tekStart– The Institute for ICT Education

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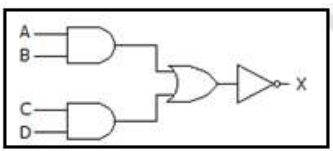
Model Paper 1

ICT I

Answer all Questions

1. Which of the given Boolean expression represent the output x the following logic circuit?



(1) $\overline{(A+B)}\overline{(C+D)}$ (2) $(\bar{A}+\bar{B})(\bar{C}+\bar{D})$ (3) $\overline{AB}+\overline{CD}$ (4) $\overline{A+B+C+D}$ (5) $\overline{ABCD}$

2. Which of the following is a general purpose electro-mechanical computer?
   (1) Difference Engine (2) Harvard Mark I (3) ENIAC (4) EDVAC (5) UNIVAC

3. Which of the following is an essential component of the system software in a computer system?
   (1) Assembler (2) Interpreter (3) Utilities (4) Operating system (5) Application Software

4. Which of the following memory is programmed with specific data when it is manufactured?
   (1) Registers (2) ROM (3) RAM (4) Cache memory (5) Hard Disk

5. Which of the following software is designed to help analyze, configure, optimize or maintain a computer?
   (1) Operating System (2) Application Software (3) Utilities (4) Assembler (5) Translator

6. 3nd generation computers were based on ..... technology.
   1) VL-Transistor 2) Integrated circuit 3) Micro processor 4) Vacuum tube 5) Transistor

7. The Boolean expression $(\overline{A+B})(\overline{\bar{A}+\bar{B}})$ equivalent to
   1) 0 2) 1 3) $\bar{A}$ 4) $\bar{B}$ 5) AB

8. If the binary number 10001111 is in 8-bit 2's complement notation, what is the actual signed decimal number stored?
   1) 143 2) 15 3) -15 4) 113 5) -113

9. -128 in tow's complement 8 bit representation is .....

(1) 10001111 (2) 10000000 (3) 01111111 (4) 11110000 (5) 00010000

10. $859_{16}+782_{16}=$

(1) FCB_{16} (2) FDA_{16} (3) EDB_{16} (4) FDB_{16} (5) FEB_{16}

11. Which of the following is an incorrect Karnaugh Map layout represent a Boolean function of 3 variables A, B and C?

(1)

A \ BC	00	01	11	10
0				
1				

(2)

A \ BC	11	10	00	01
0				
1				

(3)

A \ BC	00	11	01	10
0				
1				

(4)

A \ BC	00	10	11	01
0				
1				

(5)

A \ BC	11	01	10	00
0				
1				

12. Which of the following is (are) true about firewalls?

A. Firewall is implemented only on hardware
B. Firewalls are used to protect data and resources from an outside threat
C. Firewalls translate data from one network protocol to another
D. Firewalls are typically placed at entry/exit points of a network

(1) A and B (2) B and C (3) B and C (4) C and D (5) All of above

13. Which of the following command convert a host or domain name into an IP address?

(1) ping (2) tracert (3) netstat (4) nslookup (5) ipconfig

14. Which of the following is (are) true about CDMA?

A. Users are assigned specific frequency bands
B. Users occupy the same time and frequency allocations
C. Signals are channelized by unique assigned codes
D. Each user is allowed to transmit in predetermined time slots

(1) C only (2) A and C (3) B and C (4) C and D (5) A only

15. Consider the following assignment statements in Python programming language

A. v1= [3,5,7].pop(5)
B. v2= list({2:3,4:5})

C. v3= 10+5j*3

D. v4= list(DBMS)[1]

Which of the above are syntactically **incorrect**?

(1) A and D (2) C and D (3) B and D (4) A,C and D (5) All of above

16. Which of the following is NOT a component of data flow diagrams

(1) Weak entities (2) External entities (3) Data flows (4) Processes (5) Data stores

17. What's the output of the following Python expression?

```
>>> print(format(255,'#>5x')
```

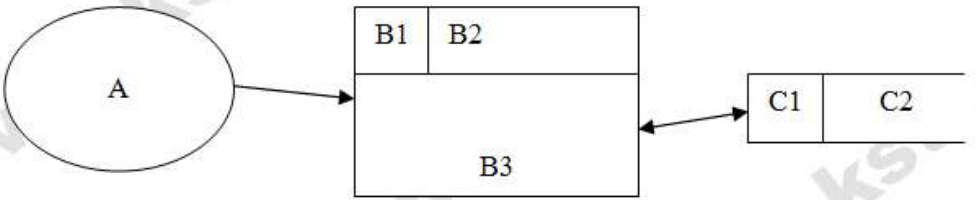
(1) ###ff (2) ff### (3) ##255 (4) >>255 (5) >>>ff

