

Gujarat Technological University

OMR Test for Recruitment of

Assistant Professor

(Centre for Mobile Computing & Wireless
Technologies)

Name of Candidate :

Seat Number :

Date of Test :

28.05.2016

Session Time :

3 pm. to 5 pm.

Candidate Signature

[on receipt of Booklet
form invigilator]

Invigilator Signature

[on completion of exam]

1	The capacitance appearing across a reverse biased semiconductor junction	A	Increases with increase in bias voltage	B	Decreases with increase in bias voltage
		C	Independent of the bias voltage	D	does not exist
2	Which of the transistor configuration is capable of providing current gain and voltage gain	A	common base	B	common collector
		C	common emitter	D	no configuration can provide
3	In the fixed bias circuit if the base resistor is shortened then	A	the transistor may get damaged	B	the base voltage will be zero
		C	The collector voltage equal to supply voltage	D	the collector current is zero
4	LED's efficiency is a measure of the electrical energy required to produce a certain	A	current	B	resistance
		C	Photometric efficiency	D	light output
5	The rise time of an amplifier is	A	inversely proportional to the upper 3 dB cut-off frequency	B	directly proportional to the upper 3 dB cut-off frequency
		C	independent of the upper 3dB frequency	D	proportional to the square root of the upper 3dB cut-off frequency
6	How much percentage of maximum power can be dissipated by a transistor for an operating Temperature equal to its maximum junction temperature?	A	100%	B	10%
		C	50%	D	0%
7	In negative -feedback amplifier with a high open-loop gain, doubling the feedback factor	A	double the closed loop gain too	B	has no effect on closed loop gain
		C	reduces the closed loop gain to one fourth	D	reduces the closed loop gain to one - half

15	The bandwidth of an ac amplifier having a lower critical frequency of 1 kHz and an upper critical frequency of 10 kHz is	A 1 kHz	B 9 kHz	C 10 kHz	D 11kHz
16	Drain current in the constant-current area increases when	A the gate-to-source bias voltage decreases	B the gate-to-source bias voltage increases	C the drain-to-source voltage increases	D the drain-to-source voltage decreases
17	In which of the following amplifier classes, the active device operates for whole of the input cycle ?	A Class A	B Class B	C Class AB	D Class C
18	Once an SCR has been switched to the ON state the minimum value of the anode current required to keep the device in ON state is called	A latching current	B trigger current	C holding current	D break over current
19	Computer operates with which one of the following language at machine level ?	A Decimal	B binary	C Hexadecimal	D Octal
20	Computer network topology which is highly reliable is	A bus	B mesh	C star	D ring
21	A type of RAM in which data is stored in the form of charge on a capacitor is	A Asynchronous SRAM	B Synchronous SRAM	C DRAM	D PROM
22	What function enables a user to input information in C programming while the program is in execution ?	A scanf	B printf	C &&	D strcpy

32	A micro programmed control unit	A is useful when very small	B usually refers to the control unit of a microprocessor
		C is faster than a hard-wired control unit	D facilities easy implementation of new instructions
33	After reset, Which is the first physical address generated by 8086 microprocessor?	A FFFF0H	B 0
		C FFFFFH	D F0000H
34	The decimal number 13.3 in binary is	A 1001.01	B 1101.01
		C 1101.1011	D 1011.01
35	A cahce line is 128bytes. The main memory has latency 50ns and bandwidth 1GBytes/s. the time required to fetch the entire cache line from main memory is	A 88ns	B 5ns
		C 128ns	D 178ns
36	Consider a 4way set associative cache consisting of 128 blocks with a block size of 64words. The CPU generates 20 bit physical address. What will be the number of fields in tag field, set field and word field?	A 9,6,5	B 7,7,6
		C 9,5,6	D 7,5,8
37	A computer has cache access time of 100ns. The main memory access time is 100ns. If the average access time desired is 250ns, what should be the cache hit ratio?	A 0.83	B 0.72
		C 0.91	D 0.68
38	What is the output of XOR gate when both input is high?	A High	B low
		C Can be high or low	D not determined
39	More than one word are put in one cache block to	A exploit temporal locality of reference in a program	B exploit spatial locality of reference in a program
		C reduce the miss penalty	D none of the above
40	Which term means to access some data and instructions repeatedly?	A Spatial locality	B temporal locality
		C Reference locality	D access locality

