this is the question bank of object oriented which contains all the past questoins

Object Oriented Software Engineering (Pokhara University)

POKHARA UNIVERSITY

Level: Bachelor Semester: Fall Year : 2013
Programme: BE Full Marks: 100
Course: Object Oriented Software Engineering Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.
Attempt all the questions.

1. a) "Object Oriented Software Engineering paradigm is different from other software engineering paradigms." Explain. 5
   b) Briefly explain that the development is the process of change. 5
   c) What is testing? Explain how testing is different from verification. 5
2. a) Explain the concept of class and objects in relation to inheritance, encapsulation and polymorphisms with the suitable examples. 8
   b) What is inheritance? How many types of inheritances are there? Explain in brief 7
3. a) Taking Banking System as an example; explains the objects of analysis model. Also show how they make it easy in object oriented development approach compared to function/ data procedures approach. 7
   b) What is analysis model? Explain requirement of analysis model. 8
4. a) Why software development is focused in use-cases? Explain its role and importance is software development. 8
   b) What is an interaction diagram? Explain its role and function. 7
5. a) Why do we need component in software development process? Highlight its importance giving examples. 8
   b) Why system testing is important? Explain System testing process in detail. 7
6. A Case Study.

   In hospital a patient goes to registration machine he press the on button then the screen opens. He enters patient id number. He books for the doctor for his check up. He checks the category of disease from given list, then he chooses doctor's name from given doctors name list, he enters time he wants to meet with doctor. For this registration he need to enters the amount, if the amount digit is ok it accepts the registration and prints the registration slip, otherwise it will give a signal of alarm of in sufficient amount. 8

   a) Draw the use case, diagram, entity objects, interface objects & control objects. 7
   b) Draw an analysis model. 2×5
7. Write short notes on: (Any two)
   a) System development is focused in models.
   b) Test models.
   c) Development is incremental.

POKHARA UNIVERSITY

Level: Bachelor | Semester: Spring | Year : 2013
Programme: BE | Full Marks: 100
Course: Object Orjented Software Engineering | Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.
Attempt all the questions.

1) "Object Oriented Software development life cycle is different from other software engineering." Explain it. 5
2) Explain the process and models during a software development? 5
3) Differentiate testing and verification. 5
4) Explain class, objects, polymorphisms with the suitable real time explains. 8
5) Explain inheritance with example. 7
6) Explain the objects of analysis model and how they make easy in object oriented compared to function/ data procedures with the help of banking explain. 7
7) Define objects of analysis model. Explain requirement model. 8
8) Why software development is focused in use-cases? 8
9) Explain interaction diagram with use case extension? 7
10) a) Describe the criteria for construction of components? 8
    b) Explain the system testing process. 7

A Case Study.

In hospital a patient goes to registration machine he press the on button then the screen opens. He enters patient id number. He books for the doctor for his check up. He checks the category of disease from given list, then he chooses doctor's name from given doctors name list, he enters time he wants to meet with doctor. For this registration he need to enters the amount, if the amount digit is ok it accepts the registration and prints the registration slip, otherwise it will give a signal of alarm of in sufficient amount.

a) Draw the use case, diagram, entity objects, interface objects & control objects. 8
b) Draw analysis model. 7
7. Write short notes on: (Any two) 2×5
   a) Traceability
   b) Explain Objectory
   c) Explain construction
   d) Architecture of development.

POKHARA UNIVERSITY

Level: Bachelor Semester: Fall Year : 2014
Programme: BE Full Marks: 100
Course: Object Oriented Software Engineering Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.
Attempt all the questions.

1. a) A Pharmaceutical Company wants to develop an Inventory Control System for its internal use. The requirements are well understood and scope is well constrained. However the project is required to be delivered within short period of time (as soon as possible). Propose a life cycle model for this scenario and provide reason(s) for justification of your answer. 8
   b) Describe the relationship and role of software engineering over other computer science areas. 7
2. a) A software project started on March 2013 was supposed to be completed by May 2014. But the progress review at the end of March 2014 shows that only 20% of the tasks have been completed and the major reason in delay of the project was the people factor. Explain briefly the possible reasons that the people factor affects the software development process. 7
   b) Define Requirements Traceability and explain why it is relevant to the maintenance of software systems. 8
3. a) What are software risks? Briefly describe the different types of software risks. 7
   b) Suppose a Hotel is going to design an online hotel booking system for its guests. There are following requirements: 8
      - Cost-effectiveness
      - Reliability
      - User friendliness

      Suggest priority of the above mentioned representative software qualities in most required to least required order. Also give appropriate reasons in favor of your answer.
4. a) Obtain 1-level DFD for the following system of cashing cheque in a bank. 8

