J277 COMPUTER SCIENCE MOCK EXAM REVISION PAPER 1

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Character Sets

Character sets are all the different characters that a computer can represent. The two common character sets are:

- ASCII or Extended ASCII
- Unicode

An ASCII character set can represent 256 characters. Each character is made up of 8 bits.

Q: If a text file has 1000 characters, how much is the estimated file size in Kilobytes:

Hint:

1	character =	8 bits			

ASCII Table:

						Decim	al -			Octal - on Ch	Hex – art	ASC	CII						
Decimal	Binary	Octal	Hex	ASCII	Decimal	Binary	Octal	Нех	ASCII	Decimal	Binary	Octal	Hex	ASCII	Decimal	Binary	Octal	Hex	ASCII
0	00000000	000	00	NUL	32	00100000	040	20	SP	64	01000000	100	40	@	96	01100000	140	60	
1	00000000	001	01	SOH	33	00100000	041	21	1	65	01000000	101	41	A	97	01100000	141	61	а
2	00000010	002	02	STX	34	00100010	042	22	-	66	01000010	102	42	В	98	01100001	142	62	b
3	00000011	003	03	ETX	35	00100011	043	23	#	67	01000011	103	43	C	99	01100011	143	63	c
4	00000100	004	04	EOT	36	00100100	044	24	s	68	01000100	104	44	D	100	01100100	144	64	d
5	00000101	005	05	ENQ	37	00100101	045	25	96	69	01000101	105	45	E	101	01100101	145	65	e
6	00000110	006	06	ACK	38	00100110	046	26	&	70	01000110	106	46	F	102	01100110	146	66	f
7	00000111	007	07	BEL	39	00100111	047	27		71	01000111	107	47	G	103	01100111	147	67	g
8	00001000	010	08	BS	40	00101000	050	28	(72	01001000	110	48	H	104	01101000	150	68	h
9	00001001	011	09	HT	41	00101001	051	29)	73	01001001	111	49	1	105	01101001	151	69	1
10	00001010	012	0A	LF	42	00101010	052	2A	*	74	01001010	112	4A	J	106	01101010	152	6A	j
11	00001011	013	0B	VT	43	00101011	053	2B	+	75	01001011	113	4B	K	107	01101011	153	6B	k
12	00001100	014	0C	FF	44	00101100	054	2C	,	76	01001100	114	4C	L	108	01101100	154	6C	1
13	00001101	015	0D	CR	45	00101101	055	2D	-	77	01001101	115	4D	M	109	01101101	155	6D	m
14	00001110	016	0E	SO	46	00101110	056	2E		78	01001110	116	4E	N	110	01101110	156	6E	n
15	00001111	017	0F	SI	47	00101111	057	2F	1	79	01001111	117	4F	0	111	01101111	157	6F	0
16	00010000	020	10	DLE	48	00110000	060	30	0	80	01010000	120	50	P	112	01110000	160	70	p
17	00010001	021	11	DC1	49	00110001	061	31	1	81	01010001	121	51	Q	113	01110001	161	71	q
18	00010010	022	12	DC2	50	00110010	062	32	2	82	01010010	122	52	R	114	01110010	162	72	r
19	00010011	023	13	DC3	51	00110011	063	33	3	83	01010011	123	53	S	115	01110011	163	73	s
20	00010100	024	14	DC4	52	00110100	064	34	4	84	01010100	124	54	T	116	01110100	164	74	t
21	00010101	025	15	NAK	53	00110101	065	35	5	85	01010101	125	55	U	117	01110101	165	75	u
22	00010110	026	16	SYN	54	00110110	066	36	6	86	01010110	126	56	V	118	01110110	166	76	V
23	00010111	027	17	ETB	55	00110111	067	37	7	87	01010111	127	57	W	119	01110111	167	77	W
24	00011000	030	18	CAN	56	00111000	070	38	8	88	01011000	130	58	X	120	01111000	170	78	X
25	00011001	031	19	EM	57	00111001	071	39	9	89	01011001	131	59	Υ	121	01111001	171	79	у
26	00011010	032	1A	SUB	58	00111010	072	3A		90	01011010	132	5A	Z	122	01111010	172	7A	Z
27	00011011	033	1B	ESC	59	00111011	073	3B	į.	91	01011011	133	5B	[123	01111011	173	7B	{
28	00011100	034	1C	FS	60	00111100	074	3C	<	92	01011100	134	5C	1	124	01111100	174	7C	1
29	00011101	035	1D	GS	61	00111101	075	3D	=	93	01011101	135	5D	1	125	01111101	175	7D	}
30	00011110	036	1E	RS	62	00111110	076	3E	>	94	01011110	136	5E	٨	126	01111110	176	7E	~
31	00011111	037	1F	US	63	00111111	077	3F	?	95	01011111	137	5F	-	127	01111111	177	7F	DEL
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Q: What is the ASCII character K in 8-bit binary?

nexadecimal?
exadecimal:
bers into binary, and then convert them into hexadecimal.
Hexadecimal:
Hexadecimal:
Hexadecimal:
T TO ACL S O S THIS IN THE STATE OF THE STAT
Hexadecimal:
1
Hexadecimal:

f) 54

Binary:	Hexadecimal:
g) 12	
Binary:	Hexadecimal:

File Sizes

Q: Put the file sizes in order from smallest to largest:

smallest

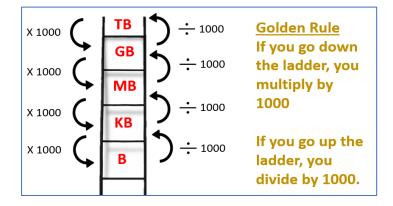
largest

1			

KB TB MB Byte Bit Nibble PT

Q: Calculate how many 3KB documents could be stored in a 10 GB hard drive.





