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இலங்கைப் பரீட்சைத் திணைக்களம் இலங்கைப் பரீட்சைத் திணைக்களம்
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අධ්‍යයන පොදු සහතික පත්‍ර (උසස් පෙළ) විභාගය, 2014 අගෝස්තු
கல்விப் பொதுத் தராதரப் பத்திர (உயர் தர)ப் பரீட்சை, 2014 ஓகஸ்ற்
General Certificate of Education (Adv. Level) Examination, August **2014**

තොරතුරු හා සන්නිවේදන තාක්ෂණය	I
தகவல், தொடர்பாடல் தொழினுட்பவியல்	I
Information & Communication Technology I	

20 E I

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 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** (×) in accordance with the instructions given on the back of the answer sheet.
* Use of calculators is **not** allowed.

1. One of the principal inventors of the Electronic Numerical Integrator and Computer (ENIAC) was
   (1) Blaise Pascal   (2) Charles Babbage.   (3) John Von Neumann.
   (4) Ada Augesta Lovelace.   (5) John Presper Eckert.

2. Which of the following statements is correct with respect to the evolution of computing devices?
   (1) Vacuum tubes were used by Blaise Pascal to build the Pascaline.
   (2) The Pascaline is considered as a first generation computing device.
   (3) Computers built using vacuum tubes are considered as second generation computers.
   (4) Electronic Numerical Integrator and Computer (ENIAC) was built using vacuum tubes.
   (5) Apple I and Apple II are two examples for second generation computers.

3. Which of the following statements is true with respect to programming languages?
   (1) Machine languages belong to the second generation programming languages.
   (2) Assembly language programs can run directly on any computer.
   (3) Assembly languages belong to the first generation programming languages.
   (4) Assembly language is more human readable form of machine language.
   (5) Machine language programs can be translated into assembly language programs by using assemblers.

4. Which of the following statements is true with respect to comments in programming languages?
   (1) At the time of execution, comments are translated into special machine instructions.
   (2) Comments should always be limited to a single line.
   (3) Comments should start with the symbol # in all programming languages.
   (4) It is a good practice to include comments in a program to explain its functionality.
   (5) In Python programming, comments should always start at the first column.

5. Which of the followings is an **invalid** Python variable name?
   (1) MyCountry   (2) mycountry   (3) My country   (4) My_country   (5) _my_country_

6. The decimal number equivalent to the 100111_2 is
   (1) 40.   (2) 39.   (3) 38.   (4) 37   (5) 36.

7. Which of the following converts digital data to analog data to transmit over an analog telephone network?
   (1) Network Interface Card (NIC)   (2) Modem
   (3) Multiplexer   (4) Bluetooth adaptor
   (5) Wi-Fi card

8. A special digit inserted into a sequence of digits for data validation is called the .... digit. Which of the following is most appropriate to fill the blank in the above statement?
   (1) check   (2) sign   (3) least significant
   (4) most significant   (5) error

9. The Sri Lankan cricket team won the T-20 World Cup-2014 tournament. The Sri Lankan cricket fans had the highest value of this information when ....

   (1) the final match started.

   (2) Thisara Perera scored the winning run.

   (3) the captain Lasith Malinga received the trophy.

   (4) they saw the news on the newspapers.

   (5) they saw the cricket team at the Katunayaka Airport.

10. $4A6_{16} + 99_{10} =$

   (1) 615_{16} (2) 615_{10} (3) 509_{10} (4) 509_{16} (5) 659_{16}

11 Representations of 5_{10} and -9_{10} in 8-bit Two's complement forms are

   (1) 00000101 and 11110111 respectively.   (2) 11111011 and 11110111 respectively.

   (3) 00000101 and 10001001 respectively.   (4) 00000101 and 11110110 respectively.

   (5) 11111011 and 11110110 respectively.

12. Consider the following logic circuit:
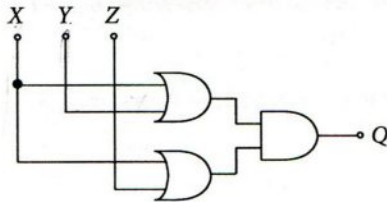
Which of the following circuit diagrams represents a simplified version of the above circuit?

