Ref IT-IT Nov

Paper / Subject Code: 88981 / Software Engineering with Project Management

T.E/sem VI/IT/choice based/10.05.19

[Time: 3 Hours] **[Marks:80]**

Please check whether you have got the right question paper.

N.B:
1. Question No 1 is compulsory.
2. Write any **three** questions out of remaining.
3. Assume suitable data If required.

Q.1
a) What is software engineering? Explain RAD model with diagram. 5
b) Explain elements of analysis model. 5
c) Differentiate between alpha testing and beta testing. 5
d) Draw a complete use case for anyone of the following activities. 5
   I. Buying a stock using an online brokerage account.
   II. Using your charge card for a meal at a restaurant.

Q.2
a) Explain agile methodology using serum with diagram. 10
b) Prepare a complete SRS for online job recruitment system. 10

Q.3
a) Explain use case based cost estimation in detail. 10
b) Draw the state chart diagram and activity diagram for ATM system. 10

Q.4
a) What is quality? Explain McCall's Quality factors. List six quality attributes for ISO 9126. 10
b) Write a short note on SCM process and explain how change control and version Control are carried out in SCM. 10

Q.5
a) Enumerate PMBOK Knowledge areas. 10
b) Define risk and explain IT project risk management processes. 5
c) Draw activity on node and activity on arrow diagram based on following activities of a project and their interrelationships shown in following table. 5

Activity	Predecessor Activity
A	-
B	-
C	A
D	A,B
E	C
F	C
G	D,E
H	F,G

Q.6

a) A project manager and team came up with the estimates as presented in table 1.1.Draw an activity on node diagram based on predecessors given, calculate expected duration for each activity and calculate and find the critical path. 1

Table 1.1: Activity Analysis for PERT

Activity	Predecessor	Optimistic Estimates (days) a	Most Likely Estimates (days) b	Pessimistic Estimates (days) c
A	None	1	2	4
B	A	3	5	8
C	B	2	4	5
D	B	2	3	6
E	B	1	1	1
F	C,D	2	4	6
G	D,E	2	3	4
H	F,G	1	2	5
I	G	4	5	9
J	H,I	0.5	1	3

b) What is a Business case? State the steps in developing the business case. 10

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TE/IT-sem VI / choice based / 22/5/19 Lib

(3 hours) [80 marks]

NOTE: Question No 1 is compulsory. Attempt any three questions from remaining.
Assume suitable data if necessary.
Draw neat labelled diagrams wherever needed.

Q.1. a) Explain the NIST cloud model. 10M

b) State the significance of hypervisors and explain type 1 and type 2 hypervisors in detail. 10M

Q.2. a) Explain the implementation levels of virtualization 10M

b) Explain the SPI cloud service model. 10M

Q.3. a) Explain the components and architecture of openstack. 10M

b) Explain Google file System in detail. 10M

Q.4. a) Differentiate between AWS S3 storage and Glacier Storage. 10M

b) What are the types of instances of Amazon EC2? Explain the AWS EC2 instance life cycle. 10M

Q.5. a) Compare AWS and openstack with respect to type of deployment, services supported and their components. 10M

b) Explain the significance of network interface, security group and ACL for Amazon VPC. 10M

Q.6. Write Short Notes on: (Any Four) 20M

a. Cloud Cube Model
b. Anything as a service
c. Benefits and challenges of mobile cloud computing
d. Virtualization Taxonomy
e. Cloud Storage Gateway
f. Cloud Watch

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(3 Hours) [80 marks]

Note: Question No.1 is compulsory
Answer any three questions out of any remaining five questions
Figures in right indicate marks
Diagrams to be drawn neatly & should be legible

Q1. a) The channel data rate is 270.833kbps in GSM standard that is 40% of theoretical maximum data rate that can be supported in a 200kHz channel bandwidth. Calculate the corresponding theoretical S/N required. [4]

b) Write in brief about WLAN technology and discuss about Hidden exposed terminal problem in WLAN. [4]

c) Explain frequency reuse concept with neat diagram and state the mechanism to calculate frequency re-use distance **q**. [4]

d) Write about the GSM logical channel hierarchy in detail. [4]

e) Discuss about UMTS 3G security with neat flow diagram. [4]

Q2.a) Write in detail the working of Reverse link CDMA system.
In an IS-95 system calculate the processing gain in dB if the baseband data rate is 9.6kbps, 4.8kbps, 2.4kbps & 1.2 kbps in rate set 1. If the error correction codes increase the data rate to 19.2kbps, recalculate the processing gain. Comment on the results obtained. [10]

Q2.b) Explain with neat diagram about DSSS technique in detail with types of spread spectrum. [10]

Q3. a) Explain the working of WEP protocol in detail with neat diagram. [10]

Q3. b) Write in detail about the need of internet firewalls for trusted system in wireless networks. [10]

Q4. a) Draw and explain the GPRS architecture in detail with neat diagram. [10]

Q4. b) Discuss and compare between MANET & VANET architecture with its applications. [10]

Q5. a) A mobile communication system is allocated RF spectrum of 25 MHz and uses RF channel bandwidth of 25 kHz so that a total numberof 1000 voice channels can be supported in the system.
i) If the cell service area is divide into 20 cells with a frequency reuse factor of A, calculate the system capacity.
ii) The cell size is reduced to the extent that the service area is now covered with 100 cells. Compute the system capacity while keeping the frequency reuse factor as 4. [10]

Q5. b) Explain in detail the working of forward link CDMA system with neat diagram. [10]

Q6. Write in detail on any **four** of the following: [20]

a) UMTS Architecture
b) wireless sensor network architecture
c) Bluetooth architecture
d) A 5/1 of GSM architecture
e) WPAN 802.15.1 standard

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TE (IT) Sem VI Choice Based (DLOC) - 03/05/19

(3 Hours) **Marks: 80**

Note: 1) Question 1 is compulsory.
2) Attempt any three from remaining Questions.
3) Assume suitable data wherever necessary.
4) Figure indicates marks.

