1.　(a)　(i)　Explain term *meta data* as used in system analysis and design.　(2 marks)

　　　(ii)　Explain each of the following terms as used in project scheduling:
　　　　　I　　optimistic time;　(2 marks)

　　　　　II　　early start time.　(2 marks)

　　(b)　Distinguish between *project task* and *milestone* as used in computer project management.
　　　　(4 marks)

　　(c)　Zep intends to develop a system testing policy for her company. Outline **four** testing rules that she is likely to include in the policy.　(4 marks)

　　(d)　(i)　Outline **two** benefits of carrying out system maintenance policy in organizations.
　　　　　(2 marks)

　　　(ii)　Parallel changeover is widely used by system developers during systems implementation. Explain **two** advantages that are associated with this changeover scheme.　(4 marks)

2. (a) (i) Outline **two** strategies that could be used by systems analyst to mitigate emerging trends in SAD. (2 marks)

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(ii) Explain **two** methods that could be used to acquire new information system in an organization. (4 marks)

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(b) Distinguish between *cardinality* and *relationship* as used in entity relation diagrams. (4 marks)

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(c) For each of the following SDLC stages, outline **three** objectives that the system analysis strive to achieve:

(i) feasibility studies; (3 marks)

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(ii) maintenance. (3 marks)

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(d) Tracey, an intern student with a certain company was required to carry out problem identification for a proposed information system. Outline **four** rules that she is likely to use. (4 marks)

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3. (a) (i) Explain the term *environment* as used in information systems. (2 marks)

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(ii) Distinguish between *adaptive* and *probabilistic* systems. (4 marks)

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(b) Joseph intends to develop a political information system. From the preliminary studies the system had undefined requirements.

(i) Identify the most appropriate system development approach he could use justifying your answer. (2 marks)

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(ii) Explain **two** advantages of the approach identified in (i). (4 marks)

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(c) (i) Differentiate between *static* and *dynamic* testing as used in systems implementation. (4 marks)

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(ii) The following is description of a diagnostic module used in a clinic system.

The system would prompt the nurse to enter the patient temperature and then check whether the temperature is positive or negative. If the temperature is negative then system will terminate else will convert the temperature to Fahrenheit and prints the diagnosis report.

Draw a program flowchart to represent the logic of the module. (4 marks)

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4. (a) (i) Outline **three** reasons of using data dictionary in system development. (3 marks)

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     (ii) Agnes intends to use structured analysis approach for her research project. Explain **two** limitations that she is likely to experience with the approach. (4 marks)

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    (b) Maureen intends to use observation method to investigate a proposed system. Outline **five** disadvantages of her method of data collection. (5 marks)

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    (c) Crest Hotel Ltd. intends to use a self-service system to allow its customers to order from their menu that consist of food, beverages and drinks. The order details are then stored on a pending order file which is then assigned to one of the hotel chefs for processing; the chef details are stored on the chef file. The chef is required to verify the order based on the details in the inventory file. When the food is ready the chef updates both the waiter and pending files. The waiter then serves the customer with the order and receives a payment which is forwarded to the cashier who then issues the customer with a receipt and updates the waiter and order files respectively.

Draw a Level 1 dataflow diagram to represent the hotel system. (8 marks)

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5.　(a)　Describe each of the following types of nodes as used in decision trees:

　　　(i)　chance/event;　(2 marks)

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　　　(ii)　terminal/edge;　(2 marks)

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　　　(iii)　decision.　(2 marks)

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　　(b)　(i)　Explain the term *super key* as used in entity relation diagram.　(2 marks)

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(ii) Structured English seeks to combine both system logic and natural language in system design. Outline **four** guidelines that could be used when using this design tool.

(4 marks)

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(c) Table 1 shows details for a proposed system project in a certain organization. Use it to answer the question that follows.

Event	Activity	Duration (weeks)	Precedence
A	Hardware selection	6	-
B	Software design	4	-
C	Install hardware	3	A
D	Coding and testing	4	B
E	File conversion	3	B
F	User manual	10	-
G	Training	3	F
H	Install and Test	2	D

Table 1

Draw a labeled Gantt chart for the proposed project schedule. (8 marks)

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6. (a) (i) Outline **two** uses of a user manual. (2 marks)

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(ii)   Outline **three** criteria that should be considered when selecting system development methodologies.   (3 marks)

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(b)   (i)   Outline **two** advantages of rapid system development.   (2 marks)

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(ii)   Poly intends to use prototyping to develop an information system for her company. Outline **five** strengths of the approach that could have influenced her.   (5 marks)

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(c)   Abex Systems Company Ltd. intends to use computer-based training sessions for the users of a new information system.

(i)   Explain **two** advantages of the training method that could have influenced the company.   (4 marks)

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(ii)   Explain **two** limitation of the method.   (4 marks)

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7.   (a)   Outline **four** guidelines that should be followed when developing system documentation.   (4 marks)

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(b) Table 2 shows net profits for project A and B respectively. Use it to answer the questions that follow.

Year	Project A (Kes)	Project B (Kes)
1	30,000	46,000
2	40,000	46,000
3	35,000	40,000
4	45,000	46,000

Table 2

(i) Using *return on investment technique* (ROI) determine the most worthwhile project given that the initial cost for the two projects was Kes 150,000 and Kes195, 000 respectively. (4 marks)

(ii) Calculate the payback time for each of the project. (3 marks)

(iii) Explain **two** limitations of using the payback technique on the project. (4 marks)

(c) (i) State two types of stakeholders in a system project. (1 mark)

(ii) Fiona would like to apply risk management techniques to avoid derailment of an information system. Explain **two** risk management techniques that she could use.

(4 marks)

8. (a) Outline **four** qualities for a good output design in an information system. (4 marks)

(b) Jackson System Development (JSD) is a linear system development method. Explain **three** typical steps/stages that could be followed when using the methodology. (6 marks)

(c) Afueni Bank Ltd. intends to develop an agency banking system to carter for its growing number of customers. The proposed system will allow agents to register new bank accounts, deposits, withdraws and fund transfers for the bank customers.

Draw a use-case diagram to represent the logical design of the described system. (5 marks)

(d)   Arc Sport Club Ltd. intends to carry out a raffle competition in aid of its community project. The winner of the raffle must have been a club member for at least five years and must have bought raffles worth more than Kes 200,000. In addition the winner must be a Kenyan citizen and possess a good track record in sport.

Draw a decision tree to represent the logical of the narrative.   (5 marks)