Reg. No. : .....

2284 Q.P. Code : [21 CSEEC 12]

(For the candidates admitted from 2021 onwards)

M.Sc. DEGREE EXAMINATION, NOVEMBER 2023

Third Semester

Computer Science

SOFTWARE PROJECT MANAGEMENT

Time : Three hours Maximum : 50 marks

SECTION A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer.

1. What is the main goal of effort estimation in software project management? (CO1, K2)

(a) To determine the project schedule

(b) To allocate project funds

(c) To identify activity risks

(d) To predict the resources required for each project activity

2. Which phase in the project planning process typically involves the creation of a detailed project schedule? (CO1, K4)

(a) Identifying project infrastructure

(b) Analyzing project characteristics

(c) Allocating resources

(d) Lower levels of planning

3. What is the primary goal of conducting a cost-benefit analysis for a project? (CO2, K2)

(a) To assess technical feasibility

(b) To calculate project risks

(c) To evaluate the financial viability of the project

d) To create a project schedule

4. What is the main goal of Rapid Application Development (RAD) in software development? (CO2, K4)

(a) To minimize project risks

(b) To emphasize documentation and formal processes

(c) To deliver software quickly through iterative development

(d) To follow a strictly linear and sequential approach

5. _____ technique involves measuring the software's functional size based on user interactions and data flows (CO3, K2)

(a) Object Points

(b) Procedural Code-Oriented Approach

(c) Function Point Analysis (FPA)

(d) Activity Float Estimation

6. _____ network diagram helps identify the logical relationships between project activities (CO3, K2)

(a) Gantt chart

(b) Critical Path Method (CPM)

(c) Precedence Network

(d) Work Breakdown Structure (WBS)

7. _____technique is commonly used for risk analysis (CO4, K2)

(a) Z values (b) Resource allocation

(c) Cost monitoring (d) Scheduling

8. What is the primary purpose of monitoring and control in risk management? (CO4, K4)

(a) To reduce risks

(b) To prioritize monitoring

(c) To visualize progress

(d) To ensure the project stays on track

9. _____ is the final stage in the contract placement process, where the contract is legally binding (CO5, K2)

(a) Initiation (b) Execution

(c) Termination (d) Acceptance

10. _____ is the primary goal of software quality assurance in project management (CO5, K4)

(a) Reducing project costs

(b) Maximizing project scope

(c) Ensuring the reliability and quality of software

(d) Meeting project deadlines

SECTION B — (5 × 3 = 15 marks)

Answer ALL questions.

11. (a) Illustrate the scope and objectives of a software project (CO1, K2)

Or

(b) What are the key characteristics of a software project? Explain. (CO1, K2)

12. (a) What are some common ways of categorizing prototypes in software prototyping? (CO2, K4)

Or

(b) Illustrate the steps involved in conducting a comprehensive cost-benefit analysis for a project. (CO2, K2)

13. (a) Differentiate between Function Points and Object Points of measuring software size. (CO3, K4)

Or

(b) Illustrate the strategies for shortening project duration in project management (CO3, K4)

14. (a) Briefly explain the processes of risk identification, analysis, reduction, and evaluation. (CO4, K2)

Or

(b) How are Z-values used to quantify and evaluate risks in project management? (CO4, K4)

15. (a) What are the various types of contracts commonly used in project management? (CO5, K2)

Or

(b) Discuss the various organizational structures that can be found in project management. (CO5, K2)

SECTION C — (5 × 5 = 25 marks)

Answer ALL questions

16. (a) What are the main stages involved in planning a software project? Explain in detail. (CO1, K4)

Or

(b) Elucidate the importance of resource allocation in project planning. (CO1, K4)

17. (a) Explain the process of selecting an appropriate project approach in project management. (CO2, K2)

Or

(b) Explain the key principles of the Waterfall model in software development. (CO2, K2)

18. (a) What are the various types of passes used in project scheduling? Explain (CO3, K2)

Or

(b) Describe the fundamental basis for software estimating. What key factors are typically considered when estimating the effort required for a software project? (CO3, K4)

19. (a) What are the key elements of project monitoring? Explain in detail (CO4, K2)

Or

(b) Describe the purpose of a resource schedule in project management. How does it help in managing project resources effectively? (CO4, K4)

