



# ARKA JAIN University, Jharkhand

3rd Semester Final Examination – 2018-19

Subject: JAVA PROGRAMMING

Course: MCA

Full Marks: 70

Time: 3 Hours

Pass Marks: 28

- Candidates are required to give their answers in their own words as far as practicable.
- Question Paper is divided into **Three Parts –A, B & C**
- **Part-A** is compulsory.
- **Part- B** contains **SIX** questions out of which **FOUR** questions are to be answered.
- **Part- C** contains **SIX** questions out of which **THREE** questions are to be answered.

## PART A

Q.1) all questions are compulsory

A] Multiple Choice Questions:

(10x1=10)

- a) Which of these methods delete all the elements from invoking collections short data type in Java?
- i) clear( )
  - ii) reset( )
  - iii) delete( )
  - iv) refresh ( )
- b) Which of this keyword must be used to inherit a class?
- i) super
  - ii) this
  - iii) extent
  - iv) extends
- c) Which method can be defined only once in a program?
- i) main method
  - ii) finalize method
  - iii) static method
  - iv) private method
- d) Which component is used to compile, debug and execute java program?
- i) JVM
  - ii) JDK
  - iii) JIT
  - iv) JRE
- e) Interface can only have ...
- i) Member elements and Methods.
  - ii) Static Variables and Static Methods.
  - iii) Static Final Variables and Instance Method Declarations.
  - iv) Member Elements, Instance Methods, Static variables and Static Methods.

f) What is the initial state of a thread when it is created and started ?

- i) Wait
- ii) Running
- iii) Ready
- iv) Sleep

g) What is the size of long data type ?

- i) 16 bit
- ii) 32 bit
- iii) 64 bit
- iv) 128 bit

h) Which is of the following is NOT TRUE for JVM ?

- i) JVM reads Byte Code and generates Machine Code.
- ii) JVM is a virtual Machine that acts as a intermediary between Java Application and Host Operating System.
- iii) JVM reads Source Code and generates Byte Code.
- iv) JVM acts as a translator that translates different Machine code ( on the basis of Host Machine ) for a common Byte Code.

i) Which of these data type can be used for a method doesn't return statement in it?

- i) void
- ii) int
- iii) float
- iv) both int and float

j) Which of the following will produce a value of 10 if  $x = 9.7$ ?

- a) floor(x)
- b) abs(x)
- c) rint(x)
- d) round(x)

**B] Very Short question**

**(5x2=10)**

- i) What is object?
- ii) What do you mean by protected modifier?
- iii) What is final keyword?
- iv) What is linked list?
- v) What is byte code?

## PART B

**Q2. Answer any four:**

**(4x5=20)**

- i) What are the features of Java programming Language?
- ii) What do you mean by Inheritance? What are its types?
- iii) What do you mean by Constructor? Explain its types.
- iv) What do you mean by function overloading? How it is different from function overriding?
- v) Discuss the difference between AWT and SWING?
- vi) What are the data types used in Java?

## PART C

**Answer any three:**

**(3x10=30)**

**Q.3)** What do you mean by Thread? What is the life cycle of a thread? Explain in detail

**Q.4)** What is Swing? What the components of Swing? Explain with example.

**Q.5)** What do you mean by JDDBS? What are its advantages? Explain different drivers of JDDBS.

**Q.6)** What do you mean by Servlet? What are the advantages of using Servlet? How it is different from CGI?

**Q.7)** What do you mean by Life cycle of a Servlet? Explain in detail.

**Q.8)** What is JSP Technology? What are the advantages of JSP over Servlet? Explain JSP Architecture.



1-c-x

Subject : RDBMS

Course: MCA

Time : 3 Hours

Full Marks : 70

Pass Marks: 28

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PART A

Q.1) All questions are compulsory

**A] Multiple Choice Questions :**

(10x1=10)

- a) A Primary key is?
- Is referred as Composite key
  - Uniquely identifies data in row
  - Uniquely identifies data in column
  - Accompanied by a Foreign key
- b) E-R Model uses symbol to represent weak entity set?
- Dotted Rectangle
  - Double outlined rectangle
  - Diamond
  - None of these
- c) In E-R Model DIAMOND represents?
- Entity set
  - Relationship
  - Attributes
  - Links
- d) The following entities/ Attributes in a relational database does not have null values?
- Keys
  - Variables
  - Relationships
  - All of these
- e) A table that yields data redundancy includes?
- Insertion Anomaly
  - Deletion Anomaly
  - Updation Anomaly
  - All
- f) The association of several entities in an ER model is called?
- Tuples.
  - Relationships.
  - Records.
  - Fields.

