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இலங்கைப் பரீடசைத் திணைக்களம் இலங்கைப் பரீடசைத் திணைக்களம்
Department of Examinations, Sri Lanka Department of Examinations, Sri Lanka

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අධ්‍යයන පොදු සහතික පත්‍ර (උසස් පෙළ) විභාගය, 2011 අගෝස්තු
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தகவல், தொடர்பாடல் தொழினுட்பவியல்	I
Information & Communication Technology	I

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පැය දෙකයි
இரண்டு மணித்தியாலம்
Two hours

Instructions:

- *Answer **all** the questions.*
- *Write your **Index Number** in the space provided in the answer sheet.*
- *Instructions are also given on the back of the answer sheet. Follow those carefully.*
- *In each of the questions **1** to **50,** pick one of the alternatives from* (1), (2), (3), (4), (5) *which is **correct or most appropriate** and **mark your response on the answer sheet with a cross** (x) **in accordance with the instructions given on the back of the answer sheet.***
- *Use of calculators is **not allowed.***

1. Who invented the Analytical Engine?
(1) Blaise Pascal (2) Charles Babbage (3) John Von Neumann
(4) John V. Atanasoff (5) John Presper Eckert

2. Which of the following technologies is used in the Second Generation Computers?
(1) Integrated Circuits (ICs) (2) Large Scale Integration (LSI)
(3) Microprocessors (4) Transistors
(5) Vaccum tubes

3. Answer sheet of a multiple choice question paper can be read with
(1) Digitizer. (2) Light pen. (3) MICR. (4) Scanner. (5) POS terminal.

4. Computerized medical imaging systems which use echoes of transmitted pulses are called
(1) CAT scans. (2) CT scans. (3) PETT scans.
(4) Ultrasound scans. (5) X-ray images.

5. The binary number equivalent to the 27_{10} is
(1) 000111 (2) 111000 (3) 011011 (4) 101011 (5) 111010

6. The abbreviation GSM stands for
(1) Global System for Mobile Access. (2) Global System for Mobile Communication.
(3) Global System for Mobile Phone. (4) Global System for Mobile Transmission.
(5) Global System for Mobile Interconnection.

7. Which of the following database types is widely used in computer applications?
(1) Flat file (2) Hierarchical (3) Network (4) Relational (5) Object oriented

8. The main role of a "router" in computer network is
(1) to broadcast data packets to all hosts in the network.
(2) to monitor the network for malicious activities.
(3) to retransmit the received signal at a higher power.
(4) to allow hosts in two networks to communicate.
(5) to allow load balancing between multiple separate networks.

9. A command that can be used to check network connectivity to a computer is
(1) ipconfig (2) ping (3) traceroute (4) netstat (5) hostname

10. Which of the following best describes the order of the testing conducted in the software development process?
(1) Acceptance testing, integrated testing, unit testing.
(2) Integrated testing, acceptance testing, unit testing.
(3) Integrated testing, unit testing, acceptance testing.
(4) Unit testing, acceptance testing, integrated testing.
(5) Unit testing, integrated testing, acceptance testing.

[*See page two*

11. Which of the following is a classification of systems?
(1) Close and hybrid (2) Natural and structured (3) Open and close
(4) Open and structured (5) Structured and hybrid

12. A banking system could be best considered as a/an
(1) embedded system. (2) enterprise resource planning system.
(3) expert system. (4) knowledge management system.
(5) transaction processing system.

13. Which of the following best describes the home page of a website?
(1) The index of the website (2) The welcome page
(3) A description of the website (4) The first page of the website
(5) A web page that presents short journal entries

14. A manager of an engineering manufacturing company is considering whether to recruit more people in the near future. What is the most relevant information in this case he has to consider?
(1) Personnel records of all the employees
(2) Previous reports of all the recruited people
(3) The attendance sheets of all the employees
(4) Detailed reports of engineering specifications and manufacturing orders
(5) Summary reports of present and projected personnel requirements

15. $C1A_{16} + 4A2_{16} =$
(1) 523_{16} (2) FBC_{16} (3) FBB_{16} (4) $0BC_{16}$ (5) $10BC_{16}$

16. What is the main function of a DHCP server?
(1) Allocating IP addresses.
(2) Resolving domain names from IP addresses.
(3) Providing directory services to users.
(4) Sharing an Internet connection among users.
(5) Protecting a computer network from virus attacks.

17. Consider the IP address 192.248.87.3 and the subnet mask 255.255.255.224. How many hosts can be directly connected to this network?
(1) 16 (2) 24 (3) 30 (4) 64 (5) 128

18. What is the most suitable media to transmit a high definition video over a distance of 5 km?
(1) Radio waves (2) Twisted pair copper cables (3) Fibre optics cables
(4) Coaxial cables (5) Open wire cables

19. The transport layer of the OSI reference model provides
(1) error correction. (2) routing of data packets.
(3) flow control. (4) process-to-process communication.
(5) error detection.

