



Computer Applications Olympiad

A project of the Institute of IT Professionals South Africa.

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FINAL ROUND QUESTION PAPER 2020

1. The question paper consists of three sets of tasks: A. Infographic tasks, B. Excel tasks and C. Access tasks. You may do the tasks in any order. However, some of the tasks for section A depend on work done in sections B and C.
2. The links with the preparation videos are made available with the data in a document called "Finalists' Preparation".
3. Learners are allowed to browse the internet for research and help during the 3 hours of the contest.
4. Learners are allowed to use their own earphones to listen to YouTube videos for research purposes.
5. Learners are NOT allowed to make contact with external people, use their cell phone or email.
6. The Reddit feature amounts to communication with someone outside the competition and therefore is not permitted to be used.
7. We have permitted the latest versions of Office. There is no restriction on what functions can and can't be used. There are no specific questions in either Excel or Access that require participants to use specific functions.
8. Your work must be clear, easy to use and easy to understand.
9. The files used in the completed tasks must be uploaded to your Solutions folder that was sent to you via email at 09:40 this morning.

SCENARIO

You are given sample data regarding wind masts erected around South Africa for the purposes of gathering data to identify the best locations for the erecting of wind generators. It is suggested that before you look at the tasks below you study the data that you have been given.

Approach this competition along the lines of a mini PAT. Having studied the data decide on a question and use this as the basis of the infographic.

The Excel tasks are more directed than those in Access. The Access tasks are more open and will require you to have an idea of what you will need in the infographic.

A. INFOGRAPHIC TASKS

The aim of this infographic is to tell a story with charts/graphs and information that make the infographic easy to understand. The criteria/requirements for your infographic are given below:

- The infographic must be A2 in size (i.e. 594 mm x 420 mm).
- Use Canva to create the infographic.
- Add graphs/charts and other graphic features to your infographic to tell your story.
- Balance the features on the sheet and ensure that the whole A2 sheet is used.
- Use suitable colours and font styles.
- Select the background of your choice.
- Add suitable text/labels with meaningful understandable information to every graphic object.

For the infographic you need to create and display a minimum of **six or seven** objects based on the tasks given below. The objects can be graphs or graphic features. They need to display information from the Excel or Access data you received. You may also use your graphs and information you have already created in the Excel and Access questions.

Task 1, 2 and 3 are compulsory plus any other 3 or 4 objects of your choice.

Task 1

Use the information (in the Access or Excel files) to create a map similar to the one shown below which shows the position of the wind turbines provided. A clearer picture was provided with the data files. Two possible URLs for this task are <https://mobisoftinfotech.com/tools/plot-multiple-points-on-map/> or <https://www.mapcustomizer.com/>



Task 2

Create one graph/chart. The graph/chart must display information from the Excel or Access data sets. Use advanced dynamic features such as those shown in the video link [here](#). To show the dynamic features provide 3 or 4 small graphs/charts next to each other, each displaying its own set of information as the source data of the chart changes. You may choose what information your graph will display, e.g. temperature, windspeed, direction, etc. Label your graphs/charts appropriately.

Task 3

Create one infographic or information summary to show/tell what you have discovered in your investigations with Task 4 of the Database section.

(Do not copy a report to the infographic unless it is a summary of information).

B. EXCEL TASKS

Task 1

Wind turbines do not generate power continuously. The turbine is switched off if the wind is less than 4,5 m/s (16 km/h). From there the power increases uniformly (linearly) up to 15 m/s (54 km/h) where it is at 100%. Above 25 m/s (90 km/h) it switches off again.

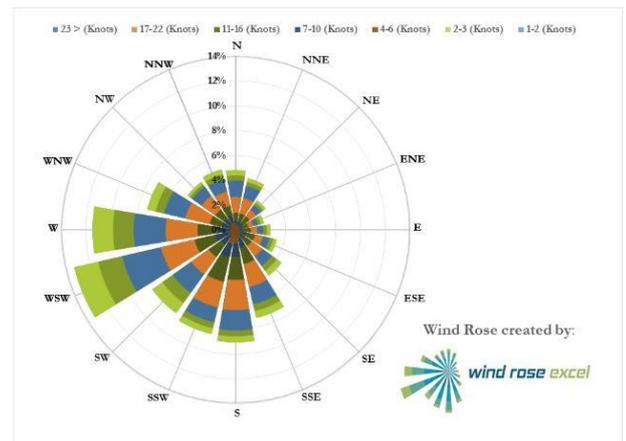
- Add a formula to your worksheet which shows a percentage of full power generated during each 10-minute interval.
- On a dashboard, create a chart which shows the power output for a user selectable site for a selected week. If you have time, this concept can be extended to different time periods.
- You may add a chart showing power output (for any site or period) to your infographic.

Task 2

Create a chart which shows the wind direction using the points N, NE, E, SE, S, SW, W and NW. The chart should

- show only one site at a time;
- be dynamic (i.e. a site must be selected from a drop down list);
- show the fraction (percentage) of the month for which the wind is blowing in each direction.

The type of chart is left up to you. Please add a comment to your sheet which explains why you chose the chart type that you did.



C. ACCESS TASKS

The tasks listed below are compulsory. In order to ensure that the information contained in the infographic that you produce is relevant there may well be other tasks that you will need to carry out to obtain the information needed.

For many of the tasks listed below you will need to create queries, some of which will require user input.

Task 1 – Switchboard(s)/Dashboard(s):

Create well-designed switchboards/dashboards that include relevant navigation buttons. The buttons should each be clearly labelled. Each of the tasks listed below must be accessible from one of the switchboards/dashboards.

When the database is opened it should automatically display the main switchboard.

Task 2 – Wind data:

Create a form based on the WindData table.

This form should be accessible from a separate switchboard linked to the main switchboard. Users must then be able to either enter new wind data or view data for a specific mast, e.g. WM10.

Task 3 – Mast information:

Create a form based on the MastData table.

This form should be accessible from a separate switchboard linked to the main switchboard. Users must be able to insert data pertaining to a newly built mast or update the information pertaining to an existing mast.

Note the following:

- Data validation must be used in the relevant fields.
- Relevant buttons need to be included on the form.
- If it is data for a new mast then all fields will be blank. The mast code should automatically be allocated the next code in the sequence, i.e. WM20. The user will then be able to enter the new data with all data being required.
- If it is an update then the user needs to input the mast code and the form will display all the current information for that mast. The user will then be able to change the data in any of the fields.

Task 4 – Predefined reports:

Create various relevant predefined reports, such as

- the location of the masts in each province
- the number of masts in each province
- the highest, lowest and average wind speed for each mast during December 2019

These reports, which will not require any user input, should be grouped on a separate switchboard. With the exception of mast codes no other codes should appear in the reports.

Task 5 – Reports requiring user input:

Create reports that would rely on the user entering data. For example, a report for mast WM10 for the period 11:00 to 14:00 on 25 December 2019. Of necessity these reports will need to include parameter-driven queries.