



**Institute of Information Technology**  
Jahangirnagar University  
Professional Masters in IT

1<sup>st</sup> Trimester Final Examination, Fall 2022

Intake: Summer & Fall, 2022

Duration: 3 Hours

Full Marks: 60

Course Code: PMIT 6111

Course Title: Software Testing & Quality Assurance

There are 07 (Seven) questions. Answer any **5 (Five)** of them.  
Figures in the right margin indicate marks.

1.
  - a) Draw the sprint. What are the basic parts of Scrum? 2+2
  - b) Mention the agile manifesto. What was the motivation behind this manifesto? 4
  - c) What is sprint zero? Mention the practice of tester in agile testing. 4
2.
  - a) After modifying a code for error correction which testing you have to apply for rechecking the rest of the code? How this testing works? 3
  - b) Who should test the software? 3
  - c) Draw the Agile Testing Quadrants. 3
  - d) Draw the acceptance testing. 3
3.
  - a) Show the levels of testing. 3
  - b) Suppose you have to test all individual module of any software system. Which testing strategy you should follow? Explain with example. 4
  - c) Identify the following types of testing: 1×5=5
    - i. Testing the limits of system e.g. maximum number of users, peak demands, extended operation.
    - ii. Test the various software and hardware configurations
    - iii. Exercise all input and output parameters of each component, all components and all calls (each component is called at least once and every component is called by all possible callers.)
    - iv. Conducted at sponsor's site (developer is not present) and software gets a realistic workout in target environment.
    - v. The initial testing process exercised to check whether the software under test is ready/stable for further testing.
4.
  - a) Find out if there is any system requirement in the user requirement given below: 3  
"Student Information System" should provide list of students enroll in each semester"
  - b) Why equivalence partitioning and boundary value analysis should be used together? Explain with an example. 4
  - c) Draw a state transition table for a scenario where a user tries to log in to another session while being logged into another session already. 3
  - d) When should we follow experience-based techniques testing? 2



5. a) Find the test case point form the following table. To complete the testing within 21 person months how many TCPs should be done in a month? What would be total cost if monthly cost is 50,000/-

Test Case Complexity	Number of Test Case	Adjustment Factor
Simple	50	1
Avarage	30	2
Complex	20	3

- b) Why we need business analyst in the project? 3
- c) Identify the types of risk, probability and effect of the risks: 1×5=5
- i. Organizational financial problems force reductions in the project budget.
  - ii. Key staff are ill at critical times in the project.
  - iii. Changes to requirements that require major design rework are proposed.
  - iv. The time required to develop the software is underestimated.
  - v. The code generated by software code generation tools is inefficient.
6. a) Write the quality management activities. Show how development process and quality management process works together. 2+2
- b) Mention the problems of quality management for software. For any real-time chatting software what would be the quality conflicts? 2+2
- c) Mention some product and process standard. Write core process of ISO 9001 standard. 2+2
7. a) Suppose there are 70 licensed copies of any application has installed within 3 months. Customers has reported 800 problem during this period. The FP = 40 and true defect identified is 540; total closed defects = 456, defects closed within responses time = 444. 2×4=8
- i. Find PUM.
  - ii. Find defect density
  - iii. Find BMI
  - iv. Find Percent delinquent fixes
- b) Mention the quality factors in McCall's factor model. How correctness can be calculated? 2+2





**Professional Masters in Information Technology (PMIT)**  
**Institute of Information Technology**  
**Jahangirnagar University**  
**PMIT Final Examination (Fall 2022)**

**Course Code:** IT-6113  
**Marks:** 60

**Course Title:** Mobile Application Development  
**Time:** 3 Hours

Answer any **FIVE** questions

**(All parts of a particular question must be answered consecutively)**

- 1 (a) Android is an OS, an open source and a platform - explain why? 4  
(b) Draw the Android architecture and write the main component used an Android application. 4  
(c) What is for screen orientation in Android? 2
- 2 (a) What is for AndroidManifest.xml file? Write necessary code for AndroidManifest.xml. 4  
(b) Make a list of Android features with their functions. 4  
(c) What is for: 2  
    `android:textColor="#0832ca"`  
    `android:textSize="30sp"`
- 3 (a) What is Open Handset Alliance (OHA) and what is its purpose? 4  
(b) Sketch the Android App/Project Folder Structure. 4  
(c) Differentiate between: 2  
    TextView and ScrollView
- 4 (a) What is Android Layout? Briefly describe different types of Layout with respective diagram. 4  
(b) What is Android Intent for, and how many types of Intent are? 4  
(c) Differentiate between Linear and Relative Layout? 2
- 5 (a) How to create "menu" in Android, what are the different items of "menu"? 4  
(b) Which method is used to handle item click event for popup menu (onMenuItemClick())? 4  
(c) How to call the method "MenuInflater.inflate()" for "menu"? Write the code. 2
- 6 (a) Which method is used to handle item click event for context menu (onContextItemSelected())? 4  
(b) Explain the activities of NotificationCompat, PendingIntent and Notificationmanager methods. 4  
(c) Write a simple code of Zoom In and Zoom Out for Animation. 2
- 7 (a) How many callback methods are in android? Explain their behavior at different stages in Android. 5  
(b) Sketch the entire, visible and foreground lifetimes of android activity or fragment transition during execution. 5



Institute of Information Technology  
Jahangirnagar University  
Professional Masters in IT

Final Examination  
Duration: 3 Hours  
Course Code: PMIT 6217

Semester: First Semester  
Full Marks: 60  
Course Title: Wireless Network

**Do not write anything on the question paper.**  
There are 7 **(Seven)** questions. Answer any 5 **(Five)** of them.  
Figures in the right margin indicate marks.