18. What's the output of the following Python expression?

```
>>> ~(2*2**2<<2)
```

1) 3 2) -3 3) 33 4) -33 5) -65

19. Consider the following data flow diagram



Which of the following term identify A, B3 and C2 respectively

(1) an external entity, a process and a data flow
(2) a data store, an external entity and a process
(3) a process, a data store and an external entity
(4) an external entity, a process and a data store
(5) an external entity, a data store and a process

20. Consider th network topology with the description.

Network topology	Description
1 - Star	A – Every node has a dedicated point to point link to every other node
2 - Bus	B – Each node has dedicated point to point link to a central controller

3 - Mesh	C – Backbone cable is used to link all the devices in the network

Which of the following match the network topology with its description correctly?

(1) 1-A,2-C,3-B (2) 1-B,2-C,3-A (3) 1-C,2-A,3-B (4) 1-B,2-A,3-C (5) 1-A,2-B,3-C

21. What's the output of the following Python expression?

```
>>> print(format(255,'#>5')
```

(1) ###ff (2) ff### (3) ##255 (4) >>255 (5) >>>ff

22. What's the output of the following Python expression?

```
>>> (2*2**2<<2)+1
```

1) 3 2) -3 3) 33 4) -33 5) -65

Consider the host with an IP address: 10.50.100.135 /27 to answer question 21 and d 22

23. What is the network address?

(1) 10.50.100.128 (2) 10.50.100.192 (3) 10.50.100.0 (4) 10.50.100.32 (5) 10.50.100.64

24. How many valid hosts are possible in this network?

(1) 32 (2) 30 (3) 62 (4) 14 (5) 16

25. Which of the following application layer protocol of TCP/IP protocol suite is used for exchanging management information between network devices?

(1) FTP (2) TFTP (3) TCP (4) SNMP (5) HTTP

26. Which of the following server allows a local network to access internet using a single public IP?

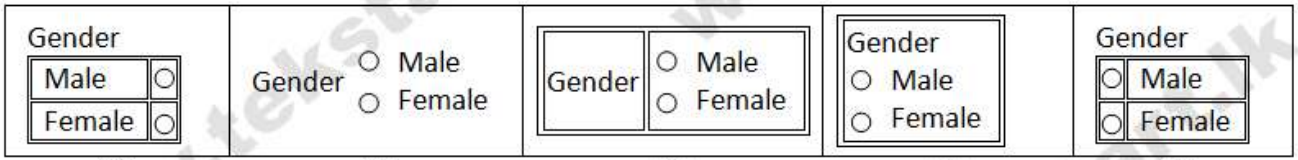
(1) File server (2) Proxy server (3) Web server (4) Mail server (5) DHCP server

27. Which device is used to connect only a local area network to another local area network that uses the same protocol?

(1) Bridge (2) Hub (3) Repeater (4) Switch (3) Router

28. Select the correct layout corresponding to the following HTML code segment

```
Gender
<form><table border="1" >
<tr><td ><input type="radio" name="gender" value="Male"></td><td> Male </td></tr><tr>
<td><input type="radio" name="gender" value="Female"></td><td> Female </td></tr>
</table></form>
```



(1) (2) (3) (4) (5)

Consider the following company database schema and answer question 29and 30

employee(eno ename, address, work_deptno)

department(deptno, dname, manager_eno)

29. Which of the following SQL statement would produce output details of employees who work 'sales' department?

(1) SELECT *
FROM employee e, department d WHERE dname='sales';

(2) SELECT *
FROM employee, department WHERE e.work_deptno= d.deptno AND dname='sales';

(3) SELECT e.*
FROM employee e, department d WHERE e.work_deptno= d.deptno AND dname='sales';

(4) SELECT *
FROM employee e, department d WHERE work_deptno= deptno AND dname='sales';

(5) SELECT e.*

FROM employee e, department d WHERE e.eno= d.deptno AND dname='sales';

30. Which of the following SQL statement would produce department name and manager name?

(1) SELECT dname, ename FROM employee, department
WHERE d.manager_eno=e.eno;

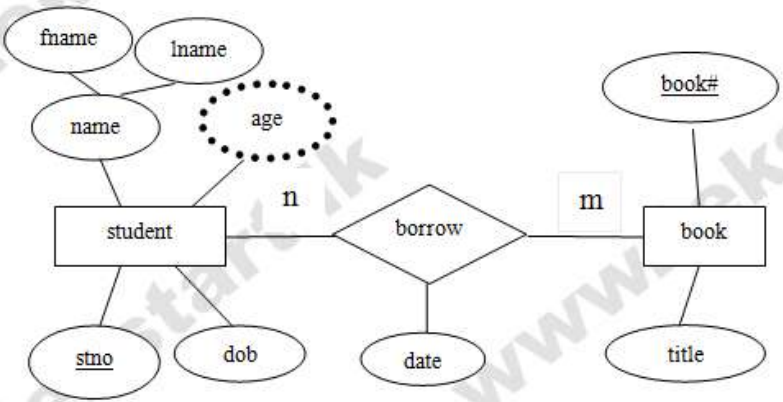
(2) SELECT dname, ename FROM employee e, department d
WHERE manager='yes';

