



**CRAWFORD UNIVERSITY, FAITH CITY IGBESA
COLLEGE OF NATURAL AND APPLIED SCIENCES**

DEPARTMENT OF COMPUTER AND MATHEMATICAL SCIENCES

HARMATTAN SEMESTER

COURSE CODE: ICT 323

UNITS: 3

SESSION: 2020/2021

TITLE: SWITCHING SYSTEM

TIME ALLOWED: 2.5 HOURS

INSTRUCTION: ANSWER ANY FOUR QUESTIONS

QUESTION ONE (15 MARKS)

- (A) (i) Define switching and discuss the need for it (2mrks)
(ii) Differentiate between A switch, a router and a hub (3mrks)
- (B) Briefly discuss the elements of a switching system (4mrks)
- (C) Briefly discuss the following concepts:
- ISDN (2mrks)
 - Frame Relay (2mrks)
 - PBX (2mrks)

QUESTION TWO (15 MARKS)

- (A) (i) What are circuit-switched (CS) networks? (2mrks)
(ii) Discuss the phases involved in the sequence for call processing between subscribers in the PSTN (4mrks)
- (B) Differentiate between centralized and distributed SPC switching systems (4mrks)
- (C) What is a State Transition Diagram (S.T.D)? Identify and describe its components (5mrks)

QUESTION THREE (15 MARKS)

- (A) Briefly discuss and compare the three main switching techniques available for telecommunication traffic (6mrks)
(ii) Differentiate between the two types of virtual circuits (2mrks)
- (B) Describe the basic signal exchange for call processing and briefly discuss the possible difficulties that could be encountered (4mrks)
- (C) Differentiate between synchronous, asynchronous, and plesiochronous digital transition of signals in SONET (3mrks)

QUESTION FOUR (15 MARKS)

- (A) Draw the state transition diagram (S.T.D.) for a typical call (8mrks)
- (B) Illustrate the structure of frames use in packet switching, explaining the functions of the constituent parts (4mrks)
- (C) Compare and contrast the OSI reference service model and that of the TCP/IP (4mrks)

QUESTION FIVE (15 MARKS)

- (A) (i) The ATM reference model has three (3) planes. Discuss them (3mrks)
(ii) Briefly describe ATM Interfaces (3mrks)
- (B) (i) Differentiate between the structure of packet frames used in ATM and that of SONET (4mrks)
(iii) Describe with an appropriate annotated diagram, the ATM reference model (3mrks)
- (C) Itemize the specific benefits of Asynchronous Transfer Mode (ATM) and Synchronous Optical Networks (SONET), one over the other (3mrks)

QUESTION SIX (15 MARKS)

- (A) (i) Briefly discuss the term Multiplexing (2mrks)
(ii) Identify the different methods of multiplexing communication signals, state the merits and demerits of each method identified (5mrks)
- (B) Describe the Physical implementation of Synchronous Optical Networks (SONET) (3mrks)
- (C) Describe Section, Line and Path in SONET (4mrks)

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