Tanta University
Faculty of Engineering
Computers and Control Department

Postgraduate Students
Academic Year 2016/2017
Second Semester

TECHNICAL ENGLISH   *Final Exam*

<u>Answer the following EIGHT questions. Time allowed : 3 hours. Full marks : 60</u>

Question 1
Write about ten lines on ONE of these topics :
- Bioinformatics
- Artificial neural networks
- Don't reinvent the wheel .

Question 2
Choose the one word or expression in the list that is closest in meaning to the underlined word :
(1) We are pleased to report that various case studies <u>validate</u> the proposed approach.
- ventilate
- verify
- violate
(2) Linear algebra plays a <u>prominent</u> role in establishing the mathematical foundation of control mechanisms .
- prompt
- promising
- distinguished
(3) Thorough planning has been the <u>key</u> to high-quality products and substantial profits .
- figure of merit
- basic background
- crucial requirement
(4) A research endeavour, even with <u>spectacular</u> results, is not completed until it is published .
- successful
- fruitful
- amazing
(5) Engineers should perform services only in areas of their <u>competence</u> .
- aptitude
- career
- company
(6) Escalating actions you do <u>escalates</u> reactions you receive .

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- unifies
- clarifies
- intensifies

(7) <u>Plagiarism</u> is forbidden . It is perceived as a serious issue of cheating .
- Proving someone else's theorems
- Improving someone else's ideas
- Taking someone else's work and passing it off as one's own

Question 3
Fill in the blanks using words from the box :

for	since	contrast	because
why	however	currently	essentially
what	likewise	relatively	inadvertently

(1) The two design techniques are ….. the same .
(2) The project will last ….. more than six months .
(3) Our aim was to find out ….. data acquisition is such a time-consuming process .
(4) The electrician ….. short circuited the inductive load .
(5) The convolution integral is adopted ….. of the accuracy of its evaluation.
(6) I am ….. finalizing a paper that I would like to submit to the IEEE Transactions on Industrial Electronics .
(7) Computer hardware is extremely difficult to alter . In ….., it is a simple task to alter software programs .

Question 4
Use compound adjectives formed from the two words in brackets . State whether the compound adjective includes a present /past participle or not :
(1) The information model will be (orient, object) .
(2) This is a (scale, large) distribution grid .
(3) The tutor gave us the detailed answers to (number, odd) exercises .
(4) (Time, vary) systems have parameters that commonly vary with time .
(5) The statistical analysis relies on the (average, zero) principle .
(6) The oven is fed from two (carry, current) conductors .
(7) The laboratory has all necessities : electrical supplies, actuators, oscilloscopes, measuring instruments, etc. It is (well, resource).

Question 5
Correct the expressions in brackets :
(1) The logarithm (to basis 2) of 8 is 3 .
(2) Let the function (has a quadratic) form .
(3) The right-hand side of the equation contains (a nxn matrix and a n-dimensional vector) .

(4) There are three types of conic section (name, parabolas, ellipses, and hyperbolas) .

(5) The mass of a body makes it (to resist any change) in velocity .

(6) Appendices A and B of the thesis elucidate the modules of the algorithm and (the performance criterion, respective) .

(7) (Such as believed) by some historians, the seed of the gravitational theory was planted in the mind of Newton when he saw an apple fall from a tree .

Question 6

Answer as indicated in brackets :

(1) The workshop on Embedded Systems was cancelled . There were few participants . (*Use so ..... that*)

(2) Optimization methods are frequently employed in engineering problems because they yield the best possible solutions .(*Use a final –ing clause*)

(3) You should find the courses of digital signal processing very useful (*What does 'should ' mean ?*)

(4) Programmer; trainees; simulation outcomes . (*Form a statement having a direct object and an indirect one.*)

(5) I am indebted ..... Dr. Khaled ..... his constructive criticism and continuous encouragement . (*Insert prepositions .*)

(6) The book entitled ' ABCs of Machine Learning ' is written by M. O' Reilly ..... (*Complete using a Latin abbreviation .*)

(7) ..... are based not on theoretical derivation but on practical experience . (*Begin with an idiom .*)

Question 7

Translate into Arabic :

It is unfortunately true that the education of scientists is so overwhelmingly committed to ' doing ' science that ' writing ' science is neglected or ignored . In order to inculcate effective communication in science through good writing, we may consider these four strategic steps :

- Evolve a positive attitude to communication in science by according it formal recognition as a specialization worthy of attention and resource inputs like any other specialization in science .
- Plan a course on ' communication in science ' and make it compulsory at both undergraduate and postgraduate levels .
- Initiate and endow a movement for more effective communication in science .
- Encourage students to present well-written material at tutorials and seminars, and integrate written discourse into most syllabi .

