



# UNIVERSITI TUN HUSSEIN ONN MALAYSIA

## FINAL EXAMINATION SEMESTER II SESSION 2009/2010

SUBJECT NAME : NETWORK AND DATA  
COMMUNICATION

SUBJECT CODE : BIT 2073

COURSE : 2 BIT

EXAMINATION DATE : APRIL/MAY

DURATION : 3 HOURS

INSTRUCTION : ANSWER FIVE (5) QUESTIONS ONLY.

THIS PAPER CONSIST OF **FOUR (4)** PAGES

- Q1**
- (a) List **THREE** (3) criteria necessary for a data communication system? Explain them. (6 marks)
  - (b) What are the **TWO** (2) advantages of multipoint connection over a point-to-point connection? (4 marks)
  - (c) Two computers connected with ethernet hub. Identify network category for their connection? Elaborate your answer. (4 marks)
  - (d) Protocol is a set of rule that govern data communication; list **THREE** (3) element of data communication protocol. Explain each of them. (6 marks)
- Q2**
- (a) The signal with a power level of 10mW is transmitted into a transmission media. The power level reading at some distance taken with the value of 5 mW. Find the power loss in that media in unit dB. (5 marks)
  - (b) From **Q2(a)**, find the distance of which the reading of 5 mW been taken. Given that the loss taken is 3 times the first reading in (dB) for that next 6 meter. (5 marks)
  - (c) A signal has a fundamental frequency of 1.250 KHz. Convert this to unit Hz and calculate its period in unit second. (5 marks)
  - (d) The wavelength in vacuum for a fibre optic lights source is 1550 nm. The corresponding frequency is 193.4 THz. Proof that the speed of the light source is  $3 \times 10^8$  m/s. (5 marks)

- Q3**
- (a) What is IPv4 addressing? Explain. (3 marks)
  - (b) What is a subnet and explain your answer with appropriate illustration. (3 marks)
  - (c) State **FOUR (4)** advantages of IPv6 over IPv4. (4 marks)
  - (d) What is network mask? (4 marks)
  - (e) State **THREE(3)** different classes of the IP addresses and their own default masks. (6 marks)

- Q4** Suppose a file of 10,000 bytes is to be sent over a line with a bit rate of 200bps.
- (a) Calculate the overhead in bits and time taken to transfer the data using asynchronous communications. Assume one start bit and one stop bit and 8 data bit for each frame. The 8 bit character consists of all data bits, with no parity bit and one bit used as the gap using stop bit between frames. (5 marks)
  - (b) Calculate the overhead in bits and time using synchronous communication. Each frame consists of 1000 characters with an overhead of 48 control bit per frame. (5 marks)
  - (c) Replace the file size to 100,000 bytes. Calculate the overhead and time taken for transfers the data in **Q4(a)**. (5 marks)
  - (d) Change the bit rate to 9600 bps. Calculate the time taken for data transfers in **Q4(b)**. (5 marks)

- Q5** Wide Area Network (WAN) is a computer network that spans a relatively large geographical area. WAN technologies are classified into two i.e. packet switching or circuit switching. Explain with appropriate examples what you understand by the following Wide Area Network technologies:
- (a) Packet Switching (5 Marks)
  - (b) Circuit Switching (5 Marks)
  - (c) Asynchronous Transfer Mode (ATM) (5 Marks)
  - (d) Asymmetric Digital subscriber Line (ADSL) (5 Marks)
- Q6** Open System Interconnection (OSI) is a standard description or reference model for how messages should be transmitted between two points in a telecommunication network. The reference model defines seven layers of functions that takes place at each of the communication. Explain briefly the following OSI layers:
- (a) Data Link Layer (5 marks)
  - (b) Physical Layer (5 marks)
  - (c) Session Layer (5 marks)
  - (d) Presentation Layer (5 marks)