



ASSESSMENT and
QUALIFICATIONS
ALLIANCE

Mark scheme January 2003

GCE

Computing

Unit CPT5

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Unit 5: Advanced Systems Development

The following notation is used in the mark scheme:

- ; means a single mark;
- / means alternative response;
- **A** means acceptable creditworthy answer;
- **R** means reject answer as not creditworthy;
- **I** means ignore;
- **BoD** means benefit of doubt

1. Any one manual for one mark

Installation (manual);

Operations (manual);

Training (manual);

Systems maintenance (manual)//maintenance (manual)//systems (manual);

Technical (manual);

max 1
Total 1

2. Any two @ one each

Bugs/Errors/Mistakes in software/system/code/program/it;

Requirements change//Adding new tasks;

Parameters change, e.g. VAT rate, No of users adjusted, No of licences change;

Performance needs tuning//Buffer size needs adjusting//Indexing needs to be switched off or on//Indexes need to be rebuilt;

Hardware is changed;

Software/System is updated//Upgrades;

R Data maintenance, e.g. tidying database

max 2
Total 2

3. (a) Question asks for method involving both car computer system and remote computer system. Second mark is an independent mark and is for comparing *something* with a *database of ... / users' details* on remote computer.

Smart Card; + Smart Card details compared with database of registered users/user's details;

Fingerprint Recognition; + Fingerprint compared with details stored on a database of registered users;

Magnetic Stripe Card//swipe card; + Card details compared with database of registered users;

Voice Recognition; + Voice Print compared with details stored on a database of registered users;

Palm Print; + Palm Print compared with details stored on a database of registered users;

Retina Pattern Recognition; + Retina Pattern compared with details stored on a database of registered users;

Face Recognition; Face Pattern compared with details stored on a database of registered users;

Iris Pattern Recognition; + Iris Pattern compared with details stored on a database of registered users;

Veins pattern; Veins pattern compared with details stored in a database of registered users;

Hand print; Hand print compared with details stored in a database of registered users;

R Typing something in, **R** Sent for verification

max 2

- (b) A equivalent to modem/terminal adapter, e.g. digital signal converted into equivalent analogue radio signal –first mark - (before being sent by radio transmitter is second mark)
 Modem(Terminal Adapter);+Radio transmitter;
 Modem(Terminal Adapter);+Microwave transmitter;
 Modem(Terminal Adapter);+Mobile(Satellite) phone; A By satellite;
 Modem(Terminal Adapter); + Connection made at rental garage; **max** **2**
- (c) E-mail;
 Written to Smart Card or Magnetic Stripe;
 Text message to mobile phone;
 R Print out, LCD panel display, display panel, CD-R, Floppy disk **max** **1**
Total **5**
4. (a) A Print Report///Print Luggage Details Report//Produce Report ; R Print Results
 B Flight Master File//Passenger file; R Luggage master file, Master File
 C (Printed) report//Luggage details//LuggageId + PassengerName + Content
 Details// Printed Results//Results; R Print Results **3**
- (b) Bar code scanner//barcode reader;
 R OCR scanner, barcode gun **1**
- (c) Dot-matrix//impact printer//line printer//Daisy wheel;
 R Everything else **1**
Total **5**
5. (a) E-mail may pass through many computers/servers if it travels over a network, each computer can make a copy/can be accessed;
 When a message arrives at its destination, it waits until the intended recipient picks it up. During this time the message is vulnerable to being read or copied by the computer's operator;
 Electronic eavesdropping of telephone wires and local area networks is possible;
 With e-mail alterations leave no trace(no physical damage) whereas with paper alterations leave a physical mark; **max** **1**
- (b) (i) E-mail encrypted using public key;
Recipient's private key used to decrypt e-mail; **2**
- (ii) E-mail encrypted by sender using private key;
 Recipient decrypts e-mail using sender's public key; **2**
Total **5**

6. (a) A database is a pool/store/collection of data/tables/records;
A database management system is a program/software that acts as an interface between user and database//DBMS controls access to this data// DBMS allows the definition/creation/maintenance/manipulation of the database; **2**
- (b) External or user (schema/level);
Conceptual or logical (schema/level);
Internal or storage (schema/level); **3**
- (c) (i) All applications have to be changed when data structure requirements of one change; **1**
- (ii) New data fields may be added/existing fields removed without affecting any existing applications that do not make use of the fields;
Because it enforces program-data independence; **max 1**
- (d) (i) Two or more users accessing the (same) data/reference to data (item) at the same time; **1**
- (ii) If it isn't an update may be lost; **1**
- (iii) Used to create/define database;
Used to create/define tables;
Used to create/define indexes;
Used to specify/define primary keys;
Used to specify/define foreign keys;
Used to create/define attributes/fields(**R** Create/define data items);
Used to create/define data types;
Used to create/define validation controls;
R DML e.g. Insert **max 2**
Used to create views;
Used to grant views to users;
R Setting access rights/levels **2**
max 3
Total 12

