



UNIVERSITY OF KARACHI

Department of International Relations

IR 622 • Science, Technology and International Relations

Course Supervisor: Professor Dr. Syed Arif Kamal

Homepage: <http://ngds-ku.org/kamal> • e-mail: kamal(at the rate of)ngds-ku.org

Time Allowed: 3 hours • Maximum Marks: 100 • Date: Tuesday, November 25, 2008

Student's Name _____ (in CAPITAL LETTERS using a "marker") • Paper Format A

Attempt **Question 1** and **5** other questions. Each part of **Question 1** is of 4 marks & of **Questions 2-7** is of 8 marks. Note down the time spent on solving each part of question and time spent on revision by making the following "Time Chart" on the answerbook front page (**2 marks**). Time spent on revision must be at least 10% of the total time

Question No.	1a	1b	1c	1d	2a	2b	3a	3b	4a	4b	5a	5b	6a	6b	7a	7b	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 paper around, check if you have the back

page printed correctly. Last line of the second page is: <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, December 16, 2008 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 **EXPLUSION** 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")

The agreed-upon (in class) page limit for each answer part is **one page and a half** of the answer book. All answers must be written in **ENGLISH**. Answers given in any other language shall not be graded.

- 1-a) How is Obama's aerospace projected policy different from Bush's implemented one?
- 1-b) What is a scientific statement and a non-scientific statement. Give 2 examples of each.
- 1-c) The observations on which a scientific theory is based must be _____ (*thinkable, reproducible, tolerable*) by anyone with the proper training and the facilities. If one takes observations at different places and at different times, one must obtain the same results. Such observations are called _____ (*stable, identifiable, acceptable*). If one generalizes from specific observations one is said to be applying _____ (*inductive, deductive, symbolic*) logic. If one obtains a particular result from a general law one is said to be applying _____ (*inductive, deductive, symbolic*) logic.
- 1-d) A new model must satisfy 5 conditions. List all of them (*e. g., EXPLAIN* current observations, ...). By drawing a chart illustrate how does a "hypothesis" become a law, passing through the stages of theory, model, conjecture, *etc.*
- 2) Compare and contrast the space programs of USA and Russia (16 marks) – page limit: 3 pages
- 3-a) What is the difference between 'model' and 'modeling'? One should model the system, the environment and the _____ (*surrounding, nature, sources of error*). Elaborate by giving an example from international relations.
- 3-b) What is difference between the orbit of a missile and a satellite? What is an ABM? Has any country or countries developed this weapon and performed experiments?
- 4-a) List 3 of the most devastating nuclear accidents. Which of these accidents had the most long-lasting effect?
- 4-b) What is nuclear winter? How would it affect the ecosystem of earth?
- 5-a) What is the principle of neutron bomb? How is it different from atomic bomb and hydrogen bomb? What will be its effect on infrastructure, human beings, animals and forests?
- 5-b) Describe the relative risk of use of neutron bomb, atomic bomb and hydrogen bomb during armed conflicts and "accidents"?
- 6-a) By drawing a flow chart, illustrate the steps taken to tackle an industrial problem to reach its solution with the least possible wastage of human and monetary resources.
- 6-b) During the seventies and eighties US has suffered from ill planning resulting in wastage of resources, risk to human life and property and environmental disaster. Name 2 situations.
- 7-a) What fundamental measures have been taken by countries, which excelled in science and technology (give at least 5 measures)?
- 7-b) How can we reduce brain drain of scientists and science professionals from our country (give 2 measures)? How can we encourage scientists from abroad to come and settle in Pakistan (give 2 measures)?