   A customer presents a cheque to a clerk. The clerk checks the ledger containing all account numbers and makes sure whether the account number in the cheque is valid, whether adequate balance is there in the account to pay the cheque, and whether the signature is authentic Having done these, the clerk gives the customer a token. The clerk also debits customer's account by the amount specified on the cheque. If cash cannot be paid due to an error in the cheque, the cheque is returned. The token number is written on the top of the cheque and it is passed on to the cashier. The cashier calls out the token number, takes the customer's signature, pays cash, enters cash paid in a ledger called day book, and file the cheque.

   b) How would you define Verification and Validation? Discuss briefly on White Box Test versus Black Box Test. 7
5. a) A health clinic provides medical services to patients in a small town. Five doctors and three nurses work at the clinic; they consult with patients, prescribe medicines and carry out minor medical treatments. Patients with more serious conditions are referred to specialists at the local hospital. A medical information system is being designed for use in the clinic. The system will manage information about employees (doctors, nurses and administrator), patients and their contact details, appointments and consultations, medicines and prescriptions, treatments given, and referrals. 10

   Produce a UML class diagram for use in constructing the system using an object oriented programming language. Your diagram must include all applicable classes and relationships. There is no need to show the attributes and operations for each class.

   b) Describe the UML based CASE tools. 5
6. a) Discuss briefly on how Use case and CRC aids in object oriented analysis. 8
   b) Describe the concurrency and subsystem allocation for object oriented design. 7
7. Write short notes on: (Any two) 2×5
   a) Polymorphism, Inheritance and Abstraction in OO concept
   b) Outsourcing
   c) CRC modeling.

POKHARA UNIVERSITY

Level: Bachelor Semester: Spring Year : 2014
Programme: BE Full Marks: 100
Course: Object Oriented Software Engineering Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable
The figures in the margin indicate full marks.
Attempt all the questions.

1. a) Why is agile process necessary? Differentiate between scrum and extreme programming. 8
   b) What is project management? State and explain the concepts (the 4 P's) of project management. 7
2. a) Why do we need to estimate the cost of software projects? Differentiate between Reverse and forward engineering with relevant example 8
   b) Obtain DFD for the following Mess Management System. 7
   A hostel has 500 rooms and 4 messes. Currently, there are 1000 students in all in 2 seated rooms. They eat in any of the messes but can get rebate if they inform and do not eat for at least 4 consecutive days. Besides normal menu, extra items are also given to students when they ask for it. Such extras are entered in an extra book. At the end of the month a bill is prepared based on the normal daily rate and extras and given to each student. System for stores issue and control is maintained for daily use of perishables and non-perishables items and order to vendor and supplies are also maintained as well.
3. a) Why is software modeling essential. Which modeling do you prefer to use if you are allowed to choose between data modeling and class base modeling. 8
   b) Draw E-R diagram for the following situation: 7
   An accountant is a relationship between customer and bank. A customer has a name. A bank has a branch. A customer may have several accountants of different type and balances.

4. a) Discuss about scenario based modeling. Differentiate between Usecase modeling and Activity Diagram. Provide examples as well. 8
   b) What is software quality control and software quality assurance? Explain formal technical review as a measure to maintain the quality of a software project. 7
5. a) How would you define Verification and Validation? Discuss briefly on White Box Test versus Black Box Test. 8
   b) Why is SCM essential during Software Development? Differentiate between Integration Testing and System Testing. 7
6. a) Why do we need to improve Software Process? Discuss about the emerging trends in software engineering 8
   b) What is capability maturity model? Describe the five levels defined in the CMM. 7
7. Write short notes on: (Any two) 2×5
   a) Cleanroom engineering.
   b) Software Reliability
   c) RAD Model

POKHARA UNIVERSITY

Level: Bachelor Semester:Fall Year : 2015
Programme: BE Full Marks: 100
Course: Object Oriented Software Engineering Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.
Attempt all the questions.

