L-1 2023

Non-Teaching Recruitment

Question Paper

Name of the Candidate	:	
Application No.	:	
Name of the Post	:	**Technical Officer (CSE)**
Exam Level	:	**Screening Test (Level-1)**
Date of Exam:	:	**25.11.2023**
Duration	:	**120 Minutes**
Total Marks	:	**100**

Instructions to the Candidates:

1. This Question paper contains **17** printed pages with **100** questions.
2. All questions are multiple choice type questions (MCQs) with four choices (A), (B), (C), (D).
3. Candidates are not allowed to carry any paper, notes, books, gadgets etc. to the examination hall. Any candidate found using or in possession of such unauthorized materials or involved in copying or impersonation or adopting unfair means or behaviors will be disqualified and may be subjected to penal action.
4. There is only one correct answer. Choose the answer from among the four options given and mark the answer by darkening the appropriate bubble marked A, B, C, or D in the attached OMR.
5. Each question carries **ONE (1)** mark only. **1 mark** will be awarded for each correct answer; **0.25** mark will be deducted for each wrong answers. (Please refer instructions given at the back side of OMR Sheet)

*****

1.	What is the output of the following program?
	main()
	{
	char a[]="Hello World";
	printf("%s", a+1);
	}
	A) ello World
	B) Hello World
	C) Compile Time Error
	D) e

2.	What is the problem in following variable declaration? float 3Balcony-PujaRoom-Kitchen?; A) The variable name begins with an integer B) The variable name begins with an integer and having the special character '-' and no issue with a special character'?'. C) The variable name begins with an integer and having the special character '-'and a special character '?' D) Having the special character '-' and '?'

3.	On a machine where pointers are 4 bytes long, what happens when the following code is executed?
	main()
	{
	int x=0, *p=0;
	x++;
	p++;
	printf("%d and %d \n",x, p);
	}
	A) 1 and 4 is printed
	B) Causes an exception
	C) 1 and 1 is printed
	D) 4 and 4 is printed

4.	Consider int *p; Then which of the following is not a valid pointer operation in C/C++? A) *p++; B) (*p)++; C) (p+3); D) 2 + (p * 4);
5.	Find the values for integer variables x, y and z to get the value of variable 'a' as 4 using the following expression? a = (x > y) ? ((x > z) ? x : z) : ((y > z) ? y : z) A) x = 6, y = 3, z = 5 B) x = 5, y = 4, z = 5 C) x = 3, y = 4, z = 2 D) x = 6, y = 5, z = 3

6.	Assume that, a C compiler requires 1 byte to store an integer. If we want to print 196, which of the following statement useful to give the correct output A) int a=196; B) signed int a=196; C) signed int a=452; D) unsigned int a=452;
7.	Which one of the below storage classes does not reserve memory? A) auto B) extern C) typedef D) static
8.	Bit stuffing refers to A) inserting a '0' in user stream to differentiate it with a lag B) inserting a '0' in lag stream to avoid ambiguity C) appending a nibble to the lag sequence D) appending a nibble to the use data stream
9.	Identify the correct sequence in which the following packets are transmitted on the network by a host when a browser requests a webpage from a remote server, assuming that the host has just been restarted. A) HTTP GET request, DNS query, TCP SYN B) DNS query, HTTP GET request, TCP SYN C) DNS query, TCP SYN, HTTP GET request D) TCP SYN, DNS query, HTTP GET request
10.	If a network designer wants to connect 5 routers as point-to-point simplex line, then total number of lines required would be A) 5 B) 10 C) 20 D) 32
11.	It is desired to send a sequence of computer screen images over an optical fiber. The screen is 480 x 640 pixels, each pixel being 24 bits. There are 60 screen images per second. How much bandwidth is needed, and how many microns of wavelength are needed for this band at 1.30 microns? A) 1.0×10^5 microns B) 2×10^5 microns C) 2.5×10^5 microns D) 5×10^5 microns
12.	A station in a network forward incoming packets by placing them on its shortest output queue. What routing algorithm is being used ? A) Hot potato routing B) Flooding C) Static routing D) Delta routing
13.	In which ARQ, when a NAK is received, all frame sent since the last frame acknowledged an retransmitted

