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**UNIVERSITI TEKNOLOGI MARA**  
**ANSWER SCHEME - TEST 2**

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<b>COURSE</b>	<b>:</b>	<b>MOBILE APPLICATION DEVELOPMENT</b>
<b>COURSE CODE</b>	<b>:</b>	<b>CSC660</b>
<b>SEMESTER</b>	<b>:</b>	<b>MARCH – AUGUST 2023</b>
<b>TIME</b>	<b>:</b>	<b>2 HOURS</b>

**INSTRUCTIONS TO CANDIDATES**

1. This question paper consists of THREE (3) parts:  
PART A (15 Questions)  
PART B (15 Questions)  
PART C (1 Question)
2. Answer ALL questions in English. Start each answer on a new page.
3. Upload the file at the specified platform.
4. You are strictly prohibited to discuss/share/disseminate the questions and answers amongst your classmates/coursemates. If found guilty or committed to one of the actions, you will be penalised.

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**DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO**

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*This examination paper consists of 9 printed pages*

**PART A (30 MARKS)**

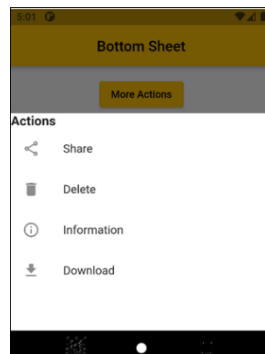
Determine whether the following statements are **TRUE** or **FALSE**.

1. `TextField` widget allows app users to type text into an app.
2. The following code is used to add a floating action button to a Flutter app interface.

```
floatingActionButton: FloatingActionButton(  
  child: Icon(Icons.phone),  
),
```

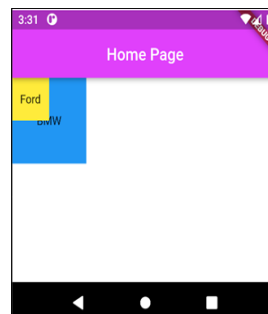
`onPressed()` can be used to add an action to this button if the app user taps this button.

3. The `Container` is a Flutter widget that allows you to customize, compose, decorate and position its child widget.
4. Assume that you designed a Flutter app as illustrated in the image of this question. When you tapped the "More Action" button, you got a bottom sheet that shows a list of actions. The type of this bottom sheet widget is `BottomNavigationBar`.



5. In Flutter, `AlertDialog` widget is similar to a small interface which appears for a few seconds at the bottom of the app user interface when the app user takes a specific action such as clicking a button.
6. When you want to create a Flutter app, you need to configure a lot of widgets and change their format. You don't need to create everything from scratch. You can easily add the `Scaffold` class or widget to your app. This class implements the basic material design visual layout structure for your app.
7. A `Stateful` widget is a dynamic widget which can change the appearance of its content in response to events triggered by user's interactions or when it receives data.

8. Check the image of the app interface in this question. The type of Flutter widget used in designing this app interface is `Row`.

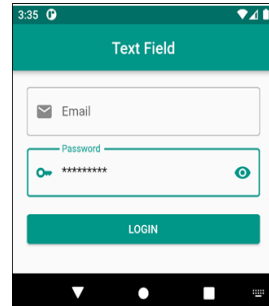


9. To insert an image in a Flutter app, first you should set the configurations which are illustrated in the image of this question. The file name which includes these configurations is `README.md`.

```
# To add assets to your application,  
# add an assets section, like this:  
assets:  
  - assets/sekila.jpeg  
#   - images/a_dot_ham.jpeg
```

10. Only one child widget can be added to the `Container` widget.
11. `InputDecoration` is the property that should be used to add a label, icon, and an inline hint text to the `TextField` widget.
12. If you install the Flutter SDK on your computer and configure it as a plug-in for Android Studio or another IDE software, Android Studio will be able to create Flutter apps.
13. `Padding` widget is used to wrap a `Column`, `Row`, `Container`, or other widgets. This widget adds a filling size around the child widget.
14. `SizedBox` widget helps you to have a specific width and/or height between widgets.
15. When you build a Flutter app, you can use an Android or an iPhone emulator to test your app UI (user interface ) and its work flow. But you **CANNOT** test this app on a real Android or iPhone device before publishing your app on Apple or Google store.
16. Flutter widgets are the basic building blocks of a Flutter user interface. Almost everything in Flutter app is a widget such as images, icons, texts, menus, buttons, row, column etc.
17. In Flutter development, you can add three rows inside a column and add an image within each row.
18. `Flutter Doctor` command checks your environment and displays a report of the status of your Flutter and Android Studio other than IDE software installation.

19. The image in this question is a part of Flutter app interface which includes two `TextField`. When the app user types anything in the password `TextField`, all the characters in the text field are replaced with stars to hide the user's password. To do this, you should add “`obscureText: true`” property to the password `TextField` widget.



20. The `crossAxisAlignment` property in a `Row` widget determines how the children are aligned horizontally.

**PART B (35 MARKS)**

Answer ALL questions.

**Question 1**

Describe [C1] the key differences between stateless and stateful widgets in Flutter, as well as appropriate times to use each kind.