1. a) Explain Agility principles of software development. Which software development model best suited for a risk driven software development. 7
   b) Can spiral model be used for all types of project? Give an example of development project for which spiral model is not appropriate. 8
2. a) What is risk management? What are different types of risks and how can we identify risk? Explain. 7
   b) Compare and contrast FP Based estimation with COCOMO II Model. 8
3. a) Obtain DFD for the following System. 8
   A customer can book a ticket from the internet or can directly buy the ticket in the Movie Hall itself. There can be multiple halls within one movie theatre. The ticket operator provides a ticket with hall's stamp after checking the booking information to the customer. The guard in each hall validates the ticket and provides access to the customer inside the hall. There is also provision of complementary food item which the café will provide in the break time of the movie.
   b) Discuss the various steps of interface design. How is it evaluated? 7
4. a) What is the purpose of Unit Testing? Draw control flow of a program to find largest number among three numbers and find cyclomatic complexity of that program? 7
   b) Suppose you want to develop software for an alarm clock. The clock shows the time of day. Using buttons, the user can set the hours and minutes fields individually, and choose between 12 and 24-hour display. It is possible to set one or two alarms. When an alarm fires, it will sound some noise. The user can turn it off, or choose to 'snooze'. If the user does not respond at all, the alarm will turn off itself after 2 minutes. 'Snoozing' means to turn off the sound, but the alarm will fire again after some minutes of delay. This 'snoozing time' is pre-adjustable. Draw use case for this system. 8
5. a) What do you mean by Design Patterns? What is the importance of incorporating reuse in a project? List out its major advantages. 7
   b) What are software quality control and software quality assurance? Explain in brief about the representative qualities of software. 8
6. a) What is capability maturity model? Describe the five levels defined in the CMM. 7
   b) Draw a UML Class Diagram representing the following elements from the problem domain for a hockey league. A hockey league is made up of at least four hockey teams. Each hockey team is composed of six to twelve players, and one player captains the team. A team has a name and a record. Players have a number and a position. Hockey teams play games against each other. Each game has a score and a location. Teams are sometimes lead by a coach. A coach has a level of accreditation and a number of years of experience, and can coach multiple teams. Coaches and players are people, and people have names and addresses. Draw a class diagram for this information, and be sure to label all associations with appropriate multiplicities. 8
7. Write short notes on: (Any two) 2×5
   a) Estimation of object oriented projects.
   b) Emerging Trends in Software Engineering.
   c) Debugging.

POKHARA UNIVERSITY

Level: Bachelor | Semester: Spring | Year : 2015
Programme: BE | Full Marks: 100
Course: Object Oriented Software Engineering | Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.
Attempt all the questions.

1. Define Software Engineering and its significant role over the system design. 7
2. Define agile software development with its advantages and disadvantages? 8
3. Define risk. Explain how risk management is carried out in a software project? Explain all the steps. 7
4. Explain why software system which is used in a real world environment must change or become progressively less useful. 8
5. Obtain 1-level DFD for Movie management system: 8
   A customer can book a ticket from the internet or can directly buy the ticket in the Movie Hall itself. There can be multiple halls within one movie theatre. The ticket operator provides a ticket with hall's stamp after checking the booking information to the customer. The guard in each hall validates the ticket and provides access to the customer inside the hall. There is also provision of complementary food item which the café will provide in the break time of the movie.
   b) From the same above mentioned case, obtain a use case diagram also. 7
   a) What is integration testing? Differentiate between top- down and bottom- up integration testing. 8
   b) List out the differences between quality control and quality assurance and explain the elements and goals of software quality assurance (SQA). 7
   a) What is SPI and SPI framework? Explain briefly about CMMI. 8
   b) Define requirement engineering. What are various methods of requirement elicitation? Explain. 7

6. a) What is difference between class diagram and object diagram? Draw class diagram for the following scenario. 8
   A bank provides debit card service for its customers only for current account and saving account. Customers can perform withdraw, transfer, balance query and pin change operations.Customers can use ATM of any location.
   b) What are test cases and what is the importance of testing and designing test cases. 7
7. Write short notes on; (Any two) 2×5
   a) Six Sigma
   b) Functional Independence
   c) Deployment level design.

POKHARA UNIVERSITY

Level: Bachelor | Semester – Fall | Year : 2016
Program: BE | Full Marks: 100
Course: Object Oriented Software Engineering | Time : 3 hrs.

Candidates are required to give their answers in their own words as far as practicable
The figures in the margin indicate full marks.
Attempt all the questions.

1. What is software engineering? Define the characteristics of system software? 6
2. Explain how both the waterfall model of the software process and Prototyping model can be accommodated in the spiral process model. 9
3. A software project started on May 2011 was supposed to be completed by March 2014. But the progress review at the end of June 2013 shows that only 20% of the tasks have been completed and the major reason in delay of the project was the people factor. Justify how, people factor affects the software development process. 8
4. What is risk in a software? How do you identify risk in software engineering? Explain risk mitigation, monitoring and management. 7
5. How formal technical review is taken as a measure to maintain the quality of a software project? Explain. 7
6. What are Software Quality Controls and Software Quality Assurance? How can we produce high quality software products? 8
7. Discuss the significance of unit testing and integration testing in object-oriented life cycle for system development. 7
8. Why system modelling is essential for software development? What are the differences between data and behaviour modelling? 8
9. a. Discuss the notations of UML diagram in detail. 6
   b. A simple system is to be developed to support the management of exercises completed by students taking a course. Students first meet with the course tutor to register for a course, and then during the course they submit a number of exercises. Every course has a certain deadline assigned by the course tutor. Tutors can allow an exercise to be submitted late. At any point, a student can find out from the system the marks they have received for any exercises already completed. A student shall also be able to view any comments made by the tutor on a certain exercise. The course tutor can also enter a mark for an exercise, and print out a summary of the marks gained by all students on course. 9

   Identify Classes and draw a class diagram to model an efficient solution for the problem.

