Subject : Software Engendering

Time: 3 Hours

Course: MCA
Full Marks: 70
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** Contains **SIX** questions out of which **FOUR** questions are to be answered. Each has caring five Marks.
- **Part- B** contains **FIVE** questions out of which **THREE** questions are to be answered. Each has caring TEN Marks.
- **Part- C** contains **ONE** question to be answered, caring 20 Marks.

PART A
[Short Question Answers (5 x 4 = 20)]

Q.1 What is Software Engineering?

Q.2 Define Verification &Validation.

Q.3 What is meant by feasibility study?

Q.4 Why modularity is important in data dictionary?

Q.5 What is coupling?

Q.6 What is Regression Testing?

PART B
[Long Question Answers (10 x 3 =30)]

Q.1 Explain Waterfall Model. What are the problems that are sometimes encountered when the waterfall model is applied?

Q.2 What do you understand by the term top-down decomposition in the context of function-oriented design? Explain your answer using a suitable example.

Q.3 What is software prototyping? What are the various prototyping methods and tools?

Q.4 What are the common characteristics of design methods?

Q.5 Write a note of
 a. Black box testing
 b. Regression testing
 c. White box testing
 d. Integration testing

PART C
[Compulsory Question Answers (10 x 2 =20)]

Q.1 Consider a project to develop a full screen editor. The major components identified are (1) screen edit, (2) command language interpreter (3) file input and output, (4) cursor movement and (5) screen movement. The sizes for these are estimated to be 4K, 2K, 1K, 2K and 3K delivered source code lines. Use COCOMO model to determine.

 1. Overall cost and schedule estimates (Assume vales for different cost drivers, with at last three of them being different from (1.0).

 2. Cost and schedule estimates for different phases.

Table 3.2: Multiplier Values for Effort Calculations

Cost Drivers	RATINGS					
	Very low	Low	Nominal	High	Very high	Extra high
Product Attribute						
RELY	0.75	0.88	1.00	1.15	1.40	—
DATA	—	0.94	1.00	1.08	1.16	—
CPLX	0.70	0.85	1.00	1.15	1.30	1.65
Computer Attributes						
TIME	—	—	1.00	1.11	1.30	1.66
STOR	—	—	1.00	1.06	1.21	1.56
VIRT	—	0.87	1.00	1.15	1.30	—
TURN	—	0.87	1.00	1.07	1.15	—
Personnel Attributes						
ACAP	1.46	1.19	1.00	0.86	0.71	—
AEXP	1.29	1.13	1.00	0.91	0.82	—
PCAP	1.42	1.17	1.00	0.86	0.70	—
VEXP	1.21	1.10	1.00	0.90	—	—
LEXP	1.14	1.07	1.00	0.95	—	—
Project Attributes						
MODP	1.24	1.10	1.00	0.91	0.82	—
TOOL	1.24	1.10	1.00	0.91	0.83	—
SCED	1.23	1.08	1.00	1.04	1.10	—

Table 3.4: Effort and Schedule fractions occurring in each phase of the lifecycle [SAGE90].

Mode & Code Size	Plan & Requirement	System Design	Detail Design	Module Code & Test	Integration and Test
Lifecycle Phase Value of μ_p					
Organic Small S≈2	0.06	0.16	0.26	0.42	0.16
Organic Medium S≈32	0.06	0.16	0.24	0.38	0.22
Semidetached Medium S≈32	0.07	0.17	0.25	0.33	0.25
Semidetached Large S≈128	0.07	0.17	0.24	0.31	0.28
Embedded Large S≈128	0.08	0.18	0.25	0.26	0.31
Embedded Extra Large S≈320	0.08	0.18	0.24	0.24	0.34
Lifecycle Phase Value of τ_p					
Organic Small S≈2	0.10	0.19	0.24	0.39	0.18
Organic Medium S≈32	0.12	0.19	0.21	0.34	0.26
Semidetached Medium S≈32	0.20	0.26	0.21	0.27	0.26
Semidetached Large S≈128	0.22	0.27	0.19	0.25	0.29
Embedded Large S≈128	0.36	0.36	0.18	0.18	0.28
Embedded Extra Large S≈320	0.40	0.38	0.16	0.16	0.30

Table 3.3 : Coefficients for Intermediate COCOMO.

Project	a_i	b_i	c_i	d_i
Organic	3.2	1.05	2.5	0.38
Semidetached	3.0	1.12	2.5	0.35
Embedded	2.8	1.20	2.5	0.32

Subject: Information Security

Time : 3 Hours

Course: MCA
Full Marks: 70
Pass Marks: 28

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- **Part-A** contains **SIX** questions out of which **FOUR** questions are to be answered. Each carrying five Marks.
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- **Part- C** contains **ONE** question to be answered. Each question carrying TWENTY Marks.

PART A
[Short Question Answers(5x4=20)]

1. What do you mean by Public key and Private key ?
2. What is the use of hash function?
3. Explain Software as a service (SaaS).
4. Explain use of firewall in any organization.
5. Write short note on Digital certificates.
6. Define Availability, Confidentiality, Integrity, Non repudiation and access control.

PART B
[Long Question Answer (10x3=30)]

1. Explain various types of attack on computer system.
2. Explain the working of DES (1 round)cipher clearly mentioning the number of bits in key, subkey and plaintext box .
3. Explain the operation of Smart card and Biometric systems.
4. Explain the working of SSL and differentiate SSL from SET.
5. Explain RSA Algorithm mathematically.