(12 marks)

**Question 2**

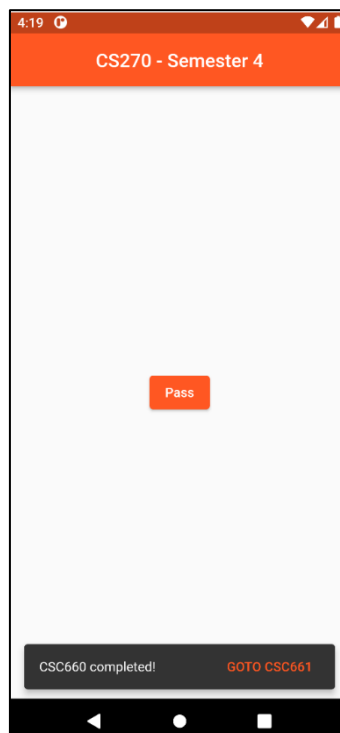
A business with five years' worth of market experience intends to develop a mobile version of its current website, whether to go for adaptive, dedicated, or mobile web development. The business needs more control over how its website is displayed to clients across a range of devices, but it is budget-constrained. Recommend [C5] the business a viable mobile solution and justify [C5] your solution.

(15 marks)

**Question 3**

Write the code segment for displaying a pop-up message “CSC660 completed!” and its action “GOTO CSC661” for three seconds as depicted in the following image.

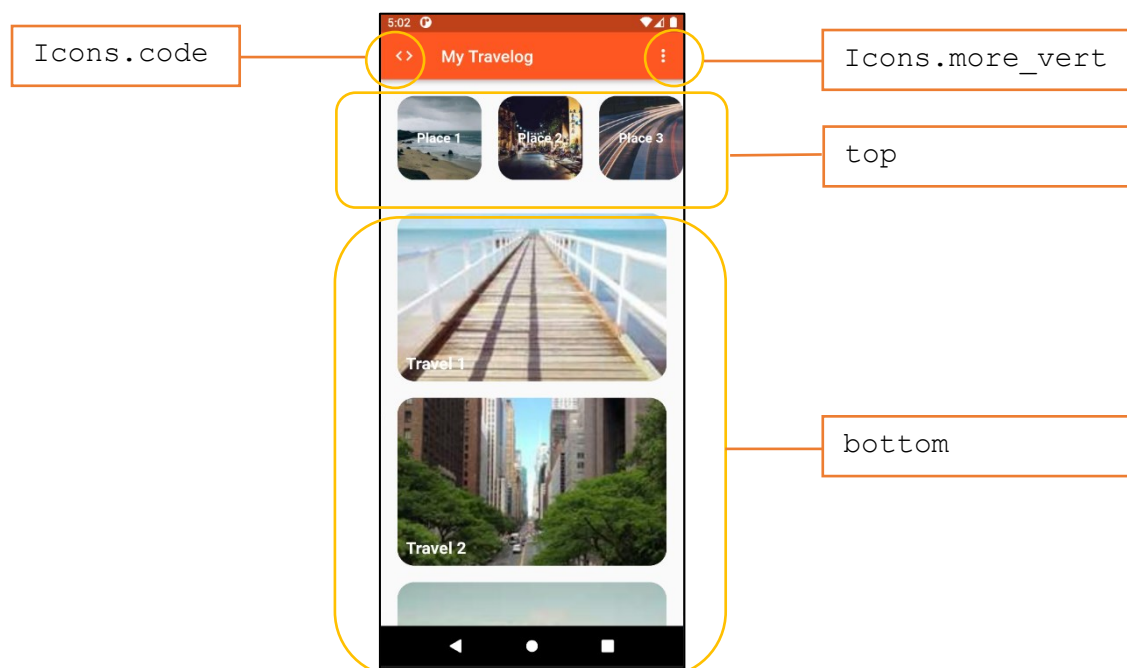
(8 marks)



**PART C (35 MARKS)**

The Flutter framework provides a wide range of layout widgets that help you to organize and arrange the UI elements. These layout widgets allow you to control the positioning, sizing, and overall structure of the user interface. Based on your knowledge and programming skills on Flutter layout widgets, answer the following questions.

1. Explain [C2] about single and multiple layouts provided by flutter framework. Give [C2] THREE examples of widgets for each kind.  
(10 marks)
2. For each single and multiple layout widget, identify [C4] ONE example of a simple user interface and describe [C2] its components.  
(10 marks)
3. Given the following image of a Flutter app, construct [C6] code snippets and give answers for the following tasks.



- a) Write the full code for the `appbar` property of the Scaffold.  
(7 marks)
- b) What is the layout used for the interface, single or multiple layout? List the main components that are used for the top and bottom parts of the interface.  
(3 marks)

- c) Complete the code segment at lines marked ##### for the bottom part of the interface. Assume class `ColorBox` is used to represent the containers for each image.

```
##### (  
    #####: ##### (  
        #####: EdgeInsets.all(20),  
        itemCount: 10,  
        #####: (context, index) => ##### (  
            #####: const EdgeInsets.only(bottom: 20),  
            #####: ColorBox(  
                ind: index + 1,  
                title: '##### ${index+1}',  
                clr: #####.grey,  
            ),  
        ),  
    ),  
,
```

(5 marks)

END OF QUESTION PAPER