10. a. A customer presents a cheque to a clerk. The clerk checks the ledger containing all account numbers and makes sure whether the account number in the cheque is valid, whether adequate balance is there in the account to pay the cheque, and whether the signature is authentic. Having done these, the clerk gives the customer a token. The clerk also debits customer's account by the amount specified on the cheque. If cash cannot be paid due to an error in the cheque, the cheque is returned. The token number is written on the top of the cheque and it is passed on to the cashier. The cashier calls out the token number, takes the customer's signature, pays cash, enters cash paid in a ledger called day book, and file the cheque. 9
       1. Derive Use Cases from the above scenario and model them into a Use Case Diagram.
    b. What do you mean by object oriented design model? Discuss concurrency and subsystem allocation. 6
11. *Write short note on (Any Two)* 2x5
    a. Agile Process
    b. Data Modelling
    c. Cyclomatic Complexity Testing Method

POKHARA UNIVERSITY

Level: Bachelor Semester: Spring Year : 2017
Programme: BE Full Marks: 100
Course: Object Oriented Software Engineering Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.
Attempt all the questions.

a) What is the significance of software Engineering? With diagram, explain *scrum* process model for software development.
b) What do you mean by software scoping? With example, explain *decision-tree* in order to understand the norms of Make/Buy decision.
a) Suppose that Pokhara University is going to develop *Online Learning System* (OLS). You have been asked by the university to mention four (4) major requirements definition for OLS. List the four requirements definition and explain their requirement specifications.
b) Draw the Context Level Data Flow Diagram (DFD) and Level 1 DFD for the above OLS.
a) What do you understand by software design? Briefly explain different steps that represent a typical task set for component-level design.
b) Briefly explain different categories of class. Describe the guidelines for allocating responsibilities to classes.
a) Why user interface design is important in software development? Referencing a mobile application for smart agriculture, describe user interface design issues.
b) Briefly explain the set of guidelines for formal technical reviews (FTR).
a) Considering online shopping software, explain test strategies.
b) Define Cyclomatic Complexity (CC). Prove that all methods that calculate CC result the same value for it.
a) Define software quality. Explain the activities of software quality assurance (SQA) group for achieving a high-quality end product.
b) With diagram, explain software process improvement framework.
Write short notes on: (Any two)
a) Types of Software
b) Spiral Model
c) Software Project Estimation

POKHARA UNIVERSITY

Level: Bachelor | Semester: Fall | Year : 2017
Programme: BE | Full Marks: 100
Course: Object Oriented Software Engineering | Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.
Attempt all the questions.

a)	What do you mean by agile development? Explain the agile process and agility? Explain the agile process and agility principles.	8
b)	How do you estimate the software project? Explain any one of them with example.	7
a)	What do you mean by RMMM plan? Describe the reactive and proactive risk handling strategies in brief.	7
b)	What are the project planning processes? Explain the W5HH principle in brief.	8
a)	What do you mean by the functional and non-functional requirements? Give any four functional and non-functional requirements for computer based online hotel reservation system.	8
b)	Obtain the DFD for library information system.	7
a)	Define the meaning of software quality and detail the factors which affect the quality not productivity of a software product?	7
b)	What is UML diagram? Explain briefly about state chart diagram, sequence diagram and collaboration diagram with example.	8
a)	What are test cases and what is the importance of testing and designing test cases.	8
b)	What do you mean by SCM? List out the difference between change control and version control in SCM.	7
a)	Draw the Class diagram and activity diagram for an automated teller machine.	8
b)	Explain the software process improvement framework in detail.	7

