



12 Pages

1. Please give the information requested in the boxes below.
2. Enter your name in the space provided to the right, fold up the flap and seal down (using the label provided) to hide your name.
3. The answers must be legibly written. The Examiners can either ignore illegible script or have it typed and the expense of typing charged to the candidate.
4. Write your answers in ink.
5. Begin each answer on a fresh page. Do all rough work in the answer book and cross it through.
6. No part of this book is to be torn out; it must be handed in complete.
7. If more books than one are used, fasten them together using the tags available from the invigilator(s).
8. **Every book must be handed in. In no circumstances may answer books, used or unused, be taken out of the examination venue.**

[illegible]

(Gweler yr ochr arall am y fersiwn Cymraeg)

SURNAME: Muin

FORENAME(S): Habib

(See the other side for English version)

7	Nifer y Llyfrau Atebion a gyflwynwyd	
6	Rhif Sedd	
5	Lleoliad yr Arholiad	
4	Dyddiad ac Amser yr Archoliad	
3	Cod y Modwl	
2	Tell y Papur Arholiad	
1	Rhif Myfyrwr	

[illegible]

3. Rhaid i'r atebion fod mewn llawysgriften ddarlennadwy. Gall yr Arholiwr naill ai anwybyddu sgript annarllennadwy, neu drefnu iddi gael ei theipio a chael yr ymgeisydd i dalu.
4. Ysgrifennwch eich atebion mewn inc.
5. Dechreuwch bob ateb ar dudalen newydd. Gwnewch unrhyw fras nodiadau yn y llyfr atebion a thynnu llinell drwyddynt.
6. Ni ddylid rhwgo unrhyw ran o'r llyfr hwn; rhaid ei gyflwyno yn gyfan.
7. Os defnyddir mwy nag un llyfr, rhwymwch hwy gyda'i gilydd gan ddefnyddio'r tagiau sydd ar gael oddi wrth y gwyllwyr/gwyliwyr.
8. Rhaid dychwelyd pob llyfr. Ni chaniateir mynd â llyfrau atebion, wedi eu defnyddio neu heb eu defnyddio, allan o'r lleoliad arholi o dan unrhyw amgylchriad.

1. Rhwch yr holl wybodaeth y gofynnir amdani yn y blychau isod.
2. Rhwch eich enw yn y lle a ddarparwyd ar y dde, pwygwh et a'i seilio i lawr (gan ddefnyddio'r label a ddarparwyd) i guddio'ch enw.

Cyfarwyddiadau i Ymgeiswyr

12 Tüdalen

Llyfr Atebion Arholiadau



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

Llenwch, plygwrch a seliwrch
(gweler nodyn 2 isod)

CYFENW:

ENW(AU) CYNTAF:

Question one

128 64 32 16 8 4 2 1

a) 56

$$56/2 = 28 \text{ r } 0$$

$$28/2 = 14 \text{ r } 0$$

$$14/2 = 7 \text{ r } 0$$

$$7/2 = 3 \text{ r } 1$$

$$3/2 = 1 \text{ r } 1$$

$$1 = 1$$

$$\text{binary} = 111000$$

3

b) 163

$$163/2 = 81 \text{ r } 1$$

$$81/2 = 40 \text{ r } 1$$

$$40/2 = 20 \text{ r } 0$$

$$20/2 = 10 \text{ r } 0$$

$$10/2 = 5 \text{ r } 0$$

$$5/2 = 2 \text{ r } 1$$

$$2/2 = 1 \text{ r } 0$$

$$1 = 1$$

$$\text{binary} = 10100011$$

3

d. Convert binary to base 10

c) 128 64 32 16 8 4 2 1

$$11100110 = \underline{\underline{230}}$$

128

64

32

4

230

12

128 64 32 16 8 4 2 1

$$b) \quad 01010011 = \underline{83}$$

$$\begin{array}{r} 64 \\ 16 \\ 2 \\ \hline 83 \\ 1 \end{array} +$$

c/. Convert hex to binary

$$a) \quad 8B \quad B \rightarrow 11$$

$$\begin{array}{ll} 8/2 = 4r0 & 11/2 = 5r1 \\ 4/2 = 2r0 & 5/2 = 2r1 \\ 2/2 = 1r0 & 2/2 = 1r0 \\ 1 = 1 & 1 = 1 \end{array}$$

$$8B = \underline{10001011}$$

$$b) \quad A7$$

$$A \rightarrow 10$$

$$\begin{array}{ll} 10/2 = 5r0 & 7/2 = 3r1 \\ 5/2 = 2r1 & 3/2 = 1r1 \\ 2/2 = 1r0 & 1 = 1 \\ 1 = 1 & \end{array}$$