	A) stop-and-wait B) go-back-n C) selective-reject D) both (a) and (b)
14.	In which routing method do all the routers have a common database? A) Distance vector B) Link vector C) Link state D) None of these
15.	In sliding window flow control, if window size is 63, what is the range of sequence numbers? A) 0 to 63 B) 0 to 64 C) 1 to 63 D) 1 to 64
16.	If the data rate of ring is 20Mbps, signal propagation speed is 200m/μs, then the number of bits that can be placed on the channel of 200 KM is A) 2000 bits B) 20,000 bits C) 1000 bits D) None of the above
17.	Assuming that for a given network layer implementation, conmnection establishment overhead is 100 bytes and disconnection overhead is 28 bytes what would be the minimum size of a packet the transport layer needs to keep up, if it wishes to implement a datagram service above the network layer and needs to keep its overhead to a maximum of 12.5%. (ignore transport layer overhead) A) 512 bytes B) 768 bytes C) 1152 bytes D) 1024 bytes
18.	Error detection at the data link level is achieved by A) Bit stuffing B) Cyclic redundancy code C) Hamming codes D) Equalization
19.	Which of the following is not a transceiver function? A) Transmission and receipt of data B) Checking of line voltages C) Addition and subtraction of headers D) Collision detection
20.	In ..... circuit switching, delivery of data is delayed because data must be stored and retrieved from RAM. A) space division B) time division C) virtual D) None of these

21.	The router algorithm takes the decision to changes the route when..... A) router changes B) transmission time does not change C) user changes D) topology changes
22.	If router J is on the optimal path from router I to router K, then the optimal path from J to K also falls along the same route is known as..... A) Routing principle B) Optimality principle C) Sink tree principle D) Network principle
23.	If a router sends every incoming packet out only on those lines that are going approximately in the right direction is known as..... A) Random flooding B) Static flooding C) Selective flooding D) Early flooding
24.	In multicast routing with spanning tree method, a network with n groups, each with an average of m members, for each group we require..... A) n pruned spanning trees must be stored for a total of mn trees B) m pruned spanning trees must be stored for a total of m trees C) n pruned spanning trees must be stored for a total of n trees D) m pruned spanning trees must be stored for a total of mn trees
25.	How switching is performed in the internet? A) data gram approach to circuit switching at datalink layer B) Virtual circuit approach to message switching at network layer C) datagram approach to message switching at datalink layer D) datagram approach to packet switching at network layer
26.	Programs tend to make memory accesses that are in proximity of previous access this is called A) temporal locality B) spatial locality C) reference locality D) access locality
27.	Which of these is true for selective-repeat protocol , if m is the size of sequence number field, then size of sender and receiver window must be A) less than 2m B) greater than 2m C) at most one half of 2m D) at least one half of 2m
28.	Which of the following does not occur during the power-on-self-test (POST)? A) The scandisk utility begins to run B) The video card and video memory are tested C) The BIOS identification process occurs D) Memory chip are checked to ensure that they are working properly