49	$y(n)=x(2n)$ is a	A non-linear and time invariant	B non-linear and time varying system
		C linear and time invariant system	D linear and time varying system
50	What is routing congestion in the VLSI design?	A Ratio of required routing tracks to available routing tracks	B Ratio of available routing tracks to required routing tracks
		C Depends on the routing layers	D None of the above
51	Most satellites operate in the frequency range of	A 300 MHz to 3 GHz	B Above 300 GHz
		C 30 MHz to 300 MHz	D 3 GHz to 30 GHz
52	Which of the following statements is not correct?	A A geo-synchronous satellite remains practically stationary relative to earth antennas	B A geo-synchronous satellite means the same thing as geo-stationary satellite
		C There is a trade-off between the cost of a communication satellite and cost of its earth stations	D Three geo-synchronous satellites cannot give 100% global coverage.
53	The power of a Rayleigh fading signal is	A Gaussian distributed	B Exponentially distributed
		C Rayleigh distributed	D Uniformly distributed
54	The Doppler spread depends on	A the fade margin	B the speed of the antenna
		C the delay spread	D None of these
55	Which diversity combining scheme gives the highest signal-to-noise ratio?	A Selection Diversity	B Selection diversity with thresholding
		C Equal Gain Combining	D Maximum Ratio Combining
56	During international roaming of a subscriber, the cellular network has to update	A the Home Location Register	B the Visitor Location Register (VLR)
		C both the HLR and the VLR	D neither the HLR nor the VLR
57	The phase shift of a wave whose frequency is 1 GHz in free space is	A 41.86 rad/m	B 20.93 rad/m
		C 10.47 rad/m	D 5.23 rad/m

58	If the reflection coefficient in a transmission line is 0.376, the VSWR is				
	A	2.21	B	22.1	
	C	0.221	D	-2.21	
59	Any two-port network having 6dB loss will give				
	A	an output which is one-quarter of the input power		B	an output which is one-half of the input power
	C	an output voltage which is 0.707 of the input voltage		D	an output power which is 0.707 of the input power
60	Indicate false statement. The SWR on a transmission line is infinity, when the line is				
	A	a short circuit	B	a complex impedance	
	C	an open circuit	D	a pure reactance	
61	For global communication, the minimum number of satellite needed is				
	A	1	B	3	
	C	7	D	11	
62	The directivity of an isotropic antenna is				
	A	1	B	0	
	C	infinity	D	1.27	
63	Which of the following antenna does not produce circular polarization?				
	A	parabolic reflector	B	Helical	
	C	Horn	D	Yagi	
64	Which of the following scheme would give higher increase in capacity of cellular CDMA system				
	A	Antenna Sectorization	B	Voice detection activity	
	C	A combination of Antenna	D	Appropriate power control	
65	Suppose that a 1MHz channel can support a 1 MBPS transmission rate. The channel is to be shared by 10 stations. Each station receives packets with exponential inter arrivals and rate $\lambda = 50$ packets per seconds and packets are constant length $L = 1000$ bits. What will be the total packet delay of the system that uses FDMA				
	A	0.011	B	0.02	
	C	0.03	D	0.015	

66	The distance of a geostationary satellite from the surface of the earth is nearly	A 360 Km	B 3600 Km
		C 36000 Km	D 360000 Km
67	Antenna beamwidth is	A measure of directivity	B measure of angle
		C measure of radiation pattern	D measure of power pattern
68	Which of the antenna is best excited by a waveguide?	A discone	B Helical
		C Horn	D Biconical
69	The dominant mode in a waveguide is characterized by	A longest cutoff wave length	B shortest cutoff wave length
		C infinite attenuation	D zero attenuation
70	The Vestigial Sideband Modulation transmits	A Both the sidebands fully	B Only one sideband
		C One sideband fully and a part of the other	D Both the sidebands partially
71	If the DSB-SC signal $m(t)\cos\omega_c t$, where $m(t)$ is a message and $\cos\omega_c t$ is a carrier, is detected using synchronous detector and the phase error of the locally generated carrier is ϕ , the detector output is	A $m(t)$ delayed by phase ϕ	B $m(t) + d\phi/dt$
		C $m(t)\cos\phi$	D $m^2(t)$
72	The probability of error can be kept very small over a noisy channel using some codes that add redundancy as long as	A Information rate R is less than the channel capacity C	B Information rate R is greater than the channel capacity C
		C Information rate R is equal to the channel capacity C	D In all cases
73	For better error performance, what should be the choice between 16-PSK and 16-QAM?	A 16PSK	B 16QAM
		C ASK	D FSK
74	Equalization is the process of	A Limiting the amplitude	B Correcting channel induced distortion
		C Conserving the bandwidth	D Increasing the bit rate

75	In Eye diagram, asymmetry between the eye patterns indicates	A	time inaccuracy of the sampler	B	jitter in the system
		C	Non linearity in the channel	D	sensitivity to timing errors
76	HDLC is an acronym for	A	High Duplex Line	B	High-level Data Link Control
		C	Half duplex Digital Link	D	Host Double Level Circuit
77	How many time slots are there in E1 frame	A	8	B	16
		C	32	D	64
78	What is a bit rate of one time slot in E1	A	144 kbps	B	64 kbps
		C	16 kbps	D	8 kbps
79	Router falls in which layer of OSI model	A	Physical	B	Network
		C	Datalink	D	Transport
80	Which of the following is used to avoid network congestion	A	Buffering	B	Source quenching
		C	Caching	D	Parallel communication
81	Which layer is responsible for flow control with sliding window protocol.	A	Network	B	Transport
		C	Data link	D	Application
82	While transmitting odd-parity coded symbols, the number of zeros in each symbol is	A	Odd	B	Even
		C	A and B both	D	Cannot be determined
83	In the IPv4 addressing format, the number of networks allowed under Class C addresses is	A	2^{14}	B	2^7
		C	2^{21}	D	2^{32}