As a matter of fact, scientific progress would have been impossible without a stable and entrenched tradition of simultaneously doing and writing science .

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Question 8
Translate into English

الطاقة هي المقدرة على بذل الشغل ، ويقدر الشغل المبذول على جسم ما يحاصل ضرب مقدار القوة ومقدار إزاحة الجسم تحت تأثير هذه القوة .. وللطاقة صور متعددة منها الكهربائية والميكانيكية والحرارية والنووية ... الخ. ومن الحقائق العلمية المعروفة جيدا أن الطاقة لا تفني ولا تنشأ من عدم ولكنها تتحول من صورة إلى أخرى، فعلى سبيل المثال تتحول الطاقة الكهربائية إلى طاقة ميكانيكية في المحركات الكهربائية بينما العكس هو الصحيح في المولدات الكهربائية .. وتقاس الطاقة على اختلاف صورها بوحدة تسمى " جول " نسبة إلى عالم الفيزياء الإنجليزي " جيمس جول " (James Joule) الذي أثرى العلم ببحوثه الرائدة في القرن التاسع عشر .

Engineering = Science + Technology + Ethics .

BEST WISHES
Prof. Dr. Mahmoud M. Fahmy
June 7, 2017

نظم الحاسبات المورية

Tanta University	Department: Computers and Control Eng. **Total Marks:** 60 Marks	Faculty of Engineering

Course Title: **Advanced Distributed Systems** Date: **June 3rd 2017**	Course Code: **CCE609** Year: Level 600 Allowed time: **3 hr** No. of Pages: (2)

Remarks: <u>Please Read the question more than once to fully understand it before you start solving.</u>

Question 1 (20 marks) Solve only 4 of the 5 parts:

a- Compare between the following pairs:

i- P2P model to the client/server model   ii- Tightly and loosely coupled systems
iii- Exclusive and concurrent write in DS.

b- For a given parallel algorithm solving a given problem on a given parallel architecture, what would typically be the effect (increase or decrease) on parallel efficiency of each of the following changes, (assuming all other independent parameters are held fixed.)
(1) Increase number of processors   (2) Increase size of problem
(3) Increase communication bandwidth   (4) Increase computing speed of processors

c- What is redundancy and why is it used in a distributed system. With examples illustrate the difference between passive and active replication.

d- What is the difference between a file server and file services? Give examples of possible file services in distributed file system and what is the difference between ordinary file system and distributed file system?

f- What are the differences between a local call and a remote call? Illustrate your answer with graphs.

Question 2 (20 marks) Solve only 4 of the 5 parts:

a) Suppose we wish to implement a transaction processing system that maintains ACID properties even in the presence of crashes. In event of a crash, any information stored on disk can be retrieved, but any data stored in memory will be lost.
Briefly describe one serious shortcoming of each of the following implementations:
(i) The database is updated on disk with each transaction
(ii) The database is kept in memory and on disk, with the copy on disk updated every 50 transactions.
(iii) The database is kept in memory. A log file is maintained on disk recording every transaction.

b) Adding processing power to a database server might improve performance in a client/server database system; however, it might not. Briefly describe other potential bottlenecks in a client/server system and explain how these problems might be resolved.

c) With examples describe Access, Location and Migration transparency in a distributed system.

d) Discuss in brief what is meant by "memory incoherent ", then specify the solution(s) for such problem. What architecture will suffer from such problem? Draw a diagram to illustrate your answer.

e) With examples describe the client server model?

Question 3 (20 marks) Solve only 4 of the 5 parts including the (e) part:

a) How to speed up an SISD machine?

b) With examples define what a transaction is. What is a nested transaction? Explain what problems can happen there is no concurrency control where multiple transactions are being executed at the same time.

c) Why is it difficult to synchronise things in distributed systems?

d) Explain why it might be a problem to detect failure in a distributed system.

e) According to the presentation and papers you have read in the topic you have focused on, explain the challenges, definition, architectures and current work directions. Use figures if possible.

Good Luck all, ☺

Course Coordinator: Prof. Dr. Amany Sarhan