1. a) "There is continuous flow of energy from electrical field to the magnetic field." Explain the statement 4  
b) "FDMA wastes bandwidth", How? Explain. Do you agree "TDMA is a complimentary access technique to FDMA"? If you agree then show your logic. 4  
c) Mention some open research topics and explain two of them 4
2. a) Explain **IrDA and Zigbee** technologies 4  
b) Access points can serve a varying number of computers using DHCP. 4  
c) In the GSM800 digital channelized cellular system, the one-way bandwidth of the system is 12.5 MHz. The RF channel spacing is 200 kHz. Eight users share each RF channel and three channels per cell are used for control channels. Calculate the spectral efficiency of modulation (for a dense metropolitan area with small cells) using the following parameters: 4
  - Area of a cell =  $8 \text{ km}^2$
  - Total coverage area =  $4000 \text{ km}^2$
  - Average number of calls per user during the busy hour = 1.2
  - Average holding time of a call = 100 seconds
  - Call blocking probability = 3%
  - Frequency reuse factor = 7
3. a) Hand-off Provides continuity of communication across cells. Explain the statement. Why should we provide a higher priority to handoff calls? 4  
b) Explain Spread spectrum multiple access (SSMA). When a user will experience "near-far" problem for SSMA? How can it be mitigated? 4  
c) Define Cell Capacity of a TDMA System. Now calculate the capacity and spectral efficiency of a TDMA system using the following parameters: bandwidth efficiency factor  $\eta_b = 0.9$ , bit efficiency (with QPSK)  $\mu = 2$ , voice activity factor  $v_f = 1.0$ , one-way system bandwidth  $B_w = 12.5 \text{ MHz}$ , information bit rate  $R = 16.2 \text{ kbps}$ , and frequency reuse factor  $N = 19$ . 4
4. a) What is **linear-feedback shift register**? Draw a 4-bit Fibonacci LFSR. 4  
b) Draw the Flow Chart of CSMA/CD-Algorithm 4  
c) OFDM offers many advantages over single-carrier modulations. mention those advantages 4





5. a) Show the graph for the probability that a transmitted bit is received in error at the receiver—versus the SNR for three different modulation techniques BPSK QAM16 and QAM 256
- b) What do you mean by Multipath propagation? How does it cause harmful interference to the signal? Explain with generating environment for urban area. 4
- c) Explain frequency reuse pattern. For a hexagonal geometry, evaluate the co-channel reuse ratio is:  $q = \sqrt{3N}$ . 4
6. a) "Hybrid **Modulation** systems exist where two characteristics are changed with each new symbol transmitted" Explain with example 4
- b) Draw a baseband OFDM transmission model. Proof the statement "When integrating received power over one symbol period,  $T_u$ , the output of the correlators is zero for any combination, except when  $k = q$ " 4
- c) If a normal GS time slot consists of 6 trailing bits, 825 guard bits, 26 training bits, and 2 traffic bursts of 58 bits of data, find the frame efficiency 4
7. a) Calculate S/I ratio for Worst case scenario in three sectors when cluster size  $N=7$  and  $N=12$  4
- b) A city has total population of 5,00,000. A network planar found the behavior of users of the city like: they generate 3 calls/hour with average holding time of 2 minutes. The service provider got the license of BW that can support 36 carriers of GSM. Determine number of sectors of 3/9 cell pattern maintaining GoS of 5%. 4
- c) Explain the Destination-Sequenced Distance Vector (DSDV) Packet Process Algorithm with example. 4



# Institute of Information Technology

Jahangirnagar University

Professional Masters in IT

1st Semester Final Examination, Fall 2022

Duration: 3 Hours

Intake: Fall 2022, Summer 2022

Full Marks: 60

Course Code: PMIT - 6307

Course Title: Data Mining and Knowledge Discovery

Do not write anything on the question paper.

There are 7 (Seven) questions. Answer any 5 (Five) of them.

Figures in the right margin indicate marks.

[Follow the question order]

1. a) Define the term "Data Mining" and give an example where human always use data mining techniques. 4  
b) What are the difference between classification and clustering? 4  
c) In the real life, where do you use association rule? 4
2. a) If you have number data i.e. income, you have to standardize them. Write the process of it. 4  
b) For ordinal and nominal data, how do you calculate dissimilarity for a single attribute? 4  
c) In what aspect, you may like decision tree classification? 4
3. a) How a tree-based classification works? What are the advantages of tree-based classification? 4  
b) Suppose you have two variables (Gender and Marital status) to select one in constructing a tree. 4

Gender	Marital	Class
M	M	Good
M	U	Bad
M	M	Good
F	U	Bad
F	U	Bad

Gender	Marital	Class
M	U	Good
M	U	Bad
F	M	Good
M	M	Good
F	U	Bad

- Which variable you should select? Use Gini coefficient or entropy to give your answer.
- c) Define the terms: True positive and False Negative and F-measure 4
  4. a) When do we use learning curve and ROC curve? 4  
b) Explain the Ensemble Method of classification. 4  
c) What is OLAP? Why do researcher use Slicing and Dicing in data analysis? 4

5. a) What are the steps of KNN classification? 4  
b) Why do the most researchers prefer SVM classification? 4  
c) If you have a nominal attribute which has 3 categories and for binary tree classification you have to merge any two categories. Which two will you merge? 4
6. a) Define hierarchical clustering and give an example of this clustering where it is the most useful technique. 4  
b) What are the different types of clustering? 4  
c) Write some limitations of k-means clustering. How can you overcome these limitations? 4
7. a) What is the basic principle of DBSCAN clustering? Write the usefulness of this clustering. 4  
b) Explain with a pictorial example of Core Point, Noise Point and Border Point. 4  
c) The distance of k-th neighbor of data points are almost equal” – explain this comment. 4