Q1. A) Describe the steps involved in ethical hacking. [05]

B) What is Digital Forensics? Explain types of Digital Forensics? [05]

C) Discuss the challenges in Web Application Forensics? [05]

D) Explain how to use the routers as response tools? [05]

Q2. A) Describe the incident response methodology in detail. [10]

B) Discuss in detail Ethics in Digital Forensics. [10]

Q3. A) What is digital evidence? Explain in detail types of digit evidences? [10]

B) Explain in detail collecting Volatile and Non-Volatile Data in Unix-Based Systems. [10]

Q4. A) Describe in detail Investigating Web Browsers. [10]

B) Discuss in detail Partitioning and Disk Layouts. [10]

Q5. A) What is Intrusion Detection systems? Explain in detail types of IDS. [10]

B) List and explain different types of computer forensic tools. [10]

Q6. Write Short notes [20]
a) Challenges for Evidence Handling.
b) Live Data Acquisition
c) RAID
d) Analyzing Network Traffic

TE (IT) Sem VI Choice Based (DLOC) - 03/06/19

(3 hours) **Total Marks: 80**

N.B. (1) Question no. **1** is **compulsory.**
(2) Attempt any **three** out of remaining **four** questions.
(3) **Figures** to the **right** indicate **full** marks.

Q.1 Attempt any **Four** out of **Five** questions

a. What is green IT? Explain with green IT dimensions. **5**
b. What is sustainable software? Explain attributes of software sustainability. **5**
c. What are the various energy management techniques for hard disk? **5**
d. What is Life Cycle Assessment? Explain 4 stages of LCA. **5**
e. Explain SITS value curve in SITS strategic framework. **5**

Q.2 a. Explain life cycle of a device or hardware in detail. **10**
b. What are the key elements of data centre IT infrastructure? **10**

Q.3 a. Explain sustainable software methodologies. **10**
b. What are the various energy saving software techniques? **10**

Q.4 a. What are the various business drivers for green IT strategies? **10**
b. Explain sustainable IT roadmap. **10**

Q.5 a. What is strategic thinking, planning and implementation for green initiatives? **10**
b. Explain objectives of green networking. **10**

Q.6 Write a short note on **(any four)**

a. Strategies to reduce carbon emission suggested by BSR **5**
b. Three R's of Green IT **5**
c. Sustainability Hierarchy models **5**
d. Regulatory environment for green IT **5**
e. Data centers and associated energy challenges **5**

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TE | Sem VI | Choice Based | IT | 16th May 2019

(3 Hours) [Total Marks:80]

NB: 1. **Question no. 1 is compulsory.**
2. Answer any **three** out of the **remaining** questions.
3. Assume data, if missing, with justification.

Q.1.(a) Apply K-means Algorithm to divide the given set of values {2,3,6,8,9,12,15,18,22} into 3 clusters [05]

(b) Explain Confusion Matrix. Calculate Accuracy, Precision and Recall for the following Confusion Matrix [05]

Cancer Classes	Yes	No	Total
Yes	90	210	300
No	140	9560	9700
Total	230	9770	10000

(c) What are the major issues in data mining? [05]

(d) What is noisy data? How to handle it? [05]

Q.2.(a) Consider the transaction database given in table below. Apply Apriori Algorithm with minimum support of 50% and confidence of 50%. Find all frequent itemsets and all the association rules. [10]

Tid	Items
100	1,3,4
200	2,3,5
300	1,2,3,5
400	2,5
500	1,2,3
600	3,5
700	1,2,3,5
800	1,5
900	1,3

(b) Explain Regression. Explain linear regression with example. [10]

Q.3.(a) Suppose we have five objects with name A, B, C, D and E. Apply single linkage clustering and draw dendrogram for the given data. [10]

	X	Y
A	1	1
B	1.5	1.5
C	5	5
D	3	4
E	4	4
F	3	3.5

(b) What is an outlier? Describe methods that are used for outlier analysis. [10]

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Q4.(a) Using the given training dataset classify the following tuple using Naïve Bayes Algorithm <Homeowner: No, Marital Status: Married, Job experience:3>

Homeowner	Marital Status	Job experience (in years)	Defaulted
Yes	Single	3	No
No	Married	4	No
No	Single	5	No
Yes	Married	4	No
No	Divorced	2	Yes
No	Married	4	No
Yes	Divorced	2	No
No	Married	3	Yes
No	Married	3	No
Yes	Single	2	Yes

(b) Explain Business Intelligence issues.

Q5. (a) What is data mining? Explain KDD process with diagram. **[10]**

(b) Explain Market-Basket analysis with example. **[10]**

Q6. (a) What are multiple level and multidimensional association rules? Explain with suitable examples for each. **[10]**

(b) Suppose that data for analysis includes the attribute age. The age values for data tuples are (in increasing order): **[10]**

13,15,16,16,19,20,20,21,22,22,25,25,25,25,30,33,33,35,35,35,35,36,40,45,46,52,70

i) What is mean of data? What is median of data?

ii) What is mode of data? Comment on data's modality.

iii)What is mid-range of data?

iv)Give the five- point summary of the data.

v) Show box plot of the data.

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