20. Which of the following Python program segment is syntactically correct?

(1)
```
total = 0
for i in range (1, 12):
total = total + i
```

(2)
```
total
    for i in range (1, 12):
    total = total + i
```

(3)
```
total = 0
for i in range (1, 12):
   total = total + i
```

(4)
```
total = 0
   for i in range (1, 12)
      total = total + i
```

(5)
```
total = 0
      for i in range (1, 12):
         total = total + i
```

[*See page three*

21. Consider the given flow chart:

Which of the following statements about the algorithm represented by the flow chart is **incorrect**?

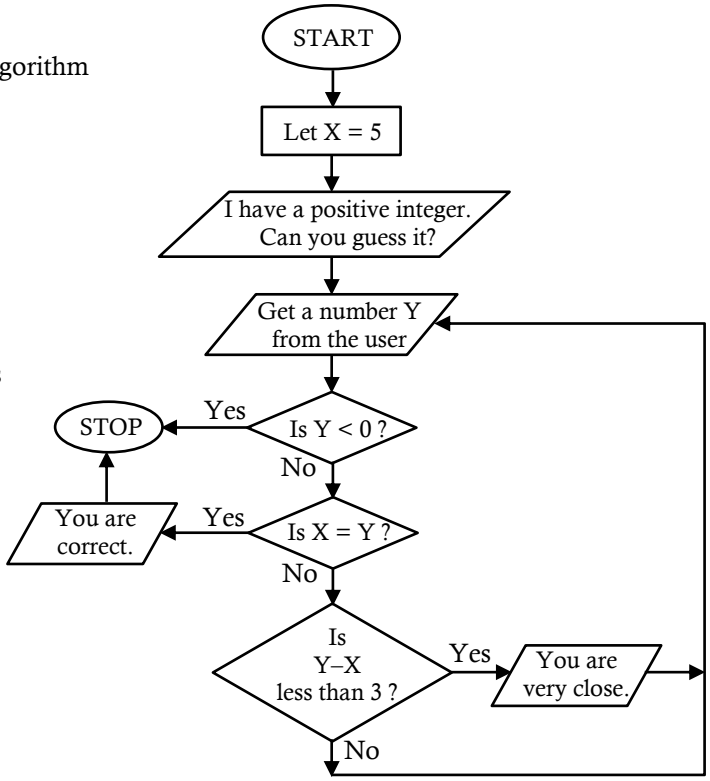
(1) It stops when the user enters the value –1.

(2) It stops when the user enters the value 5.

(3) It gives the message "You are very close." when the user enters the value 9.

(4) It gives the message "You are very close." when the user enters the value 6.

(5) If the value entered by the user is 8, it allows the user to enter another value.



22. Which of the following statements best describes the result of hard disk 'fragmentation'?

(1) Hard disk data access speed is reduced. (2) Network access speed becomes slow.
(3) Hard disk becomes totally inaccessible. (4) Some data will get erased from the hard disk.
(5) Number of bad sectors get increased.

23. Consider the following statements about computerized databases:

A - Need more human resources to manage the computerized database than a manual system.
B - Retrieval of data is efficient than a manual system.
C - No data duplications.
D - Need more space to store data than a manual system.

Which of the above statements are correct with respect to a properly designed database?

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

- Consider the following system description and the relations A, B, C and D given below to answer the questions **24**, **25** and **26**.

A principal of a National school wants to develop a database to maintain Admission Number, Student Name, Address, National Identity Card number (NIC) and the Date of Birth (DOB) of Advanced Level students. The principal also wants to know the marks obtained for each subject by the students. In addition to the above requirements, the principal needs to know the subjects assigned to the teachers.

Relations :

A - Student(admissionNo, studentName, address, DOB, NIC)
B - Subject(subjectCode, subjectName)
C - Mark(admissionNo, subjectCode, marksObtained)
D - Teacher(teacherNo, subjectCode, teacherName, subjectName, class)

24. Which of the above relations are in the third normal form?

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

25. Which of the following combinations of attributes provides the minimal set of primary keys for the relations Student, Subject and Mark respectively?

(1) admissionNo and NIC, subjectCode, admissionNo.
(2) NIC, subjectCode, subjectCode.
(3) admissionNo, subjectCode, subjectCode.
(4) admissionNo, subjectCode, admissionNo and subjectCode.
(5) admissionNo, subjectName, admissionNo and subjectCode.

[*See page four*

26. Which of the following SQL statements would produce an output with admission number, name of the student, subject code and marks obtained?