$$A7 = \underline{10100111}$$

d/. Convert Hex to decimal

$$a) \quad 23$$

$$\begin{array}{r} 16^2 \quad 16^1 \quad 16^0 \\ 256 \quad 16 \quad 1 \\ \hline 2 \quad 3 \end{array}$$

$$= \underline{32} + 3 = \underline{35}$$

$$b) \quad EF \quad E \rightarrow 14$$

$$\begin{array}{r} 16^2 \quad 16^1 \quad 16^0 \\ 256 \quad 16 \quad 1 \\ \hline 14 \quad 15 \\ E \quad F \end{array}$$

$$14 \times 16 = 224 + 15 \times 1 = 15$$

$$14 \times 10 = 140$$

$$14 \times 6 = 84$$

$$\text{Answer} = \underline{239}$$

$$e/. \quad 2^0 = 1$$

$$2^1 = 2$$

$$2^2 = 4$$

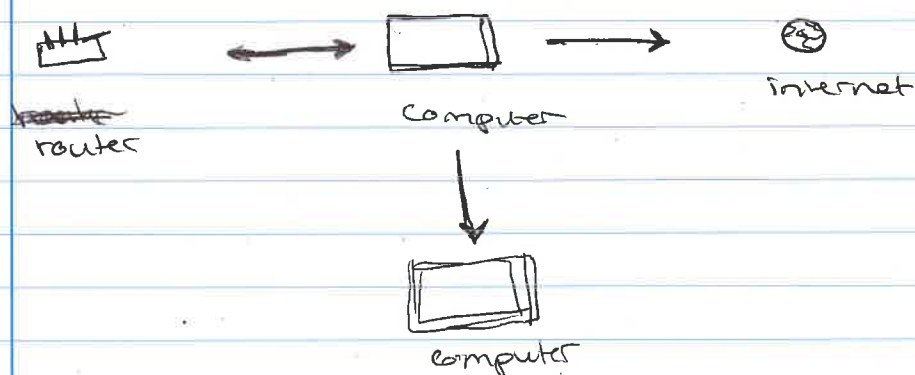
$$2^3 = 8$$

$$2^4 = 16$$

$$\text{Answer} = \underline{16}$$

Question four

a) Diagram of a computer network



ii) 192.168.26.38

$$\begin{array}{ll}
 192/2 = 96 \text{ r } 0 & 168/2 = 84 \text{ r } 0 \\
 96/2 = 48 \text{ r } 0 & 84/2 = 42 \text{ r } 0 \\
 48/2 = 24 \text{ r } 0 & 42/2 = 21 \text{ r } 0 \\
 24/2 = 12 \text{ r } 0 & 21/2 = 10 \text{ r } 1 \\
 12/2 = 6 \text{ r } 0 & 10/2 = 5 \text{ r } 1 \\
 6/2 = 3 \text{ r } 0 & 5/2 = 2 \text{ r } 1 \\
 3/2 = 1 \text{ r } 1 & 2/2 = 1 \text{ r } 0 \\
 1 = 1 & 1 = 1
 \end{array}$$

$$\begin{array}{ll}
 26/2 = 13 \text{ r } 0 & 38/2 = 19 \text{ r } 0 \\
 13/2 = 6 \text{ r } 1 & 19/2 = 9 \text{ r } 1 \\
 6/2 = 3 \text{ r } 0 & 9/2 = 4 \text{ r } 1 \\
 3/2 = 1 \text{ r } 1 & 4/2 = 2 \text{ r } 0 \\
 1 = 1 & 2/2 = 1 \text{ r } 0 \\
 & 1 = 1
 \end{array}$$

$$192.168.26.38 = 10100011.10111000.11010.100110$$

$$\begin{array}{ll}
 172/2 = 86 \text{ r } 0 & 200/2 = 100 \text{ r } 0 \\
 86/2 = 43 \text{ r } 0 & 100/2 = 50 \text{ r } 0 \\
 43/2 = 21 \text{ r } 1 & 50/2 = 25 \text{ r } 0 \\
 21/2 = 10 \text{ r } 1 & 25/2 = 12 \text{ r } 1 \\
 10/2 = 5 \text{ r } 0 & 12/2 = 6 \text{ r } 0 \\
 5/2 = 2 \text{ r } 1 & 6/2 = 3 \text{ r } 0 \\
 2/2 = 1 \text{ r } 0 & 3/2 = 1 \text{ r } 1 \\
 1 = 1 & 1 = 1
 \end{array}$$