7. (a)

Two Ways of Sending Data

Click here

Please enter your name:

SEND

Correct title;

Correct hyperlink MUST be underlined;

Correct spacing;

Correct labelled input box;

Correctly labelled button;

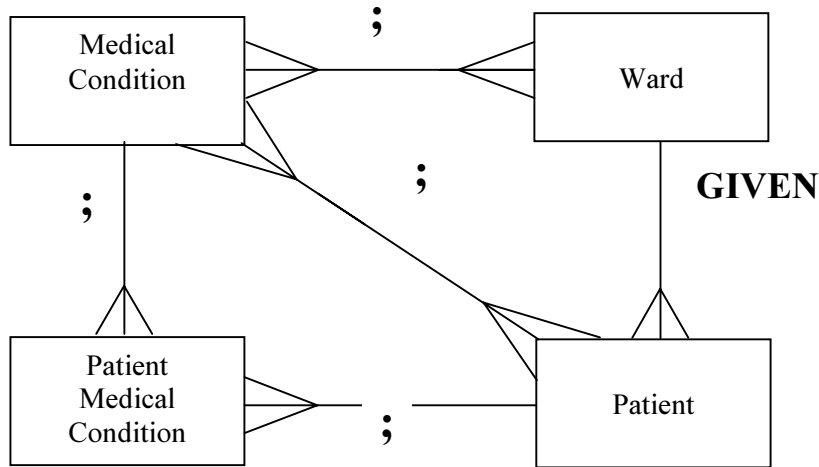
Can just be an outline of a button, i.e. no fill

Doesn't have to be over to the left

5

- | | | | |
|-----|-------|---|-----------|
| (b) | (i) | A. Fred; | 1 |
| | | B. James; | 1 |
| | (ii) | A. Fred; | 1 |
| | | B. James; | 1 |
| (c) | (i) | FPT; | 1 |
| | (ii) | _____ ; _____ ; _____ ; | 3 |
| | | http:// www.example.co.uk /example.htm; | |
| | (iii) | Telnet; | 1 |
| | | Total | 14 |

8. (a)



(NB don't allow relationship between Ward and PatientMedical Condition) **max 3**

(b) For each extra attribute lose one mark

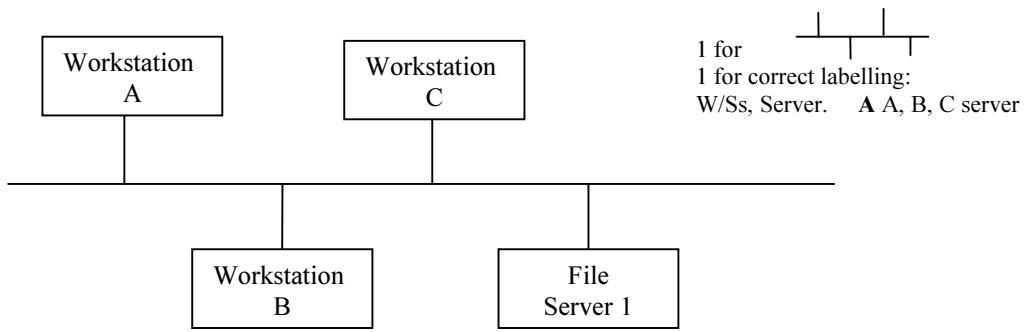
- (i) Ward(WardName, NurseInCharge, NoOfBeds) ; 1
 A NumberOfBeds, NameOfNurseInCharge, NurseInChargeName
 R WardId, Name, NurseName. NameOfNurse, BedNo, BedNumber, NumOfBeds
- (ii) Patient(PatientNo, Surname, Forename, Address, DOB, Gender, *WardName*) ; 2
 A PatientId, PatientNumber, PatientSurname, PatientForename, PatientAddress, DateOfBirth, PatientDateOfBirth, PatientGender, Sex, PatientSex
- (iii) MedicalCondition(MedicalConditionNo, Name, RecommendedStandardTreatment) ; 1
 A MedicalConditionId, MedicalConditionNumber, MedicalConditionName, ConditionName, StandardTreatment, Treatment, RecommendedTreatment
 R ConditionNumber, ConditionID ; ;
- (iv) PatientMedicalCondition(PatientNo, MedicalConditionNo) 2
 A Attributes rejected in (ii) and (iii) for PatientNo and MedicalCondition No
 R If attributes used are not consistent with (ii) and (iii)