84	Which of the following transport layer protocols is used to support electronic mail?	A SMTP	B UDP
		C IP	D TCP
85	Consider a random variable X that takes values + 1 and -1 with probability 0.5 each. The values of the cumulative distribution function F(x) at x = -1 and +1 are	A 0, 0.5	B 0, 1
		C 0.5, 1	D 0.25, 0.75
86	The protocol data unit (PDU) for the application layer in the Internet stack is	A Segment	B Datagram
		C Message	D Frame
87	A process executes the code	A 3	B 4
		C 7	D 8
88	The transport layer protocols used for real time multimedia, file transfer, DNS and email, respectively are	A TCP, UDP, UDP and TCP	B UDP, TCP, TCP and UDP
		C UDP, TCP, UDP and TCP	D TCP, UDP, TCP and UDP
89	The smallest integer than can be represented by an 8-bit number in 2's complement form is	A -256	B -128
		C -127	D 0
90	In an IPv4 datagram, the M bit is 0, the value of HLEN is 10, the value of total length is 400 and the fragment offset value is 300. The position of the datagram, the sequence numbers of the first and the last bytes of the payload, respectively are	A Last fragment, 2400 and 2789	B First fragment, 2400 and 2759
		C Last fragment, 2400 and 2759	D Middle fragment, 300 and 689
91	Determine the maximum length of cable (in km) for transmitting data at a rate of 500 Mbps in an Ethernet LAN with frames of size 10,000 bits. Assume the signal speed in the cable to be 2,00,000 km/s	A 1	B 2
		C 2.5	D 5

92	<p>In the following pairs of OSI protocol layer/sub-layer and its functionality, the INCORRECT pair is</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>A Network layer and Routing</p> <p>C Transport layer and End-to-end process communication</p> </td> <td style="width: 50%; vertical-align: top;"> <p>B Data Link Layer and Bit Synchronization</p> <p>D Medium Access Control sub-layer and channel sharing</p> </td> </tr> </table>	<p>A Network layer and Routing</p> <p>C Transport layer and End-to-end process communication</p>	<p>B Data Link Layer and Bit Synchronization</p> <p>D Medium Access Control sub-layer and channel sharing</p>
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93	<p>A bit-stuffing based framing protocol uses an 8-bit delimiter pattern of 01111110. If the output bit-string after stuffing is 01111100101, then the input bit-string is</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>A 0111110100</p> <p>C 0111111101</p> </td> <td style="width: 50%; vertical-align: top;"> <p>B 0111110101</p> <p>D 0111111111</p> </td> </tr> </table>	<p>A 0111110100</p> <p>C 0111111101</p>	<p>B 0111110101</p> <p>D 0111111111</p>
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94	<p>Host A (on TCP/IP v4 network A) sends an IP datagram D to host B (also on TCP/IP V4 network B). Assume that no error occurred during the transmission of D. When D reaches B, which of the following IP header field(s) may be different from that of the original datagram D? (i) TTL, (ii) Checksum, (iii) Fragment Offset</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>A (i) only</p> <p>C (ii) and (iii) only</p> </td> <td style="width: 50%; vertical-align: top;"> <p>B (i) and (ii) only</p> <p>D (i), (ii) and (iii)</p> </td> </tr> </table>	<p>A (i) only</p> <p>C (ii) and (iii) only</p>	<p>B (i) and (ii) only</p> <p>D (i), (ii) and (iii)</p>
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95	<p>The maximum data rate supported by GPRS EDGE network is</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>A 43.2 kbps</p> <p>C 100 kbps</p> </td> <td style="width: 50%; vertical-align: top;"> <p>B 64.2 kbps</p> <p>D 236.8 kbps</p> </td> </tr> </table>	<p>A 43.2 kbps</p> <p>C 100 kbps</p>	<p>B 64.2 kbps</p> <p>D 236.8 kbps</p>
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96	<p>Determine the transfer time of a 20 kB file with a GSM data network with a transmission rate of 10 kbps</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>A 16 sec</p> <p>C 20 sec</p> </td> <td style="width: 50%; vertical-align: top;"> <p>B 17 sec</p> <p>D 22 sec</p> </td> </tr> </table>	<p>A 16 sec</p> <p>C 20 sec</p>	<p>B 17 sec</p> <p>D 22 sec</p>
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97	<p>If every sensor has some data for another node in a network, then per node throughput scales as</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>A N</p> <p>C 1/sqrt (N)</p> </td> <td style="width: 50%; vertical-align: top;"> <p>B 2^N</p> <p>D sqrt (N)</p> </td> </tr> </table>	<p>A N</p> <p>C 1/sqrt (N)</p>	<p>B 2^N</p> <p>D sqrt (N)</p>
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98	<p>An increase in sensor density by a factor of k improves the SNR at a sensor by _____ db</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>A 10logk</p> <p>C logk</p> </td> <td style="width: 50%; vertical-align: top;"> <p>B 20logk</p> <p>D 1/logk</p> </td> </tr> </table>	<p>A 10logk</p> <p>C logk</p>	<p>B 20logk</p> <p>D 1/logk</p>
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