Write short notes on: (Any two) 2x5

a) ISO standards
b) Cleanroom engineering
c) COCOMO model
d) Case tools

POKHARA UNIVERSITY

Level: Bachelor | Semester : Fall | Year : 2018
Programme: BE | Full Marks: 100
Course: Object Oriented Software Engineering | Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) What do you mean by agile development? Differentiate between Scrum and lean software development. 8
   b) Explain the project management concepts? How do you estimate a software project? 7
2. a) What are the software risks? Explain briefly the different types of software risks. 7
   b) A restaurant uses an information system that takes customer orders, sends the order to the kitchen monitors the goods sold and inventory and generates reports for management. List functional and non-functional requirements for this Restaurant Information System. 8
3. a) What do you mean by scenario based modelling and behavioural modelling? Explain with example for each modelling. 8
   b) Obtain the Use case diagram for library management system.
4. a) How would you assure the quality of a software? Explain the software review and FTR. 7
   b) Draw the different levels of DFD for safe home system where any person can enter to the home on matching his/her password at the entrance door. 8
5. a) What do you mean by verification and validation? Discuss the basis path testing and cyclomatic and complexity of white box testing with an example. 8
   b) Why SCM is important during software development. Discuss the change control and version control in brief. 7
6. a) What do you mean by software reliability? Explain the statistical SQA and six sigma regarding in brief. 8
   b) Explain the capability maturity model in detail. 7
7. Write short notes : *(Any Two)* 2x5
   a) ISO standards
   b) Cleanroom engineering
   c) COCOMO model
   d) Data Design

POKHARA UNIVERSITY

Level: Bachelor | Semester: Fall | Year : 2019
Programme: BE | Full Marks: 100
Course: Object Oriented Software Engineering | Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) Describe the V process model with its advantages and disadvantages. 7
   b) What do you mean by agile development? Why is it important? Explain the scrum software development in details. 8
2. a) What is Software scope? Effective software project management focuses on the four P's. Explain all. 8
   b) Explain different feasibility associated with software. Explain how human resources and reusable software resources aid in software management activities. 7
3. a) What is requirement analysis? Explain different elements of requirement analysis model. 7
   b) What do you mean by scenario based modeling and behavioral modeling? Explain with examples. 8
4. a) Obtain 1-level DFD for the Food Ordering System: 7

   Customer can place an *Order of the food*. The *Order Food* process receives the *Order*, forwards it to the *Kitchen*, store it in the *Order* data store, and store the updated *Inventory details* in the *Inventory* data store. The process also delivers a *Bill* to the *Customer*. *Manager* can receive *Reports* through the *Generate Reports* process, which takes *Inventory details* and *Orders* as input from the *Inventory* and *Order* data store respectively. *Manager* can also initiate the *Order Inventory* process by providing *Inventory order*. The process forwards the *Inventory order* to the *Supplier* and stores the updated *Inventory details* in the *Inventory* data store.

   b) What do you mean by design model? What are the elements of effective interface design? Explain the evaluation of the user interface with evaluation cycle diagram. 8

5. a) Demonstrate use of scenario based testing for thread testing with suitable example. 7
   b) What is FTR? Why is it important in SQA activities? Explain how FTR is conducted. 8
6. a) Demonstrate relationship of mean-time-between-failure (MTBF), mean-time-to-failure (MTTF), mean-time-to-repair with service availability with suitable example. 7
   b) Software engineering will change more rapidly. Explain few trends, methods and tools that are likely to have influence on software engineering. 8
7. Write short notes on: **(Any two)** 2×5
   a) Functional Vs. Non-functional requirements
   b) People CMM
   c) Alpha and Beta testing

POKHARA UNIVERSITY

Level: Bachelor | Semester: Spring | Year : 2019
Programme: BE | Full Marks: 100
Course: Object Oriented software Engineering | Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) What is lean software development? Mention the lean principles and explain how each of these principles can be adapted to software process with examples. 8
   b) Why do you consider UML as language? Give reason. When do you use prototype model? Explain. 7
2. a) What is risk management? What are different types of risks and how can we identify risk? Explain. 8
   b) What is project management? State and explain the concepts (the 4 P's) of project management. 7
3. a) Prepare level 1DFD for the following food ordering system. 8

   A potential patient joins the doctors by submitting a patient application form. A new patient record is created and stored in the patient records store. A patient makes an appointment by providing their patient details. An appointment card is given to the patient after they have made the appointment. The appointment details are stored in the database.

   A receptionist makes a telephone appointment for a patient by entering a patient details. A receptionist also cancels appointments for a patient by entering their cancelation details. Both process update the appointment section of the database.

   A doctor will see a patient. When they see a patient a list of appointments and patients record will be sent to the doctor. A doctor may want to issue a prescription by entering prescription details into the system and a prescription be issued to the patient.

   b) Draw a Use Case diagram from the given case study. 7

   In hospital a patient goes to registration machine he press the ON button then the screen open. He enters patient ID number. He books for the doctor for checkup. He checks the category of disease from given list, then he chooses the doctor's name from given doctor's name list, he enters time he wants to meet with doctor. For this registration he need to enter the amount, if the amount digit is ok it accepts the registration and prints the registration slip, otherwise it will give a signal of alarm insufficient amount.