Binary Shifts

A left binary shift multiples a number and a right shift will divide a number.

Q: Carry out binary shifts on the following:
a) Left shift by 1 place: 00110000
b) Left shift by 2 places: 11110000
c) Right shift by 1 place: 01011111
d) Right shift by 3 places: 11110101
Central Processing Unit (CPU) The CPU carries out the fetch, decode, execute cycle to process instructions.
It is made up of:
 Registers Control Unit Arithmetic Logic Unit
Registers are small amounts of memory in the CPU and the CPU has four.
Q: State the role of each register:

Program Counter

Memory Address Register
Marany Data Dagistar
Memory Data Register
Accumulator
The performance of the CPU can be affected by its clock speed, number of cores and cache
size.
Q: How does clock speed affect the performance of the CPU?
Q. How does clock speed affect the performance of the of c.
Storage
a) Why does a computer need secondary storage?

b) Why does a computer need primary storage?	

There are three types of secondary storage devices:

- Magnetic
- Solid State
- Optical

Q: Explain two advantages of using each storage device.

Туре	Advantages
Magnetic	
Solid State	
Optical	

Legislation

There are four types of legislation involving computers:

- The Copyright Designs and Patents Act
- Data Protection Act
- Computer Misuse Act

Q: Explain, using one sentence, what each law outlines.
DPA
CMA
CDPA
Networks
Q: Name two features of a Wide Area Network.
Or Name two feetures of a Legal Area Nativerly
Q: Name two features of a Local Area Network.

for each meth		cted using wired a				
for each meth O: Tick which	20d		nd wireless met	hods, there a	re different s	tandards
): Tick which	iou.					
~	n method ea	ach standard is.				
	Wired	Wireless				
Wi-Fi						
Ethernet						
Bluetooth						
Tick one hov						
TICK OHE DOX	in each rov	w to identify if the	description is m	nore appropria	ate for Etherr	net or WiF
TICK ONE DOX	in each rov	w to identify if the Description	description is m	nore appropria	ate for Etherr	net or WiF
	vired conne	Description	description is m			net or WiF
Av	vired conne	Description				net or WiF
A v	vired conne ore likely to	Description ection	terference			net or WiF
A v Mc	vired conne ore likely to	Description ection be affected by interaction	terference			net or WiF
A v Mc Da Wi	vired conne ore likely to ta can be t reless trans	Description ection be affected by interaction	terference ster speed			net or WiF

Q: Name three roles/features of a switch.

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Factor that affects network performance	Description
	The physical media used to connect
	computers in a network together. For
	example, a fibre optic cable which has high speeds.
Network Topology	
Number of users	
	The measure of how much data the network
	can transmit at a given time. The higher this
	is, the better the performance of the network.
Latency	
: Name three protocols that are used to	send emails:

Server Software Licenses There are two types of software licenses, which outline what you can and can software. Q: Tick either open source or proprietary for each feature in the table. Feature Open Source Proprietary
There are two types of software licenses, which outline what you can and can software. Q: Tick either open source or proprietary for each feature in the table. Feature Open Source Proprietary
Free to use
Free to use
Paid for
Created by professional
companies
Created by the
community
Source code shared
Source code is not

O. Evaloin three disadventages of using Cloud Computing
Q: Explain three disadvantages of using Cloud Computing.
Images and Sound
Q: Describe the following words in relation to the way sound is represented on a computer
system:
System.
a) Sample Rate
b) Bit Depth
O: Explain how sampling is used to convert a voice recording into a digital form
Q: Explain how sampling is used to convert a voice recording into a digital form.
Q: Explain how sampling is used to convert a voice recording into a digital form.
Q: Explain how sampling is used to convert a voice recording into a digital form.
Q: Explain how sampling is used to convert a voice recording into a digital form.

Q: What affect does increasing colour depth have on the:
a) Quality of the image
b) File size
To calculate colour depth you work out 2 to the power of n where n is the number of bits used per pixel.
For example, to work out the colour depth of a picture which uses 3 bits per pixel:
2 to the power of $3 = 8$ colours
Q: What is the colour depth of an image that uses 4 bits per pixel? Show your working.
Q: What is metadata? Explain and give one example.
Compression
Compression is used to reduce the file size of an image.
Q: Describe the features of:
a) Lossy compression

b) Lossless Compression
Q: Which compression method would you use to compress a word document? Why?
4. Which compression means you do to be compressed in the contract that
Virtual Memory
Virtual memory is needed when the computer runs out of RAM.
Virtual illemory is needed when the computer runs out of NAIVI.
Q: Describe the steps that the computer takes when moving data to and from RAM/virtual
memory.

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