- g) The primary key must be?  
 i) Not Null  
 ii) Unique  
 iii) Both of these  
 iv) None of these
- h) The schema for Hierarchical data base is?  
 i) Tree  
 ii) Graph  
 iii) B tree  
 iv) All of these
- i) The data model which describes how data is stored is called?  
 i) Internal Model  
 ii) External Model  
 iii) Logical Model  
 iv) All of these
- j) Data about Data is normally called ?  
 i) Directory  
 ii) Data bank.  
 iii) Meta data.  
 iv) None

**B] Very Short question**

(5x2=10)

- a) What is Entity and Attribute?  
 b) Write notes on Entity Integrity?  
 c) What are the advantages of DBMS ?  
 d) What is degree of Relationship set?  
 e) What is Total participation in E-R Model?

**PART B**

**Q2. Answer any four:**

(4x5=20)

- i) With example explain strong and weak entities.  
 ii) Explain any 4 types of attributes in ER model with an example  
 iii) What are keys? What is primary, Foreign key?  
 iv) What is an entity type, and an entity set? Explain the difference between relationship instance and a relationship type .  
 v) What is Aggregation? Explain it with E-R diagram?  
 vi) Explain Hierarchical Database Model.



Answer any three:

(3x10=30)

Q.3) What is Closure of Attribute. Explain 'about Closure of Set of Functional Dependency with Proper Examples from each)

Q.4)  $R = \{A, B, C, D\}$   $F = \{A \rightarrow BC, B \rightarrow C, A \rightarrow B, AB \rightarrow C\}$ . Minimize set of FDs.

Q.5) What is 2NF. Explain with Example .

Q.6) Explain Static, Extendable and Linear Hashing..

Q.7) The elements given are : 2, 4, 7, 10, 17, 21, 28. Order=4. Construct B+ tree.

Q.8) What is Transaction management in DBMS. Explain ACID Property.

Multiple Questions

Marks: 1x10=10

1. The first step in Software Development Life Cycle (SDLC) is:
  - a. Preliminary investigation and Analysis
  - b. System Design
  - c. System Testing
  - d. Coding
2. The detailed study of existing system is referred to as:
  - a. System Planning
  - b. System Analysis
  - c. Feasibility Study
  - d. Design DFD
3. System analysis and design phase of Software Development Life Cycle (SDLC) includes which of the following?
  - a. Parallel run
  - b. Sizing
  - c. Specification Freeze
  - d. All of these
4. Prototyping serves as:
  - a. Aid user understanding and approval
  - b. Program logic
  - c. Planning of dataflow organization
  - d. None of these
5. What is a prototype?
  - a. Mini-model of existing system
  - b. Mini-model of the proposed system
  - c. Working model of the existing system
  - d. None of these above
6. Basic analysis of a project is done in:
  - a. System Analysis phase
  - b. Feasibility Study
  - c. Implementation phase
  - d. Maintenance phase
7. In which step of SDLC project termination should be done?
  - a. Design phase
  - b. System Maintenance phase
  - c. Feasibility Study phase
  - d. Coding phase



# ARKA JAIN University, Jharkhand

3rd Semester Final Examination – 2018-19

1-c-x

Subject : SOFTWARE ENGINEERING

Course: MCA

Full Marks: 70

Pass Marks: 28

Time: 3 Hours

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- **Part- C** contains **SIX** questions out of which **THREE** questions are to be answered.

## PART - A:

Multiple Questions.

Marks 1x10=10

1. The first step in Software Development Life Cycle(SDLC) is
  - a. Preliminary investigation and Analysis
  - b. System Design
  - c. System Testing
  - d. Coding
2. The detailed study of existing system is referred to as :
  - a. System Planning
  - b. System Analysis
  - c. Feasibility Study
  - d. Design DFD
3. System analysis and design phase of Software Development Life Cycle (SDLC) includes which of the following?
  - a. Parallel run
  - b. Sizing
  - c. Specification Freeze
  - d. All of these
4. Prototyping aims at :
  - a. end user understanding and approval
  - b. program logic
  - c. planning of dataflow organization
  - d. none of these
5. What is a prototype?
  - a. Mini-model of existing system
  - b. Mini-model of the proposed system
  - c. Working model of the existing system
  - d. None of these above
6. Risk analysis of a project is done in :
  - a. System Analysis phase
  - b. Feasibility Study
  - c. Implementation phase
  - d. Maintenance phase
7. In which step of SDLC project termination could be done ?
  - a. Design phase
  - b. System Maintenance phase
  - c. Feasibility Study phase
  - d. Coding phase

