, pencils, stapler and calculator.

c) If you want to use a calculator, **it must bear a "sticker"** displaying your NAME and your SEAT NUMBER, large enough so that it is visible from a distance of 5 meters. **Absolutely, NO sharing of calculators.**

d) Use your own material. **Nothing can be borrowed from or given to** a friend.

e) The papers may be of different formats. Therefore, work on your own **without consulting anyone** (We have a record of your seating arrangement).

f) Write your "NAME" on all pages of **your question paper** (5 marks shall be deducted for failing to comply) [NOTHING ELSE SHOULD BE WRITTEN ON THE QUESTION PAPER] and "PAPER FORMAT" on the front page of **your answerbook** (the upper-right-hand corner) and **the Yellow Sheet** using a "marker". Start your work from **Page 2** of your answerbook. The only thing that could be written on the front page is the "Time Chart" (see above) and the "Honor Statement" (see below).

g) The following statement must be copied on the front page of your answerbook and signed (2 marks): "My signatures, below, testify that I am the person, whose name and photograph appear on the Admit Card. Upon my honor, I declare that the following work is my own, completed without giving or receiving unacknowledged help, without copying, or the use of any unfair means." Signatures _____

h) This paper contains TWO PAGES (this page and the back page). On invigilator's signal (Start now) turn the paper around, check if you have the back page printed, correctly. Last line of the second

page reads: <END>. Start working on the paper, immediately.

i) Put your pens down and your papers turned (so that this page is facing you) and the FRONT PAGE of your answerbook should be facing you as soon as you hear "ALL PENS DOWN". Failure to do as directed shall result in "deduction of 5 marks" from your score.

j) If you use extra copies, it is "your responsibility" to write YOUR NAME, COPY NUMBER and all OTHER INFORMATION on each copy used. All the extra copies must be stapled with the main copy, before turning in your paper (you may wish to bring in a stapler with you for this purpose).

k) If you have a question of "Fill in the blanks" in your paper you must write the complete sentence with the filled word underlined.

l) Nobody is allowed to leave the examination hall, **for whatsoever reason**, once the examination has started. Bring your own DRINKING WATER.

m) Students are not allowed to LEAVE THEIR SEATS or STAND UP during the examination. If you have a query, "raise your hand" and someone will help you.

n) All work, including rough work, must be on the official answerbook. No extra sheet may be used.

o) Students are *not* allowed to use RED anywhere. All work (except figures) must be in pen or ballpoint.

p) The result shall be displayed on my homepage on **Tuesday, June 25, 2013 at 0900h**. DO NOT contact the Course Supervisor. Students are not permitted to see the answerbooks.

q) Anyone found cheating in the examination should be facing disciplinary action, which may result in **EXPULSION** or **SUSPENSION** for 2 or more years. **Absolutely, no conversation among students. DON'T TURN THE PAPER, YET.** Wait for "signal" from the invigilator.

Student's Name _____ (in CAPITAL LETTERS using a "marker")

- 1-a) Bring out evidences for ICP model from the perspective of human biology.
- 1-b) According to Zverev *et al.* BMI is the best indicator of body size (*TRUE or FALSE. If FALSE, write the CORRECT STATEMENT*). According to Karlberg's model of growth, infantile period starts at the moment of birth (*TRUE or FALSE. If FALSE, write the CORRECT STATEMENT*). Sigmoid function fits extremely well in infantile phase of ICP model (*TRUE or FALSE. If FALSE, write the CORRECT STATEMENT*). What do the acronyms JCI and IUGR stand for?
- 1-c) Describe how control theory be applied to the process of longitudinal growth of child.
- 1-d) What is estimated-adult BMI? Who launched this concept and when? What is its advantage over BMI and when does the estimated-adult BMI fail to assess health status? Which method (optimal mass or estimated-adult BMI) gives a better estimate of obesity status of a child?
- 2) Compute the growth profile for the following male child (SGPP-KHI-20100421-03/03) [date of birth = 2007-11-21, date of measurement = 2011-05-22, height = 95.4 cm, height of his father = 166.8 cm, height of his mother = 171.0 cm]
- 3) Compute the obesity profile of the following male (SGPP-KHI-20100421-03/F) [height = 166.8 cm; gross mass = 80.5 kg; clothing correction = 0.4 kg, dress code = 2/2, date of birth = 1967-02-08, date of check up = 2011-05-22]
- 4) Write short notes on any TWO of the following:
- Scoliosis in married females
 - Concept of maturity presented by Andrews
 - Forced marriages: social implications
- 5) In the following table we have dates of check up and ages for 4 children are given. Compute their dates of birth (in fractional form as well as in the format YYYY-MM-DD):

Reference	Child's initials	Date of checkup	Age
SGPP-KHI-20060412-01/01	Z. J.	2011-03-20	14.49
SGPP-KHI-20100421-03/02	A. E.	2011-05-22	6.25
SGPP-KHI-20110614-01/01	Jt. U.	2012-07-15	7.26
SGPP-KHI-20110614-01/02	Jm. U.	2012-07-15	6.31

- 6) Draw the flow diagram of KJ model dealing with growth-and-obesity profiles of still-growing parents. List deficiencies of this model.
- 7) According to Kamal and Jamil (2012), "The process of gaining height by a child may be visualized in the context of control theory. The *impulse* (hormonal secretion) results in *response* (height gain), whose effectiveness is determined by *transfer function*". Draw a diagram to illustrate the above process. From intake to tissue synthesis (process of gaining height) or storage (fat deposit), show through a diagram the processes of conversion of a chunk of bite into nutrients through (steps not listed in logical order, you have to do it yourself) heat production, digestion and absorption, energy production, elimination, metabolic utilization, chewing and swallowing.

Web address of this document: http://www.ngds-ku.org/M725-6/Exams725-6/726-13_Paper.pdf
(to be uploaded 12 hours after the conclusion of examination)