KABARAK UNIVERSITY

UNIVERSITY EXAMINATIONS

MAIN CAMPUS/TOWN CAMPUS

FIRST SEMESTER ACADEMIC YEAR 20202021

EXAMINATION FOR THE DIPLOMA IN INFORMATION TECHNOLOGY

COMP 466: MESSAGING SYSTEMS

STREAM:Y4S2 **TIME: 9:00:11:00 AM**

EXAMINATION SESSION: SEPT-DEC **DATE: 08/02/2021**

SECTION A (30 MARKS)

ANSWER ALL QUESTIONS IN THIS SECTION

QUESTION ONE (30 MARKS)

a)

i) Explain the difference between shared memory and message passing communication [2 Marks]

ii) Provide ONE advantage of shared memory and ONE advantage of message passing communication [2 Marks]

iii) Provide TWO disadvantages of shared memory and TWO disadvantages of message passing communication [4 Marks]

b) Giving an appropriate justification for your answer, classify the following either as synchronous or asynchronous communication
   i) video conferencing [3 Marks]
   ii) communication on whatsApp [3 Marks]

c) Giving an appropriate justification for your answer, classify the following either as push or pull messaging
   i) breaking news notifications on mobile phones [3 Marks]
   ii) calendar reminders set on mobile phone [3 Marks]

d) Explain how Direct and Indirect messaging work [4 Marks]

e)
   i) Provide TWO reasons to explain why pagers are more reliable than smartphones in messaging [2 Marks]
   ii) Explain TWO differences between SMS and USSD [4 Marks]

SECTION B (40 MARKS)

Answer <u>ANY TWO</u> Questions in This section

QUESTION TWO (20 MARKS)

a) Suppose processes **p1**, **p2** and **p3** share the same mail box **A.** Process **p1** sends a message to **A** while **p2** and **p3** execute a receive ( ) from A concurrently and this creates a deadlock regarding which process will receive the message sent by p2. Explain three methods that can be used to resolved this deadlock [6 Marks]

b)
   i) Explain the concept of buffering in messaging systems clearly showing why it is important [3 Marks]
   ii) Explain how the following types of buffers work [6 Marks]
      - Zero capacity buffer
      - Bounded capacity buffer
      - Unbounded Capacity buffer

b) Explain how the paging messaging technology works [5 Marks]

QUESTION THREE (20 MARKS)

a) Discuss three options available to become a Bulk SMS Aggregator [6 Marks]
b) Explain TWO reasons that make it impractical for businesses to work directly with wireless carriers to send and receive their short code messages even though this is the most logical scenario [4 Marks]

c) Provide FIVE differences between HTTP SMS API and SMPP SMS API [5 Marks]

i) Distinguish between a short and a long messaging code [2 Marks]
ii) Explain THREE applications of short code [3 Marks]

QUESTION FOUR (20 MARKS)

a) Explain what is meant by Instant Messaging [2 Marks]
b) Outline the Nine Basic steps to describe how the Instant Messaging Works [9 Marks]
c) Explain why Instant Messaging require a server [3 Marks]
d) Explain the advantages of Messaging Apps versus Social Media in offering Better Customer Service with regard to [6 Marks]
   i) Privacy
   ii) Image and Reputation
   iii) Speed and Automation

QUESTION FIVE (20 MARKS)

a) Explain what is meant by HDML notifications [3 Marks]
b) Explain how HDML notifications differ from SMS [2 Marks]
c) Once an alert is sent to the HDML gateway, it is queued for delivery. Outline the information that is used to determine the length of time the alert spends in the gateway's queue for pull and push notifications [5 Marks]
d) With aid of a diagram demonstrate the WAP push framework and explain the role of the following parts in the framework [10 Marks]

i) Push Initiator (PI).

ii) Push Proxy Gateway (PPG).

iii) WAP client. .