8. The fundamental objective of system analysis is to :
  - a. understand computer hardware
  - b. train managers in mathematical analysis
  - c. study and understand a complex system and modify it in some way
  - d. run simulation programmes
9. Which one of the following is not stage of SDLC?
  - a. System analysis
  - b. Problem identification
  - c. System Design
  - d. Feasibility study
10. An iterative process of system development in which requirements are converted to a working system that is continually revised through close work between an analyst and user is called
  - a. Waterfall modelling
  - b. Iterative modelling
  - c. Spiral modelling
  - d. None of these above

**PART - B:**

**Answer any five:**

**Marks 4x5=20**

1. What is the use of Testing Phase? Explain various types of testing.
2. What do you mean by system analysis? Explain the various principles of structured analysis.
3. What do you mean by testing? Explain the various testing techniques involved in it.
4. What do you mean by test case design? Differentiate between white box and black box testing in detail with the help of example.
5. What is procedural design? Explain it with the help of object oriented concepts.
6. Explain the following :
  - 6.1. Forward engineering
  - 6.2. Integration testing

**PART - C:**

**Answer any four.**

**Marks 4x10=40**

1. What are the attribute of good software? Explain the key challenges facing in software engineering.
2. What are critical systems, with its types? Explain.
3. Explain data flow model with an example of library system.
4. Explain object oriented design process with example.
5. Explain the steps involved in re-engineering process with a neat diagram.
6. Define validation and verification and explain two complementary approaches checking and analysis.
7. Explain software development process with diagram.





# ARKA JAIN University, Jharkhand

3rd Semester Final Examination – 2018-19

Subject: Computer Network

Course: MCA

Full Marks: 70

Pass Marks: 28

Time: 3 Hours

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- Question Paper is divided into **Four Parts –A, B, C & D**
- **Part-A** is compulsory.
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- **Part-D** is compulsory

## PART A

Q1.) All questions are compulsory:-

### A] Objective Answer Type

(5x1=5)

i) Videoconferencing is an example for communication

- a) Simplex
- b) Half duplex
- c) Full duplex
- d) serial

ii) Router operates in which layer of OSI Reference Model?

- a) Layer 1 (Physical Layer)
- b) Layer 3 (Network Layer)
- c) Layer 4 (Transport Layer)
- d) Layer 7 (Application Layer)

iii) 1 Each IP packet must contain

- a) Only Source address
- b) Only Destination address
- c) Source and Destination address
- d) Source or Destination address

iv) Data communication system within a building or campus is

- a) LAN
- b) WAN
- c) MAN
- d) None of the mentioned

v) Which of the following protocol is/are defined in Transport layer? A.

- a) FTP
- b) TCP
- c) UDP
- d) B & C

**B] Short Answer Type**

**(5x2=10)**

- i) What is a digital signature?
- ii) What are the limitations of firewalls?
- iii) What is DoS attack?
- iv) What is database encryption?
- v) What is SET.

**PART B**

**Q2.) Answer any four:**

**(4x5=20)**

- i) What is Nyquist theorem?
- ii) What are the modes of communication?
- iii) What is Telnet?
- iv) What is ARP & ARAP?
- v) What is DNS?
- vi) What is router?

**PART C**

**Answer any Three:**

**(3x10=30)**

**Q3.) a) Explain the different topologies of the network.**

**b) Explain the TCP/IP model?**

**Q4.) Explain in brief:**

**a) Brouter b) Gateway c) HTTP d) FTP**

**Q5.) a) Explain the Congestion Control, TCP's Congestion Control.**

**b) What is the Quality of Service? Explain Queue Analysis & its Mechanisms.**

**Q6.) a) What is digital communication? Explain how to propagate the signal?**

**b) What is Signal? Explain its various types.**

**Q7.) What are the internet protocols? Explain IPV4 & IPV6.**

**Q8.) Discuss about ATM in detail?**

**PART D**

**Q9.) Explain each & every layer of ISO/OSI reference model in detail with proper diagram.**

**(5x1=5)**



# ARKA JAIN University, Jharkhand

3rd Semester Final Examination – 2018-19

Subject: IS

Course: MCA

Full Marks: 70

Pass Marks: 28

Time: 3 Hours

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- **Part-A** is compulsory.
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- **Part- C** contains **SIX** questions out of which **THREE** questions are to be answered.
- **Part-D** is compulsory

## PART A

Q1.) All questions are compulsory:-

A] Objective Answer Type

(5x1=5)

- IPSec is designed to provide the security at the
  - transport layer
  - network layer
  - application layer
  - session layer
- In tunnel mode IP sec protects the
  - Entire IP packet
  - IP header
  - IP payload
  - None of the mentioned
- Network layer firewall works as a
  - frame filter
  - packet filter
  - both frame filter and packet filter
  - none of the mentioned
- An attempt to make a computer resource unavailable to its intended users is called
  - denial-of-service attack
  - virus attack
  - worms attack
  - botnet process
- Pretty good privacy (PGP) is used in
  - browser security
  - email security
  - FTP security
  - none of the mentioned

**B] Short Answer Type**

(5x2=

- i) What is a digital signature?
- ii) What are the limitations of firewalls?
- iii) What is DOS attack?
- iv) What is database encryption?
- v) What is SET.