29.	What is dispatch latency? A) The whole time taken by all processor B) The time taken by the dispatcher to stop one process and start another C) The time taken by the processor to write a file into disk D) None of Above
30.	Which of the following malicious program do not replicate automatically? A) Trojan Horse B) Virus C) Worm D) Zombie
31.	Assume that a request is made for a web page through a web browser to a web server. Initially the browser cache is empty. Further, the browser is configured to send HTTP requests in non-persistent mode. The web page contains text and five very small images. The minimum number of TCP connections required to display the web page completely in that browser is _____. A) 5 B) 6 C) 1 D) 2
32.	A client process P needs to make a TCP connection to a server process S. Consider the following situation: the server process S executes a socket (), a bind () and a listen () system call in that order, following which it is pre-empted. Subsequently, the client process P executes a socket () system call followed by connect () system call to connect to the server process S. The server process has not executed any accept () system call. Which one of the following events could take events could take place? A) Connect() system call returns successfully B) Connect() system call blocks C) Connect() system call returns an error D) Connect () system call returns in a core dump
33.	Suppose a class B network on the internet has a subnet mask of 255.255.248.0. What is the maximum number of hosts per subnet? A) 1022 B) 1023 C) 2047 D) 2046
34.	What is the maximum size of data that the Transport layer can pass on to its lower layer in TCP/IP? A) Any size B) 65515 byte C) 65535 byte D) 1500 bytes
35.	Frames of 1000 bits are sent over a 10^6 bps duplex link between two hosts. The propagation time is 25ms. Frames are to be transmitted into this link to maximally pack them in transit. What is the minimum number of bits that will be required to represent the sequence number distinctly? Assume that no time gap needs to be given between transmissions of two frames. A) 2 B) 3

	C) 4 D) 5
36.	What is the maximum size of data that the Data link layer can pass on to its lower layer in TCP/IP? A) Any size B) 65515 byte C) 65535 byte D) 1500 bytes
37.	Which of the following statements are TRUE? S1: TCP handles both congestion and flow control. S2: UDP does not handles congestion but can handle Flow control. S3: Fast retransmits deals with congestion but not flow control S4: Slow start mechanism does not with flow control A) S1 , S3 B) S1, S3 and S4 C) S1, S2 D) S1,S2 and S4
38.	The operating system and the other processes are protected from being modified by an already running process because _____ A) every address generated by the CPU is being checked against the relocation and limit registers B) they have a protection algorithm C) they are in different memory spaces D) they are in different logical addresses
39.	To obtain better memory utilization, dynamic loading is used. With dynamic loading, a routine is not loaded until it is called. For implementing dynamic loading _____ A) special support from operating system is essential B) special support from hardware is required C) user programs can implement dynamic loading without any special support from hardware or operating system D) special support from both hardware and operating system is essential
40.	The _____ presents a uniform device-access interface to the I/O subsystem, much as system calls provide a standard interface between the application and the operating system. A) Device drivers B) I/O systems C) Devices D) Buses
41.	To recover from failures in the network operations _____ information may be maintained. A) operating system B) ip address C) stateless D) state

42.	Swap space exists in _____ A) primary memory B) secondary memory C) cpu D) none of the above
43.	_____ is a Window utility program that locates and eliminates unnecessary fragments and rearranges files and unused disk space to optimize operations. A) Disk Defragmenter B) Restore C) Disk Cleanup D) Backup
44.	____ command is used to check whether or not MySQL port is open. A) shell> telnet server_host 1234 B) shell> telnet server_host 33 C) shell> telnet server_host 3306 D) None of these
45.	Which of the following options indicates a correct association of the commands: PROMPT, HEAD, and RCPT with protocols where these are used? A) HTTP, SMTP, FTP B) FTP, HTTP, SMTP C) HTTP, FTP, SMTP D) SMTP, HTTP, FTP
46.	Which of the following is a feature of Python DocString A) All functions should have a docstring in python B) DocStrings can be accessed by the _doc_ attribute on objects C) This feature provides a very convenient way of associating documentation with python modules, functions, classes and methods D) All of the above
47.	What is the order in which namespaces in Python looks for an identifier? A) First, the python searches for the built-in namespace, then the global namespace and then the local namespace B) Python first searches for the built-in namespace, then local and finally the global namespace C) Python first searches for local namespace, then global namespace and finally the built-in namespace D) Python searches for the global namespace, followed by the local namespace and finally the built-in namespace
48.	You have a DNS server that contains corrupt information. You fix the problem with the DNS server, but one of your users is complaining that they are still unable to access Internet resources. You verify that everything works on another computer on the same subnet. Which command can you use to fix the problem? A) IPCONFIG /flush B) PING /flush C) GROPE /flushdns D) IPCONFIG /flushdns