(1)

(2)

(3)

(4)

(5)

13. Consider the following circuit with four push button switches namely: S1, S2, S3, and S4. These four switches can either be in pushed or released states which are represented by 1 and 0 respectively. (Note: In the circuit given below, all the switches are in released state having value 0.)
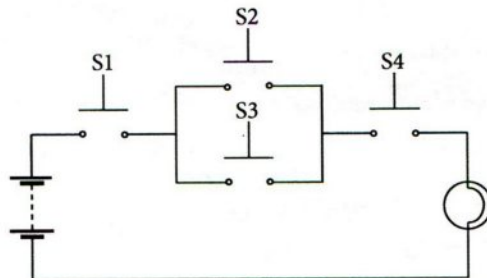
Which of the following Boolean expressions represents the function of the bulb, if the on state of the bulb is represented by the value 1?

   (1) S1 + (S2 . S3) + S4   (2) (S1 + S2) . (S3 + S4)   (3) (S1 . S2) + (S3 . S4)

   (4) S1 . S4 . (S2 + S3)   (5) S2 + (S1 . S4) + S3

14. Which of the following has the fastest access speed?
    (1) Extended Memory   (2) Register Memory   (3) Flash Memory
    (4) Cache Memory   (5) Virtual Memory

15. Which of the following is **not** a main function of an operating system?
    (1) Memory Management   (2) Process Scheduling   (3) File Handling
    (4) Virus Detection   (5) User Interfacing

16. In an operating system, moving a process from the main memory to the secondary storage in order to bring in another process to the main memory is called ....
    (1) Demand Paging.   (2) Context Switching.   (3) Swapping.
    (4) Interrupting.   (5) Scheduling.

17 The following element is a markup for including an image to an HTML document. The name of the source file of the image used is "arrow.jpg" which is in the same folder as the HTML document.

<p align="center"></p>

Which of the following is the most suitable to fill the blank in the above element?
    (1) alt   (2) src   (3) scr   (4) href   (5) link

18. Consider the folder structure given below·
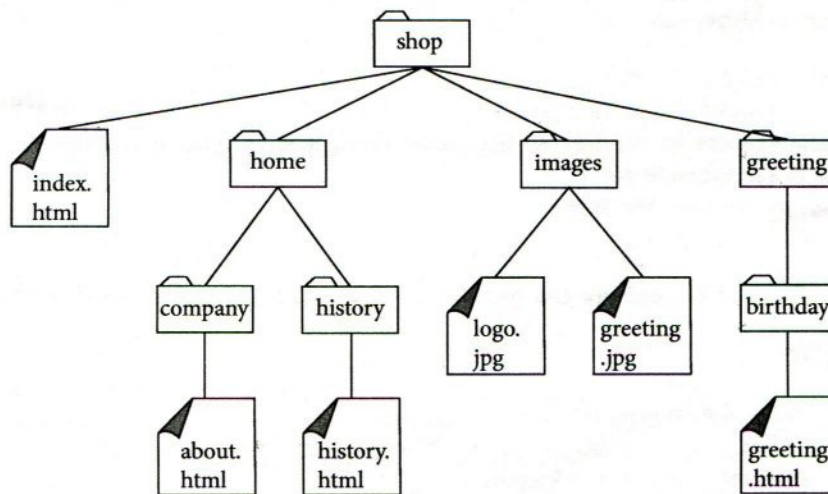
Which of the followings is the correct markup to include in the index.html to link greeting.html document?
    (1) Greeting
    (2) Greeting
    (3) Greeting
    (4) Greeting
    (5) Greeting

19. Which of the followings is a client-side scripting language that is commonly used to add interactivity to web pages?
    (1) CSS   (2) PHP   (3) XML   (4) HTML 2   (5) JavaScript

20. Consider the following HTML element:
    <input   type = text   size = 10/>
    The attribute 'size' on the above element refers to the ......
    (1) length of the text box in pixels.
    (2) maximum number of characters displayed in the text box.
    (3) maximum number of characters that can be typed into the text box.
    (4) font size of the text box.
    (5) number of lines displayed in the text box.