(1) SELECT studentName, subjectCode, marksObtained
FROM Student, Mark
WHERE Student.admissionNo = Mark.admissionNo

(2) SELECT Student.admissionNo, studentName, subjectCode, Student.marksObtained
FROM Student, Mark
WHERE Student.admissionNo = Mark.admissionNo

(3) SELECT Student.admissionNo, studentName, subjectCode, marksObtained
FROM Student, Mark
WHERE Student.admissionNo = Mark.admissionNo

(4) SELECT Student.admissionNo, studentName, subjectCode, marksObtained
FROM Student, Mark
WHERE Student.admissionNo = admissionNo

(5) SELECT Student.admissionNo, studentName, subjectCode, marksObtained
FROM Student, Mark
WHERE admissionNo = Mark.admissionNo

27. Which of the following would be the result if the Boolean expression $F(x,y) = (\overline{x+y}).(\overline{\bar{x}+\bar{y}})$ is simplified by using De Morgan's Law?

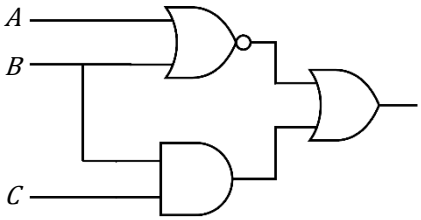
(1) x (2) y (3) 0 (4) 1 (5) x, y

28. Which of the following Boolean expressions represents the given logic circuit?

(1) $(\overline{A+B})+(B+C)$ (2) $(A+B)+(B.C)$

(3) $(\overline{A+B})+(\overline{B+C})$ (4) $(\overline{A.B})+(B.C)$

(5) $(\overline{A+B})+(B.C)$



29. Consider the following properties :

A - Density
B - Capacity
C - Security
D - Cost
E - Access time

Which of the above are being used as the main properties to classify different types of memory?

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

30. Consider the following memory types:

A - Read Only Memory
B - Secondary storage
C - Cache memory
D - Flash memory
E - Random Access Memory

Which of the above can be considered as Volatile Memories?

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

31. Consider the following statements:

A - Customer can obtain the services while he/she is at his/her home or office.
B - Payments can be made without using currency notes.
C - Customer is open to a large international service provider base.
D - Service provider is open to a larger international customer base.
E - Security of payments are always guaranteed.

Which of the above are advantages in e-commerce compared to traditional commerce?

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

[*See page five*

32. Consider the following statements with respect to on-line services:

A - Customer should have access to on-line services.
B - Customer should possess an electronic mechanism to make payments.
C - At the time of placing the order for an item, the identify of the customer should be established.
D - Service provider should provide on-line services.
E - Both the customer and the service provider should be in the same geographical region.

Which of the above items are essential in on-line ordering?

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

33. Consider the following statements:

A - Reading time from memory (latency) was assumed to be negligible.
B - Utilization of a hierarchical memory structure.
C - Inability to foresee the limitation of the processor clock frequency.

Which of the above prevented the technological advancement beyond the Von Neumann architecture?

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

34. Consider the following computer applications:

A - Guiding Tourists based on their current location.
B - Customization of automobiles.
C - Advertising via Internet.
D - Customization of domestic environments.

Which of the above applications are most favourably benefited from ubiquitous computing?

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

35. Consider the following items:

A - Object oriented
B - Rapid Application Development
C - Spiral
D - Structured
E - Waterfall

"....., ... and ..... are system development methodologies".

Which of the above are most appropriate respectively to fill the blanks in the above statement?

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

36. Consider the following statements about the Internet:

A - The Internet is a global network of networks.
B - People and organizations who are connected to the Internet can access its massive store of shared information.
C - W3C is in charge of the Internet.
D - Data can be downloaded only with File Transfer Protocol (FTP).
E - Anybody can publish information or create new services on the Internet.

Which of the above statements are correct?

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

37. Consider the following Python data items:

A - 15.2
B - [12, 'abc', 5.2]
C - {'name' : 'Nimal', 'age' : 18}

Python data types of the above data items A, B, C are respectively

(1) float, list, dictionary. (2) integer, tuple, dictionary. (3) float, list, tuple.
(4) integer, tuple, list. (5) float, tuple, dictionary.

[*See page six*

38. Select the correct layout corresponding to the following code segment of an HTML document.

```
<ul>
<li>Fruits
<ul><li>Mango
<ul>
<li>Gira amba</li>
<li>Dampara</li></ul></li>
<li>Pineapple</li></li></ul>
<li>Vegetables</li>
</ul>
```

(1)
- Fruits
- Mango
  - Gira amba
  - Dampara
- Pineapple
- Vegetables

(2)
- Fruits
  - Mango
    - Gira amba
    - Dampara
  - Pineapple
- Vegetables

(3)
- Fruits
  - Mango
  - Gira amba
  - Dampara
- Pineapple
- Vegetables

(4)
- Fruits
- Mango
- Gira amba
- Dampara
- Pineapple
- Vegetables

(5)
- Fruits
  - Mango
  - Gira amba
  - Dampara
  - Pineapple
- Vegetables

39. Consider the following items:

A - radio
B - textarea
C - select
D - checkbox
E - textbox

Which of the above can go as attributes of an input element in a form?