49.	You are the network administrator for Some Company. Your network consists of 200 Windows 7 computers, and you want to assign static IP addresses rather than use a DHCP server. You want to configure the computers to reside on the 192.168.10.0 network. What subnet mask should you use with this network address? A) 255.0.0.0 B) 255.255.0.0 C) 255.255.255.0 D) 255.255.255.255
50.	A workstation has just been installed on an Ethernet LAN, but cannot communicate with the network. What should you check first? A) Reinstall the network protocols B) Reinstall the network interface card driver C) Verify the ip configuration on the workstation D) Verify the link status on the computer's network card
51.	Your router has the following IP address on Ethernet0: 172.16.2.1/23. Which of the following can be valid host IDs on the LAN interface attached to the router? I. 172.16.1.100 II. 172.16.1.198 III. 172.16.2.255 IV. 172.16.3.0 A) I and III only B) III and IV only C) I, II and III only D) I, II and IV only
52.	What aspect of DHCP allows servers to manage multiple physical networks? A) Renewal B) Rebinding C) Scopes D) Relay agents
53.	You need to subnet a network that has 5 subnets, each with at least 16 hosts. Which classful subnet mask would you use? A) 255.255.255.192 B) 255.255.255.240 C) 255.255.255.224 D) 255.255.255.248
54.	What should you do to keep unauthorized users from changing your home network settings? A) Change the firewall setting in your computer B) Change the default administrator password and SSID C) Change the MAC address of the router D) Change the IP address of the router
55.	Which type of network topology is best for a small home network with a few devices? A) Mesh r B) Bus

	C) Ring D) Sta
56.	Which of them are correct about "traceroute" command? A) It is a network troubleshooting command which is used to trace the number of hops is required for packets to reach the destination. B) This command gives information about programs related to open socket. C) This command returns statistics about all ports. D) This command gives information about routing tables
57.	In the context of Wi-Fi settings, what is the purpose of the "Channel" setting on a wireless router? A) To control the transmit power of the Wi-Fi signal. B) To specify the frequency range for the wireless network. C) To enable or disable MAC address filtering. D) To adjust the modulation scheme for data transmission
58.	What happens when a switch receives a frame with a destination MAC address not in its switching table? A) It drops the frame. B) It sends an ICMP message to the source device. C) It broadcasts the frame to all ports. D) It queries the DNS server for the correct address.
59.	When setting up a LAN using switches, what is the significance of the term "port mirroring"? A) Cloning a network switch's configuration to another switch. B) Enabling communication between different VLANs. C) Configuring multiple switches to share a common broadcast domain. D) Duplicating network traffic from one port to another for monitoring purposes.
60.	When configuring security for a Wi-Fi network, what does the term "RADIUS authentication" involve? A) Assigning unique IP addresses to devices on the network. B) Using a centralized server for user authentication. C) Enabling WPA3 encryption for wireless communication. D) Implementing MAC address filtering for access control.
61.	To test the IP stack on your local host, which IP address would you ping? A) 127.0.0.0 B) 1.0.0.127 C) 127.0.0.1 D) 127.0.0.255
62.	Consider that 20 machines need to be connected in a LAN using 8-port Ethernet Switches. Assuming that these switches have uplink port, the minimum number of switches needed is ---------- A) 4 B) 3 C) 2 D) None of the above

63. The following function computes X^Y for positive integers X and Y.

```
int exp (int X, int Y)
{
int res = 1, a = X, b = Y;
while (b! = 0)
{
if (b%2 = = 0) {a = a*a; b = b/2;}
else {res = res *a; b = b -1;}
}
return res;
}
```

Which one of the following conditions is true before every iteration of the loop?