4. a) What is modularity? Differentiate between sequence and communication diagram with regards to the strength and weakness with example. 7
   b) What is state chart diagram? Draw a sequence diagram for the given scenario : 8

   A customer wants to draw money from his bank account. He enters his card into an ATM (Automated Teller Machine). The ATM machine prompts "Enter pin". The customer enters his pin. The ATM (internally the retrieves the bank account number from the card). The atm encrypts the pin and the account number and sends it over to the bank. The bank verifies the encrypted account and pin number. If the pin number is correct the ATM displays "Enter amount", draw money from bank account and pays out the amount.

5. a) Demonstrate use of control structure testing with suitable example. 7
   b) What is the difference between an SCM audit and a technical review? Can their function be folded into one review? What are the pros and cons? 8
6. a) Demonstrate relationship of mean-time-between-failure (MTBF), mean-time-to-failure (MTTF), mean-time-to-repair with service availability with suitable example. 7
   b) What is the capacity maturity model? Describe the five levels defined in CMMI. 8
7. Write short notes on: **(Any two)** 2×5
   a) Functional Vs. Non-Functional Requirements
   b) Baseline
   c) Requirement engineering

POKHARA UNIVERSITY

Level: Bachelor | Semester: Fall | Year : 2020
Programme: BE | Full Marks: 100
Course: Object Oriented Software Engineering | Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) What are the different phases in software development life cycle? Explain. 7
   b) What are the principles of agile software development? How agile principle is implemented in Dynamic System Development Methods (DSDM). 8
2. a) What is W5HH principle? Explain different types of feasibility for acceptance of software. 8
   b) Explain briefly the need of risk identification during software development process. Also explain RMMM and RMMM plan. 7
3. a) Explain the significance of requirement analysis in the software modelling with suitable example. 7
   b) What is UML diagrams? Explain briefly about the use case diagram and class diagram with example. 8
4. a) Draw a detailed class diagram for the following: 8
   For a construction company a software is to be developed with following specifications -
   Company takes many project is at particular location. Each project is supervised by project manager assigned by CEO of the company. Record related to start of project, its completion is maintained. Under each PM there is a team of people of different category like designer, plumber, electrician, architect, labor etc. Each project is marketed by team of Marketing Executives.
   b) Prepare level 1DFD for the following food ordering system. 7
   KFC pizza wants to install a system to record orders for pizza and burger. When regular customer call KFC pizza on the phone, their phone number goes automatically into pizza system. The phone number invokes the name, address and last order date automatically on the screen. Once the order is taken, the total including tax and delivery

is calculated. The order is given to the cook. A receipt is printed. Occasionally, special offers (Coupons) is printed so the customer can get a discount. Drivers who make deliveries give customers a copy of the receipt and coupon (if any). Weekly totals are kept for comparison with last year's performance.

5. a) Discuss the importance of unit testing and integration testing in object-oriented life cycle for system development. 7
   b) Why software review is needed? How formal technical review is helpful for maintaining quality of software project? 8
6. a) Define Software configuration management and explain its with processes. 7
   b) What is software process improvement (SPI)? Describe the different activities applied during SPI? 8
7. Write short notes on: **(Any two)** 2×5
   a) Make/Buy Decision
   b) ISO Standards
   c) Interface Design

POKHARA UNIVERSITY

Level: Bachelor | Semester: Fall | Year : 2021
Programme: BE | Full Marks: 100
Course: Object Oriented Software Engineering | Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Attempt all the questions.

1.	a)	Define Software Engineering. Describe about scrum software development and extreme programming in detail.	7
	b)	Explain spiral model with its pros and cons.	8
2.	a)	What is risk management? What are different types of risks and how can we identify risk? Explain.	7
	b)	What is feasibility study? Explain different types of feasibility study.	8
3.	a)	Obtain DFD for the following System. A customer can book a ticket from the internet or can directly buy the ticket in the Movie Hall itself. There can be multiple halls within one movie theatre. The ticket operator provides a ticket with hall's stamp after checking the booking information to the customer. The guard in each hall validates the ticket and provides access to the customer inside the hall. There is also provision of complementary food item which the café will provide in the break time of the movie.	8
	b)	What is class diagram? How it is represented? Explain it with suitable example.	7
4.	a)	What do you mean by Design Patterns? What is the importance of incorporating reuse in a project? List out its major advantages.	7
	b)	Discuss the various steps of interface design. How is it evaluated?	8
5.	a)	Define verification and validation. Discuss briefly about white box test and black box test.	8
	b)	Why change management is necessary to achieve quality? Explain change management process.	7