21 Facebook is a popular social network connecting millions of people with new members joining daily Which of the following statements is correct?
(1) Facebook plays a very important role in building and maintaining your family relationships.
(2) Facebook is the only social network available today.
(3) Privacy settings of Facebook assure the privacy of its users completely.
(4) Publishing private information in Facebook has resulted in unfortunate incidents.
(5) Real identity of a person is always guaranteed in Facebook.

22. Which of the following statements is true?
(1) Computer based learning is a teacher oriented learning technique.
(2) Skype is a famous video conferencing technique.
(3) Virtual Private Network (VPN) provides a medium for telecommuting.
(4) Conducting offline examinations can be considered as computer aided assessments.
(5) Microsoft Power Point is Free and Open Source Software (FOSS) for computer based presentations.

23. Computers attached to a LAN use the default gateway connected to the same network
(1) to translate the domain names to IP addresses.
(2) to forward IP packets when they do not know any specific route to the destination.
(3) as the firewall for the network.
(4) to send all the data packets to other computers in the same LAN
(5) to assign IP address to a computer on the LAN

24. Which of the following statements is true?
(1) www.ebay.com is an example for C2C.
(2) When the government renders its services to the public through www then it is called B2C.
(3) www.wikipedia.com is an example for C2B.
(4) www.amazon.com is an example for B2E.
(5) Facebook groups are examples for E2C.

25. The command that can be used to measure the round trip propagation delay between two computers on the Internet is
(1) ping.   (2) ifconfig.   (3) ssh.   (4) ftp.   (5) telnet.

26. In the OSI seven layer reference model, IP protocol maps to the   layer.
Which of the following is most appropriate to fill the blank in the above statement?
(1) application   (2) session   (3) transport   (4) network   (5) physical

27 The function of the DHCP server in an IP network is to
(1) translate domain names to IP addresses.   (2) cache the web pages.
(3) dynamically allocate IP addresses.   (4) filter IP packets.
(5) provide security

28. Which of the following is a valid subnet mask?
(1) 255.255.255.192   (2) 255.0.255.0   (3) 256.255.255.64
(4) 255.256.255.96   (5) 0.0.0.255

29. The ping command indicates that there is a 5% packet loss between the computers X and Y There is an FTP server running on Y A file is downloaded to X from Y using FTP protocol. Which of the following is the most appropriate statement regarding this file download?
(1) The downloaded file has exactly 5% of the data missing.
(2) The downloaded file has more than 5% of the data missing.
(3) The downloaded file has 5% of data in a different order than the original file.
(4) The downloaded file has the data in exactly the same order as the original file.
(5) FTP protocol cannot run on a network connection with errors.

30. Which of the following relations is in the 3rd normal form?
(1) student(studentIndexNo, name, parentName)
(2) sport(sportId, sportName, teacherName, teacherId)
(3) teacher(teacherId, teacherName, telephoneNumber, subjectName, subjectId)
(4) book(ISBN, title)
(5) patient(patientId, patientName, ward, wardId)

● Consider the following three tables in a relational database to answer questions **31** to **34**. Assume that a subject has only one paper for an examination.

subject

subjectId	title
SUB001	Information and Technology
SUB002	Chemistry
SUB003	Physics

exam

examId	name
EXAM001	GCE OL
EXAM002	GCE AL

examSubject

examId	subjectId	examDate
EXAM001	SUB001	2014.12.12
EXAM002	SUB001	2014.8.21
EXAM002	SUB002	2014.8.21
EXAM002	SUB003	2014.8.21

31 Which of the following is the most suitable Entity Relationship (ER) diagram to represent the above relational database tables?