A) $X^Y = (\text{res}*a)^b$
B) $(\text{res}*a)^Y = (\text{res}*X)^b$
C) $X^Y = \text{res}*a^b$
D) None of the above

64. *A spooler is a*

A) Location in memory that maintains the contents of documents until it prints out
B) Program that coordinates the print job that are waiting to process.
C) Queue of print job that are waiting to print
D) Message sent from the printer to the operating system when a print job is completed

65. If you hard disk is partitioned into 3 drives, the number of recycle bin for that hard disk is.

A) 1
B) 2
C) 3
D) 4

66. The main Apache configuration file is?

A) /etc/srm.conf
B) /etc/httpd/config.ini
C) /etc/apache.conf
D) /etc/httpd/conf/httpd.conf

67. LILO stands for _____-

A) Linux Leveraging Order
B) Linux loader
C) Linux Low Order
D) None of the above

68. Which command is used to display disk consumption of a specific directory

A) du
B) ds
C) dd
D) dds

69. When mv f1 f2 is executed which file's inode is freed?

A) f1
B) f2

	C) new inode will be used D) no inode is freed
70.	How many sizes of headers are available in HTML by default? A) 5 B) 1 C) 3 D) 6
71.	Identify the total standard color names that HTML supports. A) 30 B) 70 C) 140 D) 120
72.	The following message is displayed on the browser, while trying to access a URL : Server; Error 403 The reason for the message: A) The requested HTML file is not available. B) The URL refers to a CGI script and the header of the script does not indicate where the interpreter is located. C) The path to the interpreter of the script file is invalid. D) The requested HTML file or CGI script has insufficient permission.
73.	How can you open a link in a new browser window? A) < a href = "url" target = "new"> B) <a href = "url" target= "_blank"> C) <a href = "url".new> D) <a href = "url" target ="open">
74.	A computer system has 6 tape drives, with 'n' processes competing for them. Each process may need 3 tape drives. The maximum value of 'n' for which the system is guaranteed to be deadlock free is A) 4 B) 3 C) 2 D) 1
75.	Working set (t, k) at an instant of time, t, is A) the set of k future references that the operating system will make B) the set of future references that the operating system will make in the next 'k' time units C) the set of k referenceS with high frequency D) the set of pages that have been referenced in the last k time units
76.	Cascading termination refers to termination of all child processes before the parent terminates A) normally B) abnormally C) normally or abnormally D) none of these
77.	At a particular time of computation, the value of a counting semaphore is 6. Then 30 number of P operations and 'x' number of V operations were completed on this semaphore. If the final value of the semaphore is 7, x will be A) 22 B) 18

	C) 15 D) 31
78.	Thrashing A) Reduces page I/O B) Decreases the degree of multi programming C) Implies excessive page I/O D) Improves the system performance
79.	For implementing a multiprogramming operating system A) Special support from processor is essential B) Special support from processor is not essential C) Cache memory must be available D) More than one processor must be available
80.	Which of the following is true? A) Overlays are used to increase the size of physical memory B) Overlays are used to increase the logical address space C) In case overlays are used, the size of a process is not limited to the size of physical memory D) Overlays are used whenever the physical address space is smaller than the logical address space
81.	In which of the following scheduling policies, context switching never takes place? A) Round-robin B) Shortest remaining time next C) Pre-emptive D) First-cum-first-serve
82.	In memory allocation scheme, the A) Best fit algorithm is always better than the first fit algorithm B) First fit algorithm is always better than the best fit algorithm C) Superiority of the first fit and best-fit algorithms depend on the sequence of memory requests D) None of the above
83.	*An entire path name, consisting of several sub-directory name can contain up to* A) 13 character B) 36 character C) 53 character D) 63 character
84.	Which of the following is not a transceiver function? A) Transmission and receipt of data B) Checking of line voltages C) Addition and subtraction of headers D) Collision detection
85.	Data link layer retransmits the damaged frames in most networks. If probability of a frame's being damaged is p, then what is the mean number of transmissions required to send a frame if acknowledgements are never lost ? A) K / K - P B) 1 / K - P