(3) SELECT dname, ename FROM employee e AND department d
WHERE d.manager_eno=e.eno;

(4) SELECT dname, ename FROM employee e, department d
WHERE d.manager=e.eno;

(5) SELECT dname, ename FROM employee e, department d
WHERE d.manager_eno=e.eno;

Considers the following E-R diagram and answer question 31 and 32



31. Identify derived, descriptive and composite attributes in the above E-R diagram respectively?

(1) age, date, fname
(2) dob, date, name
(3) age, date, name
(4) age, date, lname
(5) name, date, age

32. Select the correct relation schema to represent above E-R diagram?

(1) student(stno, name, dob, age)
book(book#, title)
borrow(stno, book#, date)

(2) student(stno, fname, lname, dob
age)
book(book#, title, date)

(3) student(stno, fname, lname, dob,
age)
borrow(stno, book#, title, date)

(4) student(stno, fname, lname, age
book(book#, title)
borrow(stno, book#, date)

(5) student(stno, fname, lname, dob,
age)
book(book#, title)
borrow(stno, book#, date)

33. Select the correct HTML syntax for changing background color of page to yellow and text color to blue

(1) <body background-color ="yellow" text="blue">
(2) <body bgcolor="yellow" text-color="blue">
(3) <body bgcolor="yellow" text="blue">
(4) <body bgcolor="yellow" color="blue">
(5) <body background="yellow" text="blue">

34. Select the correct HTML syntax for defining a dropdown list?

(1) <list name="city"><option>Colombo<option>Kandy<option>Galle</select>
(2) <select name="city">
Colombo<li>Kandy<li>Galle</select>
(3) <select name="city"><item 1>Colombo< item 2>Kandy< item 3>Galle</select>
(4) <select name="city"><option>Colombo<option>Kandy<option>Galle</select>
(5) <droplist name="city"><option>Colombo<option>Kandy<option>Galle</select>

35. Select the correct HTML tag that uses inline CSS to change background color of a paragraph to yellow?

(1) ...
(2) ...
(3) ...
(4) ...
(5) ...

36. Which of the following information system models does not allow new requirements to be added in the middle?

(1) Rapid Application Development model
(2) Waterfall model
(3) Prototype model
(4) Spiral model
(5) Object Orient model

37. Which of the following statements best describes a non functional requirement of a mobile phone?

(1) A user shall be able to make a call
(2) A user shall be able to store phone numbers.
(3) Phone shall display stored phone numbers to the user.
(4) A user shall be able to terminate a call.
(5) Phone shall not harm the user by emitting harmful radiations

38. Which of the following implementation method change over from the old system to a new one incrementally, starting with one or a few functional components and then gradually extending the installation to cover the whole new system?

(1) Parallel (2) Direct (3) Pilot (4) Phase (5) Concurrent

39. 'Year Sales Trend Forecasting' system can be considered as

(1) Knowledge Management System
(2) Executive Support System
(3) Transaction Processing System
(4) Management Information Systems
(5) Office Automation Systems

40. A process of assessing the degree which a proposed system solves business problems is called

(1) Technical feasibility

(2) Economic feasibility
(3) Operational feasibility
(4) Organizational feasibility
(5) Legal feasibility

41. The process whereby actual users test a completed information system is known as
(1) Black Box testing
(2) White Box testing
(3) Integration testing
(4) Unit testing
(5) Acceptance testing

42. A form of modulation that represents digital data as variations in the amplitude of a carrier wave is .....
(1) Frequency modulation
(2) Pulse code modulation
(3) Frequency shift keying
(4) Amplitude modulation
(5) Amplitude shift keying

43. Consider the following Python program.

```
a=[2,4]
b=[6,8]
c=[a]+[b]
print(c)
```

Which of the following is the output of this program?

(1) 20 (2) [[2, 4], [6, 8]] (3) [2, 4, 6, 8] (4) [2, 4]+[6, 8] (5) [8,12]

44. Consider the following Python assignment statement.

```
n=[2,3+6j,(5/2,3//2+4j)][-1][1]
```

What is the data type of variable n after executing above statement?

(1) tuple (2) list (3) complex (4) float (5) int

45. Consider the following Python program.

```
n=10
while n>0:
  n-=1
  if n%2: continue
  print(n,end=' ')
```

Which of the following is the output of this program?