(1)

(2)

(3)

(4)

(5)
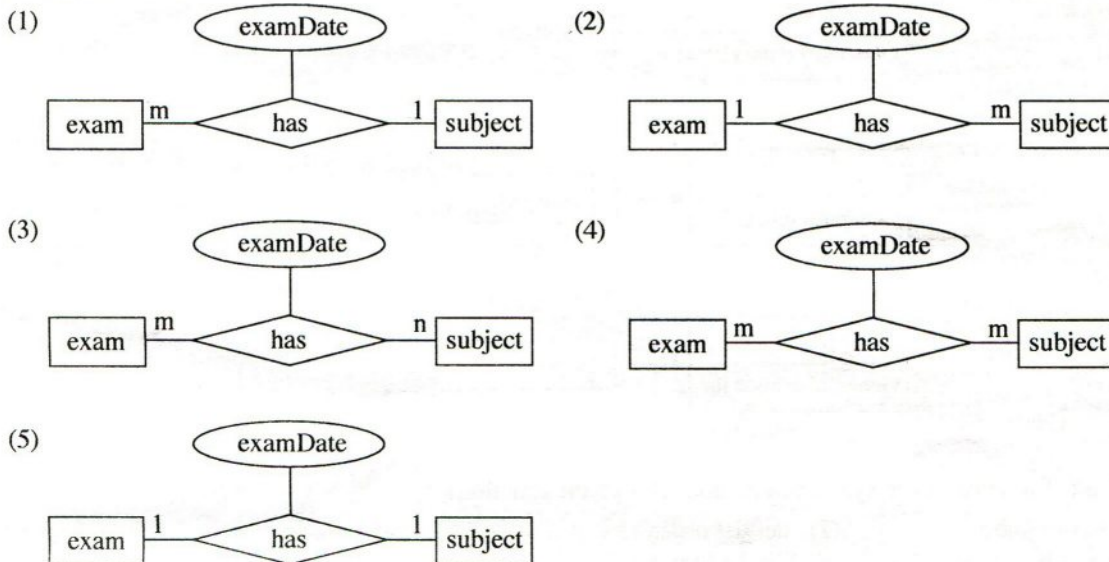
32. Which of the following is the correct primary key for examSubject table?
    (1) examId
    (2) examId, subjectId
    (3) examId, examDate
    (4) subjectId, examDate
    (5) examId, subjectId, name

33. Which of the following is the correct SQL statement to retrieve examId, name, and examDate of all examinations?
    (1) select examSubject.examId, name, examDate from exam, examSubject where
        exam.examId=examSubject.examId
    (2) select examId, name, examDate from exam and examSubject where
        exam.examId=examSubject.examId
    (3) select examId and name and examDate from exam and examSubject where
        exam.examId=examSubject.examId
    (4) select * from exam and examSubject where exam.examId=examSubject.examId
    (5) select * from exam, examSubject where exam.examId=examSubject.examId

34. Which of the following SQL statements changes only the date of examination of Physics paper of GCE AL examination to 2014.08.25?
    (1) update examSubject set examDate='2014.08.25' where subjectId='SUB003' or 'sub003'
    (2) update examSubject set examDate='2014.08.25' where examId='EXAM002' or subjectId='SUB003'
    (3) update examSubject set examDate='2014.08.25' where examId='EXAM002' and subjectId='SUB003'
    (4) update examSubject set examDate='2014.08.25' where examDate='2014.08.21'
    (5) update examSubject set examDate='2014.08.25' where examId='EXAM002' or subjectId='SUB003' or
        examDate='2014.08.23'

35. The Pilot, Phase, Direct, and Parallel are four different kind of system .... strategies. Which of the following is most appropriate to fill the blank in the above statement?
    (1) analysis
    (2) design
    (3) testing
   (4) implementation
    (5) maintenance

36. Which of the following segment of a Data Flow Diagram best represents the process of getting the contact list of a mobile phone?

