



Rewarding Learning

ADVANCED

General Certificate of Education

Centre Number

--	--	--	--	--

Candidate Number

--	--	--	--

Software Systems Development

Unit A2 1:

Systems Approaches and Database Concepts



ADV11

[ADV11] Assessment

TIME

2 hours.

Assessment Level of Control:

Tick the relevant box (✓)

Controlled Conditions	
Other	

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

This paper is accompanied by a Pre-release Case Study. You must **not** use your own annotated copy of this Case Study.

Write your answers in the spaces provided in this question paper.

Answer **all ten** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 100.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

Quality of written communication will be assessed in **questions 3, 5 and 6(b)**.

For Examiner's use only			
Question	Marks available	Marks	Remark
1	8		
2	8		
3	8		
4	5		
5	8		
6	14		
7	14		
8	5		
9	20		
10	10		
Total	100		

1 Following early discussions with Shepherd's Veterinary, Frank Adams, the senior analyst with Solutions Computer Consultancy (SCC) has indicated to his team that there are major concerns surrounding both the appointments system for farm visits and the billing procedures currently in place for these visits.

(a) Outline an example of how each of these issues might affect the business.

Appointments: _____
_____ [1]

Billing: _____
_____ [1]

(b) Explain the two most appropriate techniques the team might use to determine the extent of the concerns noted. You must indicate why each of these techniques is suitable and how they might be applied at Shepherd's Veterinary.

Technique 1: _____

_____ [3]

Technique 2: _____

_____ [3]

Examiner Only	
Marks	Remark

2 Frank always involves new trainee analysts in the development process and insists on testing their knowledge whenever possible. He has asked the trainees to complete the following paragraphs using the word list provided. Words and phrases may be used more than once.

beginning evaluation first objectives scope
budget execution initiation plan schedule
closure Feasibility last project stakeholders
controls Study manages resources time
deliverables final monitors risks Terms of
Reference

At SCC, the development of any new system is carefully planned using the project life cycle phases of initiation, planning, _____ and _____. In the initiation phase, one of the outcomes is a _____ which is an agreement and possibly a legal contract between SCC and Shepherd’s Veterinary. This document will define the vision, _____, scope and _____ of the new project.

In all projects, _____, scope and _____ are essential considerations. The project manager _____ and _____ the project and is responsible for ensuring that a detailed _____ is produced. This must contain a schedule to ensure the project is delivered on time, as well as the estimated _____ and all _____ necessary.

In the _____ phase, the project manager will identify any problems and take corrective action to deal with them. In the _____ phase of the project, the project manager will inform all _____ and conduct an _____ of the project.

[8]

Examiner Only	
Marks	Remark

- 4 Emily, the lead developer, tells the trainees that she is considering the use of database technology using Hierarchical, Network or Relational models in the development. In order to test some basic knowledge, she asks them to complete the table below by inserting **true** or **false** opposite each statement.

Complete the table below.

Statement	true/false
Use of a database demands more storage space than the use of conventional files.	
In a network model, multiple parents are possible for each child.	
In a relational model, each column in a table corresponds to a field that has a unique name holding multiple data types.	
Many to many relationships in a relational database are decomposed using a link table.	
The hierarchical model is the only model that requires knowledge of the physical storage of records in a file or memory.	

[5]

Examiner Only	
Marks	Remark

[8]

Examiner Only	
Marks	Remark

6 SCC has decided to develop an enquiry system for vet appointments. This will provide the following functionality:

- A vet must be able to log on to the system using login credentials. These must be verified and an error message displayed if incorrect. It is assumed that being logged on is a prerequisite for any other functionality;
- A vet can view today's appointments and have the option to view future and historical appointments;
- Viewing today's appointments will automatically display the travel time and provide the option to view animal records.

(a) Frank has asked the trainees to complete the Use Case diagram opposite identifying the missing items.

Complete the missing symbols/names/connections.