6. a) What is capability maturity model? Describe the five levels defined in the CMM 7

   b) Explain unit and integration testing in details. 8

7. Write short notes on: (**Any two**) 2×5

   a) Architectural Design

   b) Feature driven development

   c) FP based estimation

POKHARA UNIVERSITY

Level: Bachelor Semester: Spring Year : 2021
Programme: BE Full Marks: 100
Course: Object Oriented Software Engineering Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Attempt all the questions.

a) What is software process framework? The framework activities are complemented by a number of umbrella activities. Explain each umbrella activities. 8

b) Pokhara University is developing an integrated portal for exam form registration. Your company is applying for the development project. Which process model would you prefer for development and why? Discuss. 7

a) A software project involves the below activities. Find the Critical Path, and total time durations for the project. Also interpret your findings. 8

Activity	Precedence	Duration (days)
P	-	3
Q	-	4
R	P	5
S	Q	5
T	R,S	7
U	R,S	5
V	T	2
W	U	10

b) Define project estimation. Explain in detail the LOC and FP approach for project estimation. 7

3. a) Prepare context diagram and level 1 DFD for the following 8

A potential patient joins the doctors by submitting the patient application form. A new patient record is created and stored in patient record store. A patient makes an appointment by submitting his/ her details. An appointment card is generated and given to the patient. The appointment details are recorded in the database.

A front desk officer makes an telephone appointment for a patient by entering his/her details. He/she also cancels appointment for any patients by entering cancellation details. Both processes update the database. A doctor will see a patient. When they see a patient a list of appointment and patient's record will be accessed by the doctor. He /she may issue a prescription by entering prescription details in the system. Prescription is printed and issued to the patient.

b) What is Sequence Diagram? Explain with an example. 7

4. a) What is Design model? Differentiate between Object oriented analysis and object-oriented design. 8

b) Define requirement elicitation. Discuss the significance of Software quality assurance activities. 7

5. a) Discuss the importance of unit testing and integration testing in object-oriented life cycle for system development. 7

b) Explain basic path testing. Compute Cyclomatic complexity from the given piece of program 8

```
large = x [0];
for (i=1;i<=n; i++)
{
If (x[i] > large)
Large = x[i];
}
```

6. a) Define verification and validation. Discuss about the white-box and black-box testing. 8

b) Discuss about the emerging trends in software engineering. 7

7. Write short notes on: **(Any two)** 2×5

a) Six Sigma

b) Design pattern

c) The Make /Buy Decision

POKHARA UNIVERSITY

Level: Bachelor | Semester: Fall | Year : 2022
Programme: BE | Full Marks: 100
Course: Object Oriented Software Engineering | Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Attempt all the questions.

	a)	Give your justification on whether software systems should be engineered or manufactured.	7
	b)	What are the reasons behind agile popularity? Explain.	8
2.	a)	What is management spectrum? Explain different types of feasibility for acceptance of software	7
	b)	What are the main characteristics of Software Risks?	8
		A software team involved in the development of a software system plans on using 80 reusable components with average component size as 120 LOC and software engineering cost for each LOC as $ 11. Only 20 percent of the software components scheduled for reuse will be integrated into the application and the remaining functionality will have to be custom developed. The software team defines a project risk with 90% probability of occurrence of this risk. From the given scenario compute the risk exposure for this project and comment on what it implies.	
3.	a)	Define requirement engineering. What are various methods of requirement elicitation? Explain.	2+6
	b)	Briefly explain the set of guidelines for formal technical review (FTR).	7
4.	a)	Draw a use case diagram for following case study:	7
		In hospital a patient goes to registration machine He presses the on button then the screen Opens. He enters patient id number. He books for the doctor for his checkup. He checks the category of disease from given list, then he choose doctors name from given list. He enters time; he wants to meet the doctor. For this registration he need to enters the amount, if the amount digit is ok it accepts the registration and prints	

the registration slip, otherwise it will give a signal of alarm of in sufficient amount

b) A Passenger hands over his ticket at the counter. The employee at counter verifies the ticket. If something is wrong with it, he refers the passenger to the customer services else he asks the customer to hand over his luggage. He then verifies the customer's luggage; if a fee is required the customer pays the necessary fee after which he is issued a boarding pass. 8

Draw an activity diagram from the above scenario.

5. a) List out the differences between quality control and quality assurance and explain the elements and goals of software quality assurance (SQA). 7

b) What is regression testing? Differentiate between top- down and bottom- up integration testing.

