

# KISII UNIVERSITY

## SEMESTER EXAMS

### MAIN CAMPUS

#### UNIVERSITY EXAMINATION FOR THE AWARD OF THE DEGREE OF BACHELOR OF BUSINESS INFORMATION MANAGEMENT.

#### BINM-251 SYSTEMS ANALYSIS AND DESIGN

SEPT-DEC 2023

**TIME: 2HRS**

**DATE:**

**STREAM: BINM-Y2S1**

#### INSTRUCTIONS:

**Do not write anything on this paper**

**Answer Question ONE (Compulsory) and any THREE other questions.**

**Question ONE consists of 25 marks while the rest consist of 15 Marks each.**

#### QUESTION ONE

A) Discuss the system development life cycle (SDLC)(5mks)

b) Highlight the similarities and differences between network, hierarchical and relational data models.(5mks)

C) Explain each of the following terms as used in systems analysis and design (5marks)

- i. Prototype
- ii. Project
- iii. Legacy system
- iv. Problem
- v. CASE

c) Discuss the waterfall and spiral models as used in information system development(10mks)

#### QUESTION TWO

a) An airline organization has one reservation clerk on duty on its local branch at any given time. The clerk handles information regarding passenger reservation and flight timing. Assume that the number of customers arriving during any given period is poisson distributed with an arrival rate of eight per hour and that the reservation clerk can service a customer in six minutes at an average with an exponentially distributed service time.

- i. What is the probability that the system is busy? (2mks)
- ii. What is the average time a customer spends in the system? (2 mks)
- iii. What is the average length of the queue and what is the average number of customers in the system? (6mks)

b) Describe the dataflow diagram symbol. (5 mks)

#### QUESTION THREE

b) Discuss the planning, analysis and maintenance phases of information system development.(9mks)

b) Discuss the agile software development methodologies (6mks)

#### QUESTION FOUR

1. Assume the following facts

A project will cost \$ 45,000 to develop. When the system becomes operating after one year development period, operational cost will be \$ 9,000 during each year of the system is five years of operation useful life. The system will produce benefit of \$ 30,000 in the first year of operation, and this figure will increase by a compound 10% each year.(5 mks)

What is the payback period for this project?

2. Using the same facts as in project 2, what is the Return OnInvestment for this project?(5mks)

3. Using the same facts, as in project 2, what is the Net Present Value for this project?(5mks)

#### QUESTION FIVE

a) A particular project comprises of the following activities

Activity	Duration (days)	Predecessors
A	30	-
B	15	-
C	30	B
D	15	C
E	10	C
F	14	E
G	7	A,C
H	14	D,F,G

#### REQUIRED

- Draw the AON diagram for this project(5mks)
- Calculate the ES, EF, LS, LF, and slack times for each activity. (5mks)
- Identify the critical path. (2mks)

b) Discuss the advantages and disadvantages of Payback method in cost benefit analysis..(5 mks)