(1) _____ (9) _____

(2) _____ (10) _____

(3) _____ (11) _____

(4) _____ (12) _____

(5) _____ (13) _____

(6) _____ (14) _____

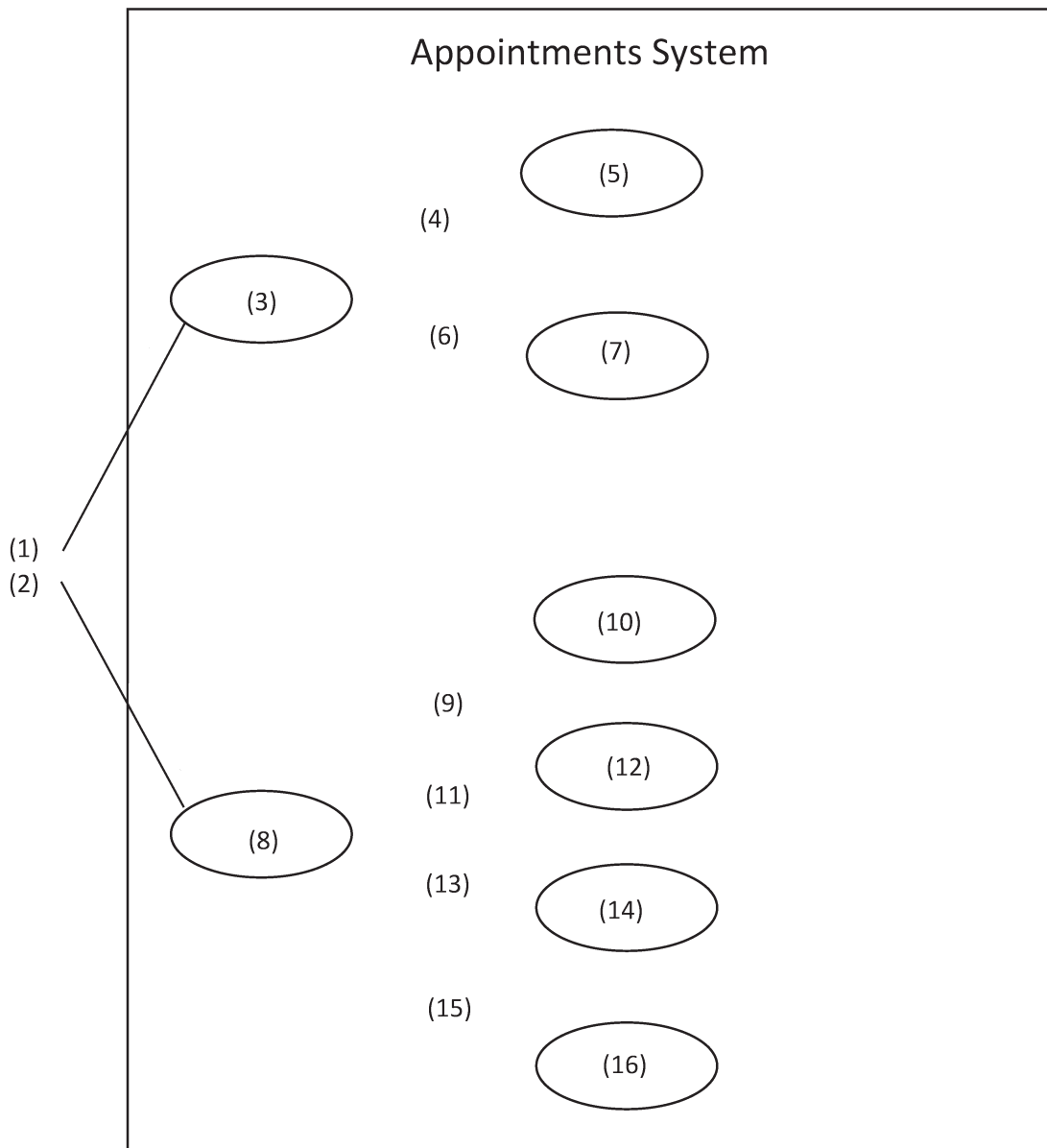
(7) _____ (15) _____

(8) _____ (16) _____

[8]

Examiner Only	
Marks	Remark

Use Case diagram for the Appointments System



Examiner Only	
Marks	Remark

BLANK PAGE

(Questions continue overleaf)

- 9 **Figure 1** below shows a partial database design for animal appointments for use with the following requirements.

Figure 1 Partial Database Design for Animal Appointments

<p>ANIMAL</p> <p>AnimalID AnimalName AnimalDOB ClientID BreedID</p>	<p>CLIENT</p> <p>ClientID ClientForename ClientSurname ClientAddress1 ClientAddress2 ClientAddress3 ClientPostcode ClientTelNo</p>	<p>BREED</p> <p>BreedID BreedDesc</p>
<p>APPOINTMENT</p> <p>AppID AppDate AppTime ClientID VetID FarmVisitYN Duration NoOfAnimals</p>	<p>VET</p> <p>VetID VetForename VetSurname</p>	<p>APPANIMAL</p> <p>AppID AnimalID</p>

- (a) For the ANIMAL table, name and describe the constraint that **must** be applied to each of the following fields.

Field	Constraint / Description
AnimalID	
BreedID	
AnimalDOB	

[3]

Examiner Only

Marks Remark

BLANK PAGE

(Questions continue overleaf)

10 Emily asks the trainees to consider the tests required to determine which vets are available to cover a two hour appointment at 3:00 pm on Wednesday 3rd June.

Complete the partial Test Table, opposite, to ensure that a selection list only includes available vets when new appointments are being made.

Use the partial database given in **Figure 1**, Question **9** and assume the following:

No appointments exist for June 3rd 2020
Last AppID used 1045
VetIDs: 10 Peter Shepherd
 11 Robert Hardy,
 12 Jean Higgins and
 13 Thomas Bryce.

IDs may be created for clients and animals. [10]

Examiner Only	
Marks	Remark

Test Table (partial)

Test data	Reason for test data	Expected outcome
Appointment details: AppDate 3/06/2020 AppTime 14:30 Duration 1.5hrs VetID 12 ClientID 0051 NoOfAnimals 2 FarmVisitYN N <i>(animal IDs D156, D157)</i>	Insert valid appointment details for VetID 12 ending between 3:00 pm and 5:00 pm	Appointment 1046 details added to Appointment table Animals added to AppAnimal table with AppID (Vet 12 will NOT be available)
	Insert valid appointment details for VetID 11 starting between 3:00 pm and 5:00 pm	
Appointment details: AppDate 3/06/2020 AppTime 13:00 Duration 2 hrs VetID 13 ClientID 0066 NoOfAnimals 3 FarmVisitYN Y <i>(animal IDs R804, R905, R906)</i>		
Appointment details: AppDate 3/06/2020 AppTime 15:00 Duration 2 hrs	Check that only free vets are available for selection from grid	

THIS IS THE END OF THE QUESTION PAPER

Permission to reproduce all copyright material has been applied for.
In some cases, efforts to contact copyright holders may have been unsuccessful and CCEA
will be happy to rectify any omissions of acknowledgement in future if notified.