6. a) What are test cases and what is the importance of testing and designing test cases. 7

b) Highlighting the Software Process Improvement Framework activities, explain why do you think that a Software development company should initiate SPI activities? 8

7. Write short notes on: **(Any two)** 2×5

a) Class diagram VS Object diagram

b) Domain and reuse analysis

c) Six sigma

POKHARA UNIVERSITY

Level: Bachelor | Semester : Spring | Year : 2023
Programme: BE | Full Marks: 100
Course: Object Oriented Software Engineering | Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) What do you understand by the term software engineering? Explain the software process framework in brief. 7
   b) A company is developing a new software product. The product is complex and will require a team of 100 developers to work on it over the course of 2 years. The company is looking for a software engineering model that will allow them to develop the product efficiently and effectively. Propose a software model for this scenario and provide justification for your answer. 8
2. a) What do you understand about outsourcing? Explain suppose an estimated LOC on any software project is 58,600, organizational average productivity is 620 LOC/PM. And the labor rate per month is Rs 12,000. Calculate the total project cost and estimated effort. 7
   b) Explain Risk is an inevitable aspect of any project, particularly software projects. How do project managers identify potential risks, and what are the various methods and tools used for Risk Management, including risk handling strategies, to proactively mitigate and address these risks before they escalate? 8
3. a) Define Requirement Engineering. Explain abstraction, modularity, functional independence and refinement in design concepts. 7
   b) Draw a level-1 DFD diagram for any one of the movie booking systems of Nepal. 8

   OR

   Draw an activity diagram to borrow books from your respected college library management system.
4. a) How Object-oriented analysis differs from Object-oriented Design? 7
   b) Explain the concept of the Class Diagram along with example of class diagram for Online Shopping System. 8

5. a) Clarify the phrase "Quality has a cost, but lack of quality also has a cost". Explain the defect amplification and removal process with example. 7
   b) What is Black box testing? Demonstrate different types of test you conduct during black box testing. 8
6. a) How can a project manager assure a client that the software product is of high quality? Describe the steps taken to ensure software quality while it is being developed. 7
   b) Describe the SPI framework in detail, outlining its key components and the steps involved in implementing an effective SPI initiative within an organization. 8
7. Write short notes on: **(Any two)** 2×5
   a) User Interface Design
   b) Process Activation Table (PAT)
   c) CMM

POKHARA UNIVERSITY

Level: Bachelor | Semester: Fall | Year : 2023
Programme: BE | Full Marks: 100
Course: Object Oriented Software Engineering | Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) Suppose Pokhara University is planning to make a software application for managing programs, notices and extra curricular information. This application needs to be completed in a span of 6-9 months for the information sharing only and the rest of the features will be added in around 2 years. Propose a software development model for this software and justify your answer. 8

   b) What is software process framework? The framework activities are complemented by a number of umbrella activities. Explain each umbrella activities 7

2. a) Compute the function point value for a project with following information. 8

   Number of inputs: 450
   Number of outputs: 700
   Number of inquiries: 303
   Number of files: 210
   Number of external interfaces: 85

   Assume that all complexity adjustment values are average. If the productivity of the company is 85 FP/person-month and average salary is $620 per month then calculate the cost and effort required for the project. Assume necessary data if required.

   b) What are the processes involved while planning a project? Also explain the software feasibility with an appropriate example. 7

3. a) Obtain 1 level DFD for the following system of enchasing cheque in a bank. A customer presents a cheque to a clerk. The clerk checks the ledger containing all account numbers and makes sure whether the account number in the cheque is valid, whether adequate balance is there in the account to pay the cheque, and whether the signature is authentic. Having done these, the clerk gives the customer a token. The clerk also debits customer account by the amount specified on the cheque. If cash cannot be paid due to an error in the cheuqe, the cheque is returned. The token number is written on the top of the cheque and it is passed on the cashier. The cashier calls out token number, takes the customer signature, pays cash, enters cash paid in a ledger called daybook, and file the cheque. 9

   b) Differentiate between class diagram and object diagram with example 6

4. a) Describe the principle of Software Engineering and explain the the use of abstraction, modularity, functional independence in design concepts 8

   b) Describe the structure based modeling explaining its components with an appropriate example. 7

5. a) What is the ISO standard? Explain the goals of software quality assurance 8

   b) What do you understand about software reliability? Compare between verification and validation testing. 7

6. a) What do you mean by test case and test suite? Prepare a test case for a simple login form. 8

   b) Explain the emerging trends in software Engineering technology evolution. 7

7. Write short notes on: **(Any two)** 2×5
   a) Design concepts
   b) Use-case diagram
   c) SCM