	C) K / K(1 + p) D) p / K + 1
86.	Two networks each provide reliable connection-oriented service. One of them offers a reliable byte stream and the other offers a reliable message stream. A process writes 1024 bytes, then A) both networks will receive 2048 bytes as a single unit B) message stream network receives 2048 bytes as a whole. But bytes stream 1024 bytes only at a time. C) message stream network will receive 1024 bytes only at one time. But byte stream network will receive 2048 bytes as a single unit. D) both will receive 1024 bytes at one time since there is a gap between write
87.	The _____ measures the number of lost or garbled messages as a fraction of the total sent in the sampling period. A) Residual Error rate B) Transfer failure probability C) Connection release failure probability D) Connection establishment failure probability
88.	Six channels, each with a 200 khz bandwidth are to be multiplexed together. what is the minimum bandwidth requirement if each guard band is 20Khz - A) 1000 KHz B) 1100 KHz C) 1200 KHz D) 1300 KHz
89.	Which one of the following IP addresses belongs to the same subnet as 10.0.64.0/18 A) 10.0.63.4 B) 10.0.32.4 C) 10.0.126.3 D) 10.0.128.4
90.	Which of these statements is true about packet switching networks? A) Resource allocation is done for a packet beforehand B) Bandwidth is reserved on the links C) Scheduled processing for a packet D) Resource allocation is done on demand

91.	Consider the following C function.
	`void abc(int arr[], int n)`
	`{`
	`for (int i = 0; i < n; i+=2)`
	`{`
	`if (i>0 && arr[i-1] > arr[i] )`
	`swap(&arr[i], &arr[i-1]);`
	`if (i<n-1 && arr[i] < arr[i+1] )`
	`swap(&arr[i], &arr[i + 1]);`
	`}`
	`}`

	Suppose swap() function in the above code swaps two elements using their addresses. If an array {10, 20, 30, 40, 50, 60, 70, 80} is passed to the function, write the array elements after change. A) No change in array elements B) Elements will be sorted in descending order C) {20,10,40,30,60,50,80,70} D) {40,30,20,10,80,70,60,50}

92.	What is the output of the following (when embedded in a complete program)?
	
	int n = 0 ;
	while (n <= 5)
	{
	++n;
	if (n != 3) continue;
	cout << n << " " ;
	}
	
	A) 1 2 4 5
	B) 4 5
	C) 1 2
	D) 3

93.	What is the output of the following (when embedded in a complete program)?
	int n = 5 ;
	do {
	cout << n << " " ;
	n--;
	if ((n ==1) || (n ==3)) break ;
	} while (n > 0) ;
	
	A) 5 4 2
	B) 5 4 3
	C) 5 4
	D) 5 4 1 3

94.	Pointer arithmetic is not possible on ___. A) Integer pointers B) Float pointers C) Character pointers D) Void pointers
95.	Which of the following is true about return type of functions in C? A) Functions can return any type B) Functions can return any type except array and functions C) Functions can return any type except array, functions and union D) Functions can return any type except array, functions, function pointer and union
96.	What will be the output of the following code snippet? #include <stdio.h> void swap(int *a, int *b) {

```
    int t = *a;
    a = b;
    *b = t;
}
void solve() {
    int a = 3, b = 5;
    swap(&a, &b);
    printf("%d %d", a, b);
}
int main() {
        solve();
        return 0;
}
```

A) 3 5
B) 5 3
C) 3 3
D) 5 5

97. Which is used to keep the call by reference value as intact?

A) static
B) const
C) absolute
D) virtual

98. . (\) operator in C is ___.

A) Macro continuation operator
B) Stringize operator
C) Tokenizer
D) None of these

99. Consider the following recursive function fun(x, y). What is the value of fun(4, 3)

```
int fun(int x, int y)
{
 if (x == 0)
   return y;
 return fun(x - 1,  x + y);
}
```

A) 12
B) 13
C) 9
D) 10

100 What is the output of the following nested loops ?

```
main()
{
int  p , m ;
```

```
for ( p = 1 ;  p <= 5 ; p++ )   ;
for ( m = p ;  m <= 5 ; m++ )
printf("%d  ", m);
printf("%d  ", m);
}
```

A) 1 2 3 4 5
B) 5 5
C) 6
D) 5 6