UNIVERSITY COLLEGE TATI
TATI

UNIVERSITY COLLEGE TATI (UC TATI)

FINAL EXAMINATION QUESTION BOOKLET	
COURSE CODE	: BCS 2903
COURSE	: MOBILE COMPUTING
SEMESTER/SESSION	: 2-2024/2025
DURATION	: 3 HOURS

Instructions:

1. This booklet contains 5 questions. Answer ALL questions.

3. All answers should be written in answer booklet.

4. Write legibly and draw sketches wherever required.

5. If in doubt, raise your hands and ask the invigilator.

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO

THIS BOOKLET CONTAINS 7 PRINTED PAGES INCLUDING COVER PAGE

QUESTION 1

a) Differentiate between Wireless Local Area Network and Wireless Local Loop.   (4 marks)

b) Illustrate the architecture of Wireless Local Loop (WLL).   (6 marks)

c) List **THREE (3)** common types of mobile application development   (3 marks)

d) Define the role of middleware in mobile application development.   (2 marks)

e) Propose common support tools for mobile application development of the   (2 marks)
following:
  i)   Integrated Development Environments (IDEs)
  ii)   Software Development Kits (SDKs)

f) Provide performance issues for the answer Question (c).   (3 marks)

QUESTION 2

a) Explain the basic concept of Mobile IP.   (2 marks)

b) Describe the following main components of Mobile IP.   (8 marks)
  i.   Mobile Node (MN)
  ii.   Home Agent (HA)
  iii. Foreign Agent (FA)
  iv.   Care-of Address (CoA)

c) Discuss the role of tunneling in Mobile IP.   (2 marks)

d) List **FOUR (4)** key components of the WAP architecture.   (4 marks)

e) Describe **TWO (2)** Wireless Application Protocol (WAP) resolution to address   (4 marks)
the limitations in early days of mobile devices adaptation in wireless networks.

2

QUESTION 3

a) Describe traditional client-server model. (2 marks)

b) Illustrate mechanism for server data dissemination. (6 marks)

c) Define and describe mobile data access in mobile computing. (3 marks)

d) List and briefly describe **THREE (3)** extended client-server model architecture in mobile network environment. (6 marks)

e) Discuss the **THREE (3)** challenges of client cache management in mobile computing. (6 marks)

QUESTION 4

a) Define the used of Scaffold widget in Flutter. (2 marks)

b) Explain the purpose of the `main.dart` file in a Flutter application. (3 marks)

c) Answer the question based on diagram in Figure 1.

```
import 'package:flutter/material.dart';
void main() {
  runApp(MaterialApp(
    home: TextFieldScreen(),
  ));
}

// Main widget for the text field example
class TextFieldScreen extends StatefulWidget {
  @override
  _TextFieldScreenState createState() => _TextFieldScreenState();
}

class _TextFieldScreenState extends State<TextFieldScreen> {
  final TextEditingController _controller =
TextEditingController();

  @override
  void dispose() {
    _controller.dispose();
    super.dispose();
  }

  void _showValue() {
    showDialog(
      context: context,
      builder: (context) {
        return AlertDialog(
          content: Text(_controller.text),
        );
      },
    );
  }
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Text('TextField Example'), // Title of the AppBar
      ),
      body: Padding(
        padding: const EdgeInsets.all(16.0),
        child: Column(
          children: <Widget>[
            TextField(
              controller: _controller,
              decoration: InputDecoration(
                  labelText: 'Enter something'), // Label text for
the TextField
            ),
            SizedBox(height: 20), // Spacer between TextField and
ElevatedButton
            ElevatedButton(
              onPressed: _showValue,
              child: Text('Show Value'),
            ),
          ],
        ),
      ),
    );
  }
}
```

Figure 1

4

(i)   Predict what the output for the program in Figure 1.   (3 marks)

(ii)   Illustrate the output (user interface) you justify in question (i).   (2 marks)

d) Given the incomplete code in Figure 2. Complete the code based on the requirements in (i) and (ii):

```
import 'package:flutter/material.dart';


void main() {
  runApp(MaterialApp(
    home: TabBarDemo(),
  ));
}



// CODE FOR QUESTION (i)
/*


*/
//CODE FOR QUESTION (ii)
/*


*/
```

Figure 2

i.   Write the code to set up a **StatelessWidget** in Flutter that includes a   (6 marks)
     DefaultTabController with a length of 3, and a **Scaffold** containing an
     AppBar with a **TabBar** of three tabs, each represented by different
     icons. Provide the code for this part of the **TabBarDemo** widget.

ii. Given the **TabBar** setup with three tabs in the **AppBar**, implement the
     body of the **Scaffold** to display different content for each tab using a   (3 marks)
     TabBarView. Each tab should show an icon corresponding to its
     TabBar icon. Provide the code to complete the **TabBarDemo** widget.