(c) Accept tbl in front of table name ;

Select Patient.Forename, Patient.Surname, PatientMedicalCondition.MedicalConditionNo
 From Patient, PatientMedicalCondition ; ;
 Where Patient.WardName = 'Victoria' ; ;
 And Patient.PatientNo = PatientMedicalCondition.PatientNo ; ;
 A Forename, Surname, MedicalConditionNo, WardName **max 3**

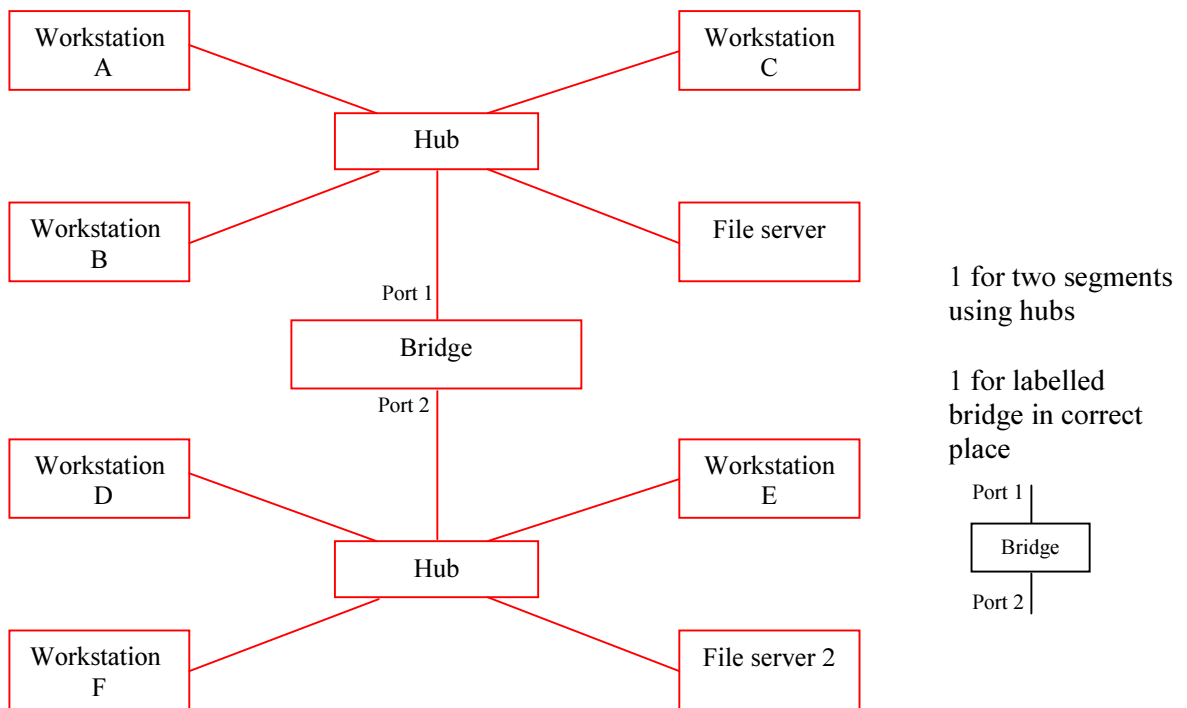
Total 12

9. (a)



2

- (i) First mark: collisions; **R** clashes
Second mark: Frame/Packet//Description of how collisions occur, e.g. two stations sending at same time/stations have to resend;
R Accessing file server at same time 2
- (ii) 1 mark for drawing two segments connected by a bridge. 1 mark for a second segment consisting of hub and workstations D, E, F and File Server 2.



2

- (c) (i) First mark is for switched Ethernet explanation. Second mark is for hub-based Ethernet explanation.
Switched Ethernet allows a computer such as workstation A to send a packet to workstation D, for example, at the same time as another, e.g. B, is sending to workstation F//a sending workstation's packets are sent to only one workstation//Switched Ethernet segments network into smaller segments;
- If this is attempted in a hub-based network a collision will occur/only two workstations are permitted to communicate at the same time//a sending workstation's packets are broadcast to all workstations//hub-based network is just one segment; 2
- (ii) **NB** Emphasis is on transmission not performance of file server
- | | | | |
|----------------------------|-------------------|--------------|----------|
| Transmission or equivalent | speed is higher; | | |
| Transmission or equivalent | speed is faster; | | |
| Transmission or equivalent | speed is greater; | | |
| Transmission or equivalent | speed is quicker; | | |
| No collisions; | | | |
| A Network is faster | | | |
| | | max | 1 |
| | | Total | 9 |