PART C

[Compulsory Question Answers (2x10=20)]
1. (a) What do you mean by Authentication? Explain with real life example of token Based authentication in details.
   (b)What is Digital signature? Explain its use with the help of example.

ARKA JAIN University, Jharkhand

3rd Semester Final Examination – 2019-20

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**
- **Part-A** Contains **SIX** questions out of which **FOUR** questions are to be answered. Each has caring five Marks.
- **Part- B** contains **SIX** questions out of which **THREE** questions are to be answered. Each has caring TEN Marks.
- **Part- C** contains **ONE** question to be answered, caring 20 Marks.

PART A
[Short Question Answers (5 x 4 = 20)]

Q.1 What is a structured observation?

Q.2 What is meant by event sampling?

Q.3 What is quantitative data?

Q.4 What are the uses of regression analysis?

Q.5 What do good research hypotheses do

PART B
[Long Question Answers (10 x 3 =30)]

Q.1 Explain the difference between a lab experiment and a field experiment.
Q.2 What are the difficulties in the formulation of a hypothesis?
Q.3 Explain the problems encountered by researcher in India.

Q.4 What is item analysis, and how is it used in evaluating achievement tests?

Q.5 Explain the difference between researcher based and researcher effects.
Q.6 What is the relationship between independent and dependent variables?

PART C
[Compulsory Question Answers (10 x 2 =20)]

Q.1
a) Why are quantifiable measures preferred in most psychological research than qualitative methods?
b) What are the major steps involved in the process of construction of schedule or questionnaire?

ARKA JAIN University, Jharkhand

3rd Semester Internal Examination – 2019-20

Subject: Computer Network

Time: 3 Hours

Course: MCA
Full Marks: 70
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** contains **SIX** questions out of which **FOUR** questions are to be answered.
- **Part- B** contains **FIVE** questions out of which **THREE** questions are to be answered.
- **Part- C** contains **ONE** question to be answered, carrying 20 Marks.

PART A

Q.1) Short Question Answers

(5*4=20)

a) Why & where Nyquist-Shannon Theorem is used? Explain both.
b) State advantages and disadvantages of mesh topology with proper diagram & explanation.
c) What is the difference between switch and hub?
d) What is router, bridge & brouter?
e) Write about point-to-point protocol.
f) Differentiate between LAN, WAN & MAN.

PART B

Q.2) Long Question Answer:

(10x3=30)

a) Describe the Multicast Routing Protocols: MOSPF, DVMRP.
b) What is error detection & correction? List various methods of error detection & correction & explain any two of them.
c) Explain various transmission media.
d) Write short notes on   a) SMTP   b) MIME   c) FTP   d) DNS
e) What is the Quality of Service? Explain Queue Analysis & its Mechanisms.

PART C

Q.3) Compulsory Question Answer:

(1x20=20)

a) What is ATM? How does it work? Explain its architecture with proper diagram.

b) Explain about IPv4 with its frame architecture and various classes.

Subject: JAVA PROGRAMMING

Time: 3 Hours

Course: MCA
Full Marks: 70
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-C** is compulsory.
- **Part- A** contains **SIX** questions out of which **FOUR** questions are to be answered.
- **Part- B** contains **Five** questions out of which **THREE** questions are to be answered.

PART A

Answer any four: (4x5=20)

1) What do you mean by Inheritance? What are its types?
2) What do you mean by function overloading? How it is different from function overriding?
3) What do you mean by JDK?
4) What are the features of Java Programming?
5) What do you mean by Swing?
6) What do you mean by JSP?

PART B

7) What do you mean by JDBC Architecture? Explain JDBC divers .

8) What do you mean by Servlet? What are the advantages of using Servlet? How it is different from CGI?

9) Discuss the life cycle of an Applet.

10) Discuss the functioning of FilenputStream and FileOutputStream in Java .

11) What do you mean by Packages in Java? Explain with an example.

PART C

Answer any three: 3x10=30)

12) What do you mean by Thread? What is its significance in program? What is the life cycle of a thread? Explain in detail

Subject: Relational Database Management System

Time: 3 Hours

Course: MCA
Full Marks: 70
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** Contains **SIX** questions out of which **FOUR** questions are to be answered. Each has caring five Marks.
- **Part- B** contains **SIX** questions out of which **THREE** questions are to be answered. Each has caring TEN Marks.
- **Part- C** contains **ONE** question to be answered, caring 20 Marks.

PART A
[Short Question Answers (5 x 4 = 20)]

Q.1 What is Parallel Database?

Q.2 What is Functional Dependency.

Q.3 What is Normalization?

Q.4 What is Super key ?

Q.5 What is B+ Tree?

Q.6 What is Two phase Locking in the concept of Database Transaction ?

PART B
[Long Question Answers (10 x 3 =30)]

Q.1. Explain E-R Modelling symbols..

Q.2. Describe various Integrity rules of RDBMS...

Q.3. R(A,B,C,D,E,F)

C->F

E->A

EC->D

A->B. Find the Keys

Q.4 What is Serializability.

Q.5 What is Indexing in terms of Database..

Q.6 Explain few basic SQL Commands.

PART C

[Compulsory Question Answers (10 x 2 =20)]

Q.1

    a) Explain ACID Properties in Database Transaction. Explain the usefulness of each..

    b) Explain how concurrency can lead to inconsistency. What is a deadlock? Can it occur in a serialisable schedule? If so, give an example? How can it be detected and resolved?.