20. (a) Explain the stages and activities involved in effective contact a management. (CO5, K2)

Or

(b) Explain the steps involved in effective decision-making in organizations. How can organizations foster a culture of sound decision-making? (CO5, K4)

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Reg. No. : 22CSEC15

2285 Q.P. Code : [21 CSEEC 13]

(For the candidates admitted from 2021 onwards)

M.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

Third Semester

Computer Science

CLOUD COMPUTING

Time : Three hours Maximum : 50 marks

SECTION A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer

1. Which of the following is NOT typically considered a cloud computing service model? (CO1, K1)

(a) Infrastructure as a Service (laaS)

(b) Platform as a Service (PaaS)

(c) Software as a Service (SaaS)

(d) Network as a Service (NaaS)

2. What is one of the primary security concerns associated with cloud computing? (CO1, K1)

(a) Over provisioning of resources

(b) Lack of redundancy

(c) Data privacy and compliance

(d) Limited scalability

3. In cloud computing, what does the term "Software plus Services" refer to? (CO2, K1)

(a) Delivering software applications exclusively via the internet

(b) Combining traditional software with cloud-based services

(c) Developing software for managing cloud infrastructure

(d) Using software to enhance network security

4. Identify the technology that facilitates communication between devices within a network (CO2, K1)

(a) Router (b) Firewall

(c) Cloud Storage (d) Server

5. Label the technology that allows multiple virtual servers to run on a single physical server (CO3, K1)

(a) Desktop Virtualization

(b) Server Virtualization

(c) Data Storage Virtualization

(d) Cloud-based Backup Systems

6. Which technology is closely related to cloud-based block storage? (CO3, K1)

(a) RAID

(b) Network Attached Storage (NAS)

(c) Object Storage

(d) Optical Storage

7. Among the following, which is not a broad approach to cloud migration? (CO4, K1)

(a) Rehosting (b) Redesigning

(c) Rebranding (d) Refactoring

8. What is the name of the cloud computing approach that involves minimal changes to applications and is often referred to as "lift and shift"? (CO4, K1)

(a) Cloud Transformation

(b) Replatforming

(c) Rehosting

(d) Cloud Overhaul

9. Express the primary risk associated with cloud computing and data security (CO5, K2)

(a) Increased data encryption

(b) Improved data accessibility

(c) Data loss or breach

(d) Faster internet speed

10. Explain the concept of "zero-trust security" in relation to data security. (CO5, K2)

(a) Trusting all users and devices by default

(b) Trusting no one and verifying everyone's identity and access continuously

(c) Ignoring security measures in the cloud

(d) Trusting physical security over digital security

SECTION B — (5 × 3 = 15 marks)

Answer ALL questions.

11. (a) Discuss the various types of cloud computing services and their respective use cases. (CO1, K1)

Or

(b) Explain the concept of cloud computing and its significance in modern technology. (CO1, K1)

12. (a) Explain the concept of cloud storage and its advantages over traditional storage methods. (CO2, K1)

Or

(b) Name the key steps Involved in developing applications for a cloud computing environment. (CO2, K3)

13. (a) Provide insights into cloud-based block storage and its contribution to the scalability and performance of cloud infrastructure. (CO3, K6)

Or

(b) What is virtualization, and why is it a fundamental concept in modern IT infrastructure? (CO3, K1)

14. (a) Explain the Mobile Cloud Ecosystem and the various components that constitute it. (CO4, K1)

Or

(b) Describe the major players in the field of mobile cloud computing and their respective contributions. (CO4, K1)

15. (a) Describe the pros and cons of implementing content-level security measures in Cloud Computing environments. (CO5, K1)

Or

(b) Write about the role of cloud computing in modern data management and security. (CO5, K2)

SECTION C — (5 × 5 = 25 marks)

Answer ALL questions.