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

40. What is the correct syntax to be used to insert a JavaScript into an HTML page?

(1) `<javascript>` (2) `<javascript language="text/javascript">`
(3) `<script type="text/javascript">` (4) `<scripting language="javascript">`
(5) `<scripting type="javascript">`

41. Consider the following XML scripts:

A -
```
<?xml version="1.0"?>
<students>
<name>Shashi Dias</name>
<age>18</age>
<regNo>A25849</regNo>
</students>
```

B -
```
<?xml version="1.0"?>
<students>
<name age="18">Shashi Dias</name>
<regNo>A25849</regNo>
</students>
```

C -
```
<?xml version="1.0"?>
<name>Shashi Dias</name>
<age>18</age>
<regNo>A25849</regNo>
```

D -
```
<xml version="1.0"?>
<students>
<name age=18>Shashi Dias</name>
<regNo>A25849</regNo>
</students>
</xml>
```

Which of the above scripts are syntactically correct?

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

[*See page seven*

42. Consider the following statements about operating systems:

A - Ubuntu is an open source operating system.
B - Windows XP is a proprietary operating system.
C - Linux is a proprietary operating system.

Which of the above statements is/are correct?

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

43. Consider the following statements with respect to ER diagrams:

A - An ER diagram has entities and relationships.
B - Cardinality of all relationships should always be one-to-one.
C - Entities may have attributes.
D - There could be binary and tertiary relationships.

Which of the above statements are correct?

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

44. Consider the following statements about language translators:

A - Interpreters convert the entire source program into object program at once.
B - Compilers convert the entire source program into object program at once.
C - Programs written in high level languages do not need language translators to execute on a typical computer.

Which of the above statements is/are correct?

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

45. Consider the following statements about programming languages:

A - C programming language is a first-generation language (1GL).
B - Assembly language is a second-generation language (2GL).
C - Python is a second-generation language (2GL).

Which of the above statements is/are correct?

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

46. Consider the following statements in a program:

A - # This is a comment.
B - // This is a comment.
C - /* This is a comment. */
D - a=1 # This is a comment.
E - # Initial value of a=1

Which of the above are syntactically correct Python statements?

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

47. Consider the following assignment statements:

A - a = 'Nimal's address'
B - a = "Nimal's address"
C - a, b, c = 1
D - a, b, c = 1, 2, 'string'
E - a = b = 1

Which of the above are syntactically correct Python statements?

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

[*See page eight*

48. Consider the following incomplete Python program:

```
data=[5, 1, 23, 10]
datacount = len(data)
for i in range(datacount-1):
  for k in range (i, datacount):
.....
    temp = data[i]
    data[i],data[k] =data[k],temp
for i in range(datacount):
    print (data[i])
```

Which of the following Python statements should be included at the blank line to print the data items in the data structure named 'data' in the ascending order.

(1) `if data[i] < data[k]:` (2) `if data[i] > data[k]:` (3) `if data[i] = data[k]:`
(4) `if data[i] < data[k]` (5) `if data[i] > data[k]`

49. Consider the following Python program:

```
data = [5, 1, 23, 10, -3]
def fun(a):
     i, c=1, a[0]
     while i < len(a):
        if(a[i] > c):
              c=a[i]
        i = i + i
     return c
print (fun(data))
```

Which of the following is the output of this program?

(1) –3 (2) 1 (3) 5 (4) 10 (5) 23

50. Consider the following Python program:

```
f1 = open('input.txt','r')
f2 = open('output.txt', 'w')
line = f1.readline()
while (line) :
        data = (line.strip()).split(",")
        total = float(data[1]) + float(data[2])
        f2.write('{},{},{},{}\n'.format(data[0],data[1],data[2],total))
        line = f1.readline()
f1.close()
f2.close()
```

The content of the file "input.txt" is given below.

```
Nimal,30,60
Saman,80,45
Upali,100,80
```

After executing the program what would be the content of the file "output.txt"?

(1)
```
Nimal
Saman
Upali
```

(2)
```
Nimal,30,60
Saman,80,45
Upali,100,80
```

(3)
```
Nimal,30,60,90
Saman,80,45,125
Upali,100,80,180
```

(4)
```
Nimal,30,60,90.0
Saman,80,45,125.0
Upali,100,80,180.0
```

(5)
```
Nimal,30,60,90.0 Saman,80,45,125.0 Upali,100,80,180.0
```

❋ ❋ ❋