

<<School>>

INFORMATION TECHNOLOGY
STANDARDISED NORMALISATION TEST

GR 12 PORTFOLIO TEST
EXAMINER: <<Teacher name>>
MODERATORS: IT Cluster

February 2020
MARKS: 40
TIME: 45 min

INSTRUCTIONS:

- This paper consists of **7** pages. Please check that your question paper is complete.
- Fill in the answers in the spaces provided on this question paper.
- It is in your interest to write legibly and to present your work neatly.

SCENARIO

The Music department at your school manages the registration of external music examinations for the pupils attending the school. Look at the following requirements for the database:

- Pupils may register for multiple examinations.
- Pupils may not register for more than one examination on any given day.
- Pupils may not register to write multiple exams for the same instrument.
- Each instrument is examined by a specific examining body (UNISA / Trinity / Rockschoo) and one specific examiner.
- Each examining body issues a specific award – UNISA offers certificates, Trinity offers medals and Rockschoo offers trophies.
- Examiners may conduct multiple exams as long as the exams are not scheduled simultaneously.

1. List two aims of database normalisation? (2)

2. Circle the correct answer:

Database normalisation is a(n) iterative / noniterative process. (1)

3. Complete the following table by listing the rules for each of the normal forms. (6)

First Normal Form	Second Normal Form	Third Normal Form

4. Define the term “composite key”. (2)

Study the following screenshot made of the table the Music department is currently using and then answer the questions that follow.

<u>PupilID</u>	<u>Gender</u>	<u>Surname</u>	<u>Name</u>	<u>Age</u>	<u>Exam Instrument</u>	<u>Exam body</u>	<u>Award</u>	<u>Exam Level</u>	<u>Examiner</u>	<u>Exam Date & Time</u>
FWB001	Female	Wilson	Bree	16	Piano	UNISA	Certificate	Grade 5	Lortie	09:00 2020/03/12
FWB001	Female	Wilson	Bree	16	Voice	Rockschoo	Trophy	Grade 2	Swift	12:00 2020/03/13
FWB001	Female	Wilson	Bree	16	Keyboard	Rockschoo	Trophy	Grade 2	Bryan	08:00 2020/03/14
MKM012	Male	Khumalo	Mzilikazi	15	Guitar	Trinity	Medal	Grade 3	Young	09:00 2020/03/11
MKM012	Male	Khumalo	Mzilikazi	15	Drums	Trinity	Medal	Grade 4	Collins	10:00 2020/03/12
MPS013	Male	Pillay	Sandeep	16	Piano	UNISA	Certificate	Grade 6	Lortie	09:00 2020/03/13
MPS013	Male	Pillay	Sandeep	16	Voice	Rockschoo	Trophy	Grade 6	Swift	09:00 2020/03/14
FWH014	Female	Wang	Hua	13	Guitar	Trinity	Medal	Grade 1	Young	13:00 2020/03/12
FWH014	Female	Wang	Hua	13	Drums	Trinity	Medal	Grade 2	Collins	09:00 2020/03/13
FWH014	Female	Wang	Hua	13	Keyboard	Rockschoo	Trophy	Grade 3	Bryan	08:00 2020/03/15
MBA015	Male	Baranov	Alek	16	Production	Rockschoo	Trophy	Grade 4	Legend	09:00 2020/03/14

5. Why is it not advisable to store the age of each pupil as it has been done in this table? (1)

6. How would you advise them to keep record of a pupil's age instead? (2)

7. An attempt has been made to normalise the table on the previous page.

7.1 Identify which normal form the table is in? (1)

7.2 Justify your answer given in question 7.1 (2)

8. The same type of exam instrument appears multiple times throughout the table.

8.1 Is this an example of redundant data or duplicate data? (1)

8.2 Explain your answer given in question 8.1 (2)

9. Data is often susceptible to anomalies.

9.1 Define the three types of anomalies. (3)

Update

Delete

Insert

9.2 Referring to the table on page 3, give an example of each of the three types of anomalies. (3)

Update

Delete

Insert

10. Draw a dependency diagram for the table. Label all dependencies. (6)

(If you need more space, draw the diagram on the last page of this paper)

11. Write the relations of the table in 3NF. Your answer must be written in relational notation. (8)

Total: 40 marks

Extra space