16. (a) Describe the differences between Platform as a Service (PaaS) and Software as a Service (SaaS) in cloud computing. (CO1, K1)

Or

(b) Define the term "First movers in the cloud" and explain their significance in the evolution of cloud computing. (CO1, K2)

17. (a) Discuss the evolving trends and innovations in cloud computing, such as server less computing, edge computing, and the integration of artificial intelligence into cloud services. (CO2, K2)

Or

(b) Compare Software as a Service (SaaS) and Software plus Services (S+S) models in cloud computing. What are the key differences between these approaches? (CO2, K3)

18. (a) Sketch the evolution of virtual networks, from their inception to their current role in modern IT infrastructure, and explain their significance. (CO3, K3)

Or

(b) Explain the differences between server virtualization and desktop virtualization, providing real-world examples of their applications. (CO3, K1)

19. (a) Define the Seven Step Models of Migrating into a Cloud and discuss their a significance in ensuring a smooth transition to cloud-based infrastructure. (CO4, K2)

Or

(b) Describe the evolution of mobile computing and its significance in the context of Mobile Cloud Computing (MCC). How has MCC transformed the way we use mobile devices? (CO4, K1)

20. (a) Describe the impact of emerging technologies on Cloud Computing and data security. (CO5, K1)

Or

(b) What is content-level security in the context of cloud computing, and how does it differ from traditional security approaches? (CO5, K1)

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2286 Q.P. Code : [21 CSEEC 14]

(For the candidates admitted from 2021 onwards)

M.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

Third Semester

Computer Science

BIG DATA ANALYTICS

Time : Three hours Maximum : 50 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer

1. What are the different features of Big Data Analytics? (CO1, K1)

(a) Open-Source (b) Data Recovery

(c) Scalability (d) All the above

2. Which one is not in the five V's of Big Data? (CO1, K1)

(a) Volume (b) Velocity

(c) Variety (d) Veracity

3. HDFS stands for? (CO2, K2)

(a) Hadoop Field System

(b) Hadoop File Search

(c) Hadoop File System

(d) Hadoop Field search

4. HDFS is implemented in ———— language (CO2, K1)

(a) Perl (b) Java

(c) C++ (d) Python

5. What is MapReduce? (CO3, K1)

(a) A distributed data processing framework

(b) A database management system

(c) A network routing algorithm

(d) A single computer data processing framework

6. Which of the following is a disadvantage of using MapReduce? (CO3, K1)

(a) It is difficult to use

(b) It can only process small amounts of data

(c) It has a high latency

(d) It requires specialized hardware

7. ———— is a platform for constructing data flows for extract, transform, and load (ETL) processing and analysis of large datasets. (CO4, K2)

(a) Pig Latin (b) Pig

(c) Oozie (d) Hive

8. ———— jobs are optimized for scalability but not latency. (CO4, K2)

(a) Drill (b) Hive

(c) Oozie (d) Mapreduce

9. ———— is a strong declarative query language provided by *Neo4j*. (CO5, K2)

(a) Hive (b) Native

(c) Cypher (d) None of the above

10. *Neo4j* supports which of the following JAVA API? (CO5, K2)

(a) Cypher API

(b) Native Java API

(c) Both

(d) Either (a) or (b)

PART B — (5 × 3 = 15 marks)

Answer ALL questions.

11. (a) List the big data platforms? (CO1, K3)

Or

(b) Explain crowd sourcing and its uses? (CO1, K4)

12. (a) Describe the architecture of Hadoop? (CO2, K4)

Or

(b) List the various file types of HDFS? (CO2, K4)

13. (a) Write a note on data flow in mapreduce. (CO3, K4)

Or

(b) Describe about mapreduce architecture. (CO3, K4)

14. (a) Explain about the Components of Cassandra? (CO4, K3)

Or

(b) Explain about the features of Apache Pig? (CO4, K3)

15. (a) Write a note on graph database? (CO5, K2)

Or

(b) Explain about the uses of *Neo4j*. (CO5, K3)

PART C — (5 × 5 = 25 marks)

Answer ALL questions.