(1) 8 6 4 2 0 (2) 9 7 5 3 1 (3) 8 6 4 2 (4) 9 7 5 3 (5) 9 8 7 6 5

46. Which of the following Python program produces following output?

```
+++++
++++
+++
++
+
```

(1)
```
for x in range(5):
    print('+++++'[:x])
```

(2)
```
for x in range(5,0,-1):
    print('+++++'[:x])
```

(3)
```
for x in range(5,0):
    print('+++++'[:x])
```

(4)
```
for x in range(1,6):
    print('+++++'[:x])
```

(5)
```
for x in range(5,0,1):
    print('+++++'[:x])
```

47. Consider the following Python program.

```
fin=open('data.txt','r')
fout=open('out.txt','w')
data=fin.readline()
line=''
nlist=sorted(data.strip().split())
for n in nlist:
   line+=n
fout.write(line)
fin.close()
fout.close()
```

The content of the 'data.txt' file is

23 44 87 15 12

Which of the following is the content of the 'out.txt'?

(1) 87,44,23,15,12, (2) 8744231512 (3) 1215234487

(4) 12 15 23 44 87 (5) 2344871512

48. Select the valid Python statement that can be used to open a file called "data.txt" for reading and appending.

(1) fo=open('data.txt','w+')

(2) fo=open('data.txt','a+')

(3) fo=open('data.txt','a')
(4) fo=open('data.txt','aw')
(5) fo=open(data.txt,a+)

49. Which of the following Python program is syntactically correct and write 5 user input numbers (one number per line) to a text file called 'data.txt'?

(1)
```
infile=open('data.txt')
for n in range(5):
    num=input('Enter a number:')
    infile.pass(num+'\n')
infile.close()
```

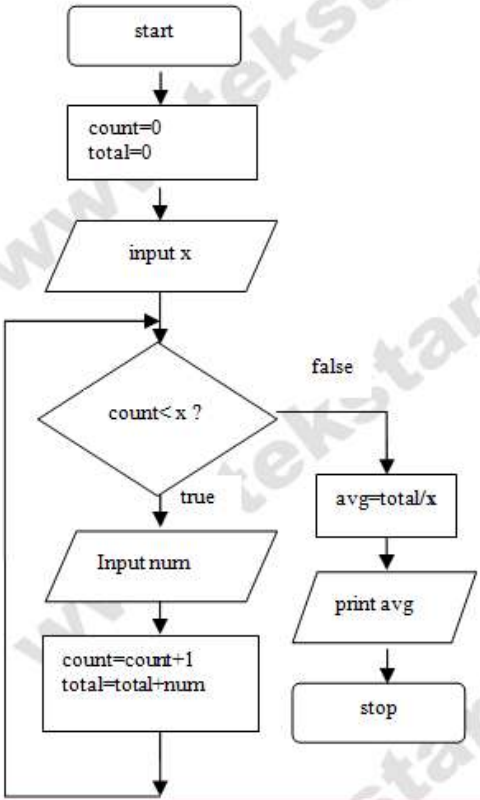
(2)
```
infile=open('data.txt','w')
for n in range(5):
    num=int(input('Enter a number:'))
    infile.write(num+'\n')
infile.close()
```

(3)
```
infile=open('data.txt','w')
for n in range(5):
    num=input('Enter a number:')
    infile.write('num')
infile.close()
```

(4)
```
infile=open('numbers.txt','r')
for n in range(5):
    num=input('Enter a number:')
    infile.write(num+'\n')
infile.close()
```

(5)
```
infile=open('data.txt','w')
for n in range(5):
   num=input('Enter  a number:')
   infile.write(num+'\n')
infile.close()
```

Consider the following flow chart



Which of the following Python program correctly implement the algorithm?

(1)
```
count=total=0
x=input('Get a number')
while count<x:
  num=input('Get a number')
  count+=1; total+=num
avg=total/x; print(avg)
```

(2)
```
count=total=0
x=int(input('Get a number'))
while count<x:
  num=int(input('Get a number'))
count+=1;total+=num
avg=total/x; print(avg)
```

(3)
```
count=total=0
x=int(input('Get a number'))
while count<x:
  num=int(input('Get a number'))
  count+=1; total+=num
avg=total/x; print(avg)
```

(4)
```
count=total=0
x=int(input('Get a number'))
while count<x:
   num=int(input('Get a number'))
   count+=1;  total+=num
avg=total/x; print  avg
```

(5)
```
count=total=0
x=int(input('Get a number'))
while count<num:
   num=int(input('Get a number'))
   count+=1; total+=num
avg=total/x; print(avg)
```

****