(1)

(2)

(3)

(4)

(5)
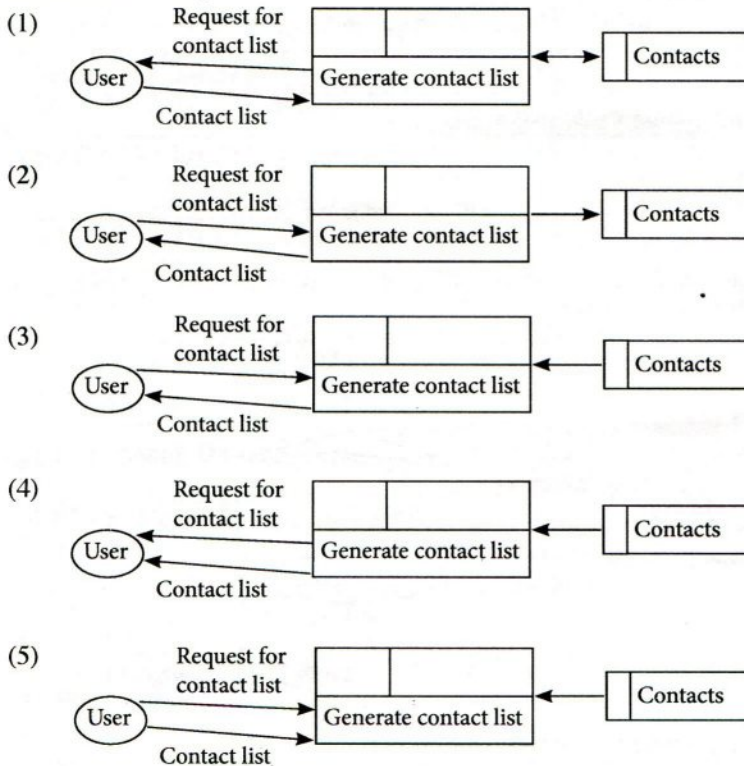
37. Which of the following is a syntactically correct Python function?

(1) def isLarger(a,b):
    return a > b

(2) def isLarger(a,b):
    return a > b

(3) def isLarger(a,b)
    return a > b

(4) function isLarger(a,b):
    return a > b

(5) function isLarger(a,b)
    if(a > b)
        return a
    else
        return b

- Use the following flowchart to answer questions **38** and **39**.
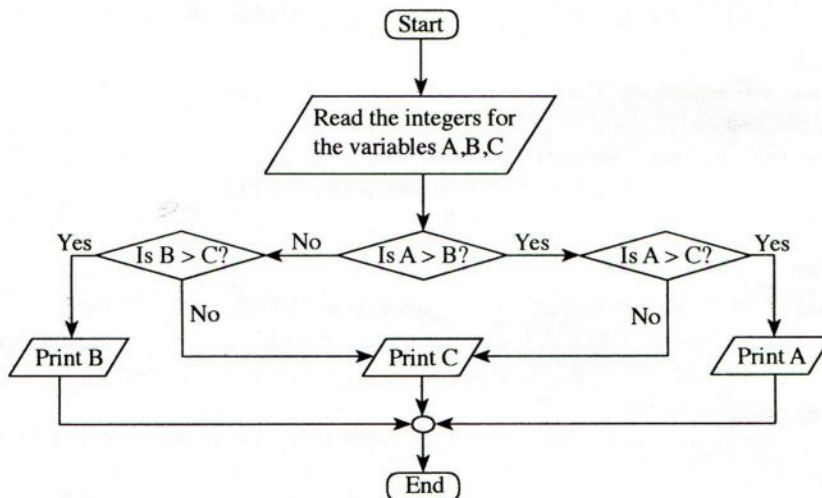
38. If a user input 20, 27, 18 for the variables, A, B, C respectively the output will be

(1) 18   (2) 20   (3) 27   (4) 20, 27   (5) 27, 18

39. Which of the following Python programs correctly implements the above flowchart?

(1)
```
A = int(input("Enter a value for A."))
B = int(input("Enter a value for B:"))
C = int(input("Enter a value for C:"))
if (A > B):
    if(A > C):
        print(A)
else:
    if(B > C):
        print(B)
    else:
        print(C)
```

(2)
```
A = int(input("Enter a value for A."))
B = int(input("Enter a value for B:"))
C = int(input("Enter a value for C:"))
if (A > B):
    if(A > C):
        print(A)
    else:
        print(C)
else:
    if(B > C):
        print(B)
```