16. (a) Elaborate the characteristics of Big data. (CO1, K4)

Or

(b) Discuss in detail the process of web analytics? (CO1, K5)

17. (a) Explain about primitive and complex data types in Avro. (CO2, K4)

Or

(b) Explain about output formats in hadoop. (CO2, K3)

18. (a) Briefly explain about the components of YARN architecture. (CO3, K4)

Or

(b) Differentiate Mapreduce and YARN? (CO3, K4)

19. (a) Briefly explain about built in functions in Hive. (CO4, K5)

Or

(b) Explain about pig latine data types and conventions? (CO4, K4)

20. (a) Explain cyber query language with examples. (CO5, K4)

Or

(b) Discuss about data visualization tools and its categories are in graph database? (CO5, K5)

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2287

Q.P. Code : [21 CSEEC 15]

(For the candidates admitted from 2021 onwards)

M.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

Third Semester

Computer Science

WIRELESS NETWORKS

Time : Three hours Maximum : 50 marks

SECTION A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer

1. The code division multiple access technique is not used frequently because (CO1, K2)

   (a) It requires very large bandwidth

   (b) The circuitry required is very complex

   (c) The system becomes too expensive

   (d) Its technology has not been completely developed

2. ASK, PSK, FSK and QAM are techniques of _____ conversion (CO1, K1)

(a) Digital to Analog (b) Analog to digital

(c) Analog to analog (d) Digital to digital

3. _____ uses IEEE 802.11 standard (CO1, K1)

(a) Blue tooth (b) Wireless LAN

(c) Wi-Fi (d) Wi-Max

4. What is an access point? (CO3, K2)

(a) An entity that provides access to the LLC layer

(b) An entity that provides access to the MAC layer

(c) An entity that provides access to the DS

(d) An entity that provides access to the BBS

5. WPAN stands for _____ (CO2, K1)

(a) Wireless personal area networks

(b) Wide personal area networks

(c) Wireless private area networks

(d) Wide private area networks

6. IEEE _____ standard is used for bluetooth (CO2, K1)

(a) 802.15.4 (b) 802.15.2

(c) 802.15.3 (d) 802.15.1

7. In wireless ad-hoc network _____ (CO2, K2)

(a) Access point is not required

(b) Access point is must

(c) Nodes are not required

(d) All nodes are access points

8. Which is not a reactive routing protocol? (CO2, K1)

(a) DSR (b) AODV

(c) DSDV (d) TORA

9. A _____ is a combination of a transmitter/receiver in a single package (CO4, K1)

(a) Transceiver (b) Receiver

(c) Sensor (d) Actuator

10. _____ sensors are passive, but have a well-defined notion of direction of measurement (CO4, K1)

(a) Passive, omni directional

(b) Passive, narrow-beam

(c) Active

(d) None of the given options

SECTION B — (5 × 3 = 15 marks)

Answer ALL questions.

11. (a) List any six challenges of wireless transmission. (CO1, K2)

Or

(b) The radio band frequency lies between 3 GHz to 30 GHz. Which application is suitable for communicating in the specified frequency? (CO1, K2)

12. (a) Compare ad-hoc mode with infrastructure mode in wireless network. (CO2, K2)

Or

(b) Outline WLAN topologies. (CO2, K4)

13. (a) List various connection states in Bluetooth and explain its functionality. (CO2, K4)

Or

(b) Write a note ZigBee network topology. (CO2, K3)

14. (a) Outline on TORA. (CO2, K4)

Or

(b) Write a note on Hierarchical Routing protocol. (CO2, K3)

15. (a) Compare MANET with WSN. (CO4, K2)

Or

(b) Illustrate aggregation technique in in-network processing. (CO4, K4)

SECTION C — (5 × 5 = 25 marks)

Answer ALL questions.

16. (a) With a neat sketch, list the components of PCM encoder and explain in detail. (CO1, K3)

Or

(b) Describe in detail about digital modulation techniques. (CO1, K3)

17. (a) With a neat diagram explain the architecture of Wireless LAN. (CO1, K4)

Or

(b) Write a note on : (CO3, K3)

(i) IEEE 802.11 services (3)

(ii) Sketch MAC sublayer Frame format. (2)

18. (a) With a neat sketch, explain Bluetooth protocol architecture. (CO3, K3)

Or

(b) With a neat diagram explain the architecture of LR-WPAN device. (CO3, K3)

19. (a) (i) Expand MANET. List its characteristics. (3)

(ii) Sketch the categorization of ad hoc routing protocol. (2)

(CO2, K3)

Or

(b) Illustrate the process of roué establishment and route maintenance in dynamic source routing protocol. (CO2, K4)