$$\begin{array}{ll}
 78/2 = 39 \text{ r } 0 & 254/2 = 127 \text{ r } 1 \\
 39/2 = 19 \text{ r } 1 & 127/2 = 63 \text{ r } 1 \\
 19/2 = 9 \text{ r } 1 & 63/2 = 31 \text{ r } 1 \\
 9/2 = 4 \text{ r } 1 & 31/2 = 15 \text{ r } 1 \\
 4/2 = 2 \text{ r } 0 & 15/2 = 7 \text{ r } 1 \\
 2/2 = 1 \text{ r } 0 & 7/2 = 3 \text{ r } 1 \\
 1 = 1 & 3/2 = 1 \text{ r } 1 \\
 & 1 = 1
 \end{array}$$

$$= 10101100.11001000.100110.11110101$$

Q1

F/

$$200 \times 800 = 1600$$

$$\text{RGB} = 800 \text{ MB/s}$$

$$16$$

$$9/16 \text{ memory} = 140$$

Question 2

b) An disadvantage of SSD over Hard disk is it holds more memory.

QUESTION TWO (20 marks total)

- a) Produce a labelled diagram showing the construction of a typical rotating hard disk (5 marks)
 By referring to this diagram, explain its basic method of operation (5marks)
 Similarly, explain what the specifications 'Average access time', 'sustained transfer speed' and 'burst transfer speed' refer to. (3 marks)
- b) How does a Solid State Drive (SSD) differ from a conventional rotating hard disk?
 State two advantages and one disadvantage of SSDs over conventional Hard Disks. (7 marks)

QUESTION THREE (30 marks total)

Match each definition/term to appropriate word.

No	Definition/Terms	Word	Answer
1	An advantage of the peer-to-peer network model is	selecting the path to destination networks	Networks
2	Which term is used to refer to a Layer 2 PDU?	bandwidth; throughput	Encapsulation
3	Which type of Ethernet cable should be used to directly connect two devices that both use the same pins for transmitting and receiving data?	Physical network topology	TCP
4	How many binary bits exist within an IPv6 address?	SSH	128
5	An example for global routable IP address	Ease of setup	225.225.225.
6	A _____ centre is a facility used to house computer systems in an enterprise network.	Internet	default gateway
7	At which layer of the TCP/IP model does TCP operate?	Network Interface Card (NIC)	bandwidth
8	What role does a router play on a network?	UDP	Internet
9	What type of program installs and gathers personal information, including password and account information, from a computer without permission or knowledge of the user?	Encapsulation	spy ware
10	What type of device is commonly connected to the Ethernet ports on a home wireless router?	TCP	HTTP
11	Records where each host is located and how it is connected to the network	default gateway	IP Address
12	What terms represent the maximum and actual speed that can be utilized by a device to transfer data?	Frame	

13	Which type of attack involves an attacker using a powerful computer to try a large number of possible passwords in rapid succession to gain access to a system?	200.165.200.215	Spyware
14	_____ protocol operate at the application layer of the OSI model?	reference model	Internet
15	Transfer a photo to another phone by touching the two devices to each other	multicast	email
16	_____ is a private IP address	NFC	DoS
17	_____ provide secured virtual terminal access to remote servers.	HTTP server	SMTP
18	Uses acknowledgements to guarantee delivery	data	data
19	Which IP configuration parameter provides the IP address of a network device that a computer would use to access the Internet?	email	
20	What type of attack is the ping of death?	FF:FF:FF:FF:FF:FF	Malware
21	What is a "best effort" protocol well suited for streaming audio and VoIP?		Internet
22	The process of adding additional information to the pieces of data that make up the message in order to ensure that it is delivered to the correct application on the correct destination host	10.1.1.1	email
23	What type of message is sent to a specific group of hosts?	DoS	
24	_____ is a broadcast Ethernet frame	spyware	SMTP
25	Hardware that enables the device to connect to the network medium, either wired or wireless	255.255.255.255	LAN Device
26	Which type of network model describes the functions that must be completed at a particular layer, but does not specify exactly how each protocol should work?	Crossover twisted-pair	
27	Port 80 is well known port for the _____ server application	Brute force	NFC
28	Term used to describe the global IP network that results from the interconnection of many independently owned networks	LAN devices	
29	What type of server would use IMAP?	128	
30	Which destination IPv4 address does a DHCPv4 client use to send the initial DHCP Discover packet when the client is looking for a DHCP server?	SMTP	Multi cast

2

Question No.

Examiner Only

Arholwr yn unig

Rhif y Cwestiwn