QUESTION 5

a)   Read the news below and answer the following questions:

#TECH: Employers eyeing candidates with AI skills
By Nur Najlaa Mohd Rahmat - June 19, 2024 @ 4:27pm

COMPANIES nowadays are more inclined to hire candidates with artificial intelligence (AI) skills, even if they have less working experience than candidates who have fewer AI skills.

A comprehensive report titled 'Work Trend Index 2024' — based on a survey of 31,000 individuals across 31 countries — LinkedIn's labour and hiring trends, as well as insights from Microsoft 365 indicates a significant rise in AI usage among employees in Malaysia.

The report highlights a dramatic shift in hiring practices, with 65 per cent of Malaysian leaders preferring candidates with AI skills over more experienced candidates without them.

The trend reflects the growing recognition that AI competency is essential in the modern workplace.

For competitive edge

LinkedIn's head of sales for emerging markets in Southeast Asia, Rohit Kalsy, said in an era of rapid changes in the talent landscape, leaders who focus on agility and invest in skills development to create an AI-ready workforce will gain a competitive edge.

"As Malaysia experiences a significant transformation in the workplace driven by AI, businesses are recognising the necessity for a new talent strategy.

"Sixty-two per cent of business leaders would not hire someone without AI skills, while 65 per cent would rather hire someone less experienced but with AI skills rather than someone without.

"AI mentions in LinkedIn job posts drive a 17 per cent bump in application growth."

Rohit added that there was a staggering 142-fold increase in AI-related skills and projects mentioned in resumes, which reflects the accelerating adoption of AI tools such as ChatGPT and Copilot that have become integral to various professional fields.

Moreover, a notable 84 per cent of Malaysian workers are already using AI to streamline tasks, enhance creativity and improve efficiency compared with the global average of 75 per cent, according to the report.

Reducing work burden

Microsoft Malaysia managing director K. Raman said the amount of work has increased post Covid-19, leading to a higher demand for productivity tools.

"This adoption is crucial in addressing the issue of job burnout, with 77 per cent of employees reporting feeling overwhelmed by their workload.

"AI tools help alleviate this burden by saving time and allowing employees to concentrate on more impactful tasks, thus enhancing job satisfaction and retention.

"Generative AI is not just about automation, it's about augmentation."

However, Raman said despite the enthusiasm for AI, many Malaysian organisations lack a coherent AI strategy.

He said while 88 per cent of leaders acknowledge the necessity of AI for maintaining competitiveness, 66 per cent express concerns over their company's lack of a clear AI vision.

"This gap has prompted employees to take matters into their own hands, with 83 per cent bringing their own AI tools to work in a trend termed 'Bring Your Own AI'"

"This independent approach, however, risks missing out on the strategic benefits of AI and exposes companies to potential data security issues.

"It's essential for employers to provide training that empowers employees to use AI responsibly and effectively, ensuring that the benefits of AI are maximised while mitigating potential risks."

Raman added that a company culture which encourages experimentation and embraces change is essential for successful AI integration.

"Senior leadership must actively endorse and lead AI transformation efforts.

"A change-ready culture that fosters innovation and learning is the backbone of successful AI adoption."

Source: #TECH: Employers eyeing candidates with AI skills (nst.com.my)

i)   In your opinion, justify **FOUR (4)** essential artificial intelligence skills that   (8 marks)
     future candidates should possess before being hired by companies.

ii) "As Malaysia experiences a significant transformation in the workplace   (10 marks)
     driven by AI, businesses are recognizing the necessity for a new talent
     strategy". Elaborate on **FIVE (5)** strategies that the business should
     implement to attract and acquire talent with AI skills.

---End of question---