20. (a) With a neat sketch explain about the sensor node architecture. (CO4, K4)

Or

(b) Consider an application of cattle monitoring system. A farmer has 1000 cattle's in his field. These cattle are to be protected from wild animals from attacking them. You being a technical consultant suggest the farmers and workers to choose appropriate sensors, technology and standard to implement the system. Justify the reasons for choosing appropriate standards. (CO4, K6)

Reg. No. : 22CSEE15

2283 Q.P. Code : [22 CSEEE 03]

(For the candidates admitted from 2022 onwards)

M.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

Third Semester

Computer Science

Elective — DEEP LEARNING TECHNIQUES

Time : Three hours Maximum : 50 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The fundamental unit of the neural network is _____ (CO1, K1)

(a) Neuron (b) Brain

(c) Nucleus (d) Dendrites

2. Which of the following is a subset of machine learning? (CO1, K1)

(a) Numpy (b) SciPy

(c) Deep Learning (d) All of the above

3. What is the range of the output values for a ReLU function? (CO2, K2)

(a) [–inf, +inf] (b) [0, 5]

(c) [0, 1] (d) [0, inf]

4. _____ controls the magnitude of a step taken during Gradient Descent. (CO2, K2)

(a) Parameter (b) Learning rate

(c) Step rate (d) Momentum

5. Kernel filter in CNN is applied to _____ (CO3, K1)

(a) increase the number of training epochs

(b) decrease the model accuracy

(c) extract features from input data

(d) add noise to the input data

6. RNN stands for (CO3, K1)

(a) Recursive Neural Network

(b) Recurrent Neural Network

(c) Recurring Neural Network

(d) Removable Neural Network

7. Long term Memory of GRU is controlled by _____ (CO3, K3)

(a) Output gate (b) Reset gate

(c) Update gate (d) Hidden gate

8. _____ is the simples type of GAN. (CO3, K1)

(a) Conditional GAN

(b) Deep Convolutional GAN

(c) Vanilla GAN

(d) Laplacian Pyramid GAN

9. Which neural network architecture is commonly used for image captioning? (CO4, K2)

(a) CNN

(b) RNN

(c) LSTM

(d) All of the mentioned options

10. Pick the odd one out in R-CNN model family. (CO4, K2)

(a) R-CNN (b) Fast R-CNN

(c) Faster R-CNN (d) Fastest R-CNN

PART B — (5 × 3 = 15 marks)

Answer ALL questions.

11. (a) Mention the need of activation function in ANN. (CO1, K6)

Or

(b) With a sketch, Discuss about various layers in NN. (CO1, K4)

12. (a) Define saddle point and sketch it. (CO2, K2)

Or

(b) State the local minima problem, its cause and its mitigation. (CO2, K1)

13. (a) Does zero padding affect the output feature map? Justify your answer. (CO3, K6)

Or

(b) Write a short note on Max pooling with example. (CO3, K4)

14. (a) What does update gate in GRU does? Write the sigmoid equation. (CO3, K3)

Or

(b) Write a note on Variational Autoencoders. (CO3, K3)

15. (a) Write a note on two models of GAN architecture. (CO4, K3)

Or

(b) Compare image classification with object detection. (CO4, K4)

PART C — (5 × 5 = 25 marks)

Answer ALL questions.

16. (a) Illustrate and explain the steps involved in perceptron algorithm. (CO1, K4)

Or

(b) Define the terms : (CO1, K2)

(i) Weight

(ii) bias and

(iii) Loss

17. (a) State the reason for overshooting and discuss about the various approaches to mitigate it. (CO2, K1)

Or

(b) Write a note on Nesterov gradient descent. (CO2, K3)

18. (a) Sketch and explain the LSTM architecture. (CO3, K3)

Or

(b) State the usage of RNN and explain about its type. (CO3, K1)

19. (a) Sketch and explain encoders-decoders in deep learning. (CO3, K3)

Or

(b) Explain in derail about Denoising autoencoders. (CO3, K3)

20. (a) State the need for image segmentation. List various image segmentation algorithms and explain its functionality. (CO4, K3)

Or

(b) What is the role of deep learning in image captioning? Sate about its model and its methodology to perform the task. (CO4, K3)