**PART B**

**Q2.) Answer any four:**

(4x5=20)

- i) Compare symmetric and asymmetric key cryptography.
- ii) Discuss about Biometric Authentication.
- iii) What are different cryptographic algorithms used?
- iv) What is a Firewall? Explain its design principles and types with example.
- v) Discuss the different types of firewall systems.
- vi) What is Secure Socket Layer? Explain.

**PART C**

**Answer any Three:**

(3x10=30)

- Q3.) a) What is Intrusion? Discuss Intrusion detection system with neat diagram.  
b) Discuss the need of Secure Socket Layer.
- Q4.) a) Write a short note on firewall design principles and types of firewalls.  
b) Discuss in detail about secure electronic transaction.
- Q5.) a) Explain RSA algorithm with suitable examples.  
b) Write a short note on Kerberos.
- Q6.) a) Explain IP-security.  
b) Give an example to explain the concept of transposition ciphers in detail.
- Q7.) Give a neat sketch to explain the concept of Secured Hash Algorithm (SHA) & explain.
- Q8.) Write short notes on XML, SOAP, WSDL and UDDI.

**PART D**

**Q9.) Explain EBC, CBC, OFB & CFB secret key cryptography.**

(5x1=5)



# ARKA JAIN University, Jharkhand

3rd Semester Final Examination – 2018-19

1-07

Subject: RESEARCH METHODOLOGY

Course: MCA  
Full Marks : 70  
Pass Marks: 28

Time : 3 Hours

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- Question Paper is divided into **Three Parts –A, B & C**
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## PART A

Q.1) All questions are compulsory

### A) Multiple Choice Questions :

(10x1=10)

1. Variables are located in
  - a. Research design
  - b. Objectives
  - c. Hypothesis
  - d. Questionnaire
2. A variable is
  - a. Measureable
  - b. Objective
  - c. Subjective
  - d. Statement
3. Sampling is not possible in
  - a. Doctrinal research
  - b. Non-doctrinal research
  - c. Experimental research
  - d. None in the above
4. Sampling is a requirement of
  - a. Objectivity
  - b. Methodology
  - c. Research
  - d. Subjectivity
5. Quota sampling is a type of
  - a. Probability sampling
  - b. Random sampling
  - c. Non probability sampling
  - d. Non random sampling
6. Null hypothesis is stated in
  - a. Question
  - b. Statement
  - c. Negative statement
  - d. Positive statement
7. Quality of measurement procedure that provides repeatability and accuracy is called
  - a. Validity
  - b. Scientificity
  - c. Reliability
  - d. Authenticity

8. An independent variable is the presumed \_\_\_\_\_ of the dependent variable
  - a. Factor
  - b. Cause
  - c. Source
  - d. Point
9. A research which follows case study method is called
  - a. Clinical or diagnostic
  - b. Casual
  - c. Analytical
  - d. Qualitative
10. A research report is a formal statement of
  - a. Research Process
  - b. Research Problem
  - c. Data Collection
  - d. Data Editing

(5x2=10)

**B] Very Short question**

11. What do you mean by research?
12. What is data collection?
13. What do you mean by Qualitative Research?
14. What is Hypothesis?
15. What is Random Sampling?

**PART B**

(4x5=20)

**Q2. Answer any four:**

1. Explain difference between research method and research methodology.
2. Briefly describe the different steps involved in a research process.
3. Explain the layout of research report.
4. Explain the meaning and significance of research design.
5. Distinguish between Cluster and Sampling.
6. Describe the sampling design process.

**PART C**

(3x10=30)

**Answer any three:**

1. "We can teach methods of analysis, yet any extensive research... requires something equally important: an organization or synthesis which provides the essential structure into which the pieces of analysis fit." Examine this statement show how a good research report may be prepared.
2. "It is only through interpretation the researcher can expose the relation and process that underlie his findings." Explain by giving example
3. What is a hypothesis? What characteristics it must possess in order to be a good research hypothesis?
4. Design a Questionnaire to study Customer's Satisfaction towards services provided by State Bank of India. (Make necessary assumptions)
5. "It is never safe to take published statistics at their face value without knowing their meaning and limitation". Elucidate this statement by enumerating and explaining the various points which you would consider before using any published data.
6. "Empirical research in India in particular creates so many problems for researchers." State the problems that are usually faced by such researchers.