(3)
```
A = int(input("Enter a value for A."))
B = int(input("Enter a value for B:"))
C = int(input("Enter a value for C:"))
if (A > B):
    if(A > C):
        print(A)
    else:
        print(C)
else:
    if(B > C):
        print(B)
    else:
        print(C)
```

(4)
```
A = int(input("Enter a value for A."))
B = int(input("Enter a value for B:"))
C = int(input("Enter a value for C:"))
if (A > B):
    if(A > C):
        print(C)
    else:
        print(A)
else:
    if(B > C):
        print(C)
    else:
        print(B)
```

(5)
```
A = int(input("Enter a value for A."))
B = int(input("Enter a value for B:"))
C = int(input("Enter a value for C:"))
if (A > B):
    if(A > C):
        print(A)
    else:
        print(C)
else:
    if(B > C):
        print(C)
    else:
        print(B)
```

40. What will be the output when the following Python code is executed?
```
a = ['a', 2, [3, 'b', 4], [6, "abc", 9], 8]
print(a[2][2])
```
(1) 2   (2) [3, 'b', 4]   (3) 'b'   (4) 4   (5) 22

41 What is the value of variable z after executing the Python statement z = 1 = = 2?
(1) 0   (2) 1   (3) True   (4) False   (5) Null

42. Which of the following Python expressions shows the correct evaluation order of the Python expression 10 4 * 3/2 5?
(1) (((10 4) * 3)/2) 5   (2) ((10 (4 * 3))/2) 5   (3) 10 (4 * ((3/2) 5))
(4) 10 ((4 * (3/2)) 5)   (5) (10 ((4 * 3)/2)) 5

43. Consider the following statements on Static Random Access Memory (SRAM):
   A   SRAM needs periodic refreshing
   B   It is used for Cache memory
   C   Registers are made of SRAMs
   Which of the above statement(s) is/are correct?
(1) A only   (2) B only   (3) A and B only   (4) A and C only   (5) B and C only

44. Consider the following HTML style rules:

      A   body {color: red;}

      B   h1 {color: red;}

      C   p {color: red;}

            h1 {color: red;}

      D   p, hl {color: red;}

Which of the above rules will display h1 elements and all the paragraphs of the following document in red?

```
<body>
    <h1>Trees</h1>
    <p>Coconut tree</p>
    <p>Rubber tree</p>
    <h1>Flowers</h1>
    <h2>Rose</h2>
</body>
```

  (1) *A* only   (2) *C* only   (3) *A* and *B* only

  (4) *B* and *D* only   (5) *C* and *D* only

45. Which of the following systems should always be based on Artificial Intelligence?

  A   Expert Systems

  B   Enterprise Resource Planning (ERP) Systems

  C   Multi-Agent Systems

  D   Geographical Information Systems

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

46. Consider the following statements about an automated system:

  A   Human intervention is not required or minimally required.

  B   All the operations of the machine are controlled by the micro chip installed in the machine.

  C   A system that processes daily banking transactions can be considered as an automated system.

Which of the above statement(s) is/are correct?

  (1) *A* only   (2) *A* and *B* only   (3) *A* and *C* only

  (4) *B* and *C* only   (5) All *A*, *B* and *C*

47 Consider the following statements regarding the requirements of a Bank ATM:

  A   A customer shall be able to inquire his/her bank balance.

  B   A customer should be able to deposit money through ATM.

  C   Maximum withdrawal amount per day is Rs. 20,000.

Which of the above requirements is/are functional requirement(s) of the ATM?

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

48. Consider the following systems:

  A   Human blood circulatory system

  B   Human digestive system

  C   Human nervous system

The system(s) that can be considered as open system(s) is/are

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

49. Consider the following statements about Software Agents:

  A   A software agent is capable of autonomous actions in order to meet its design objectives.

  B   A software agent is capable of user-directed actions in order to meet users' objectives.

  C   A multi-agent system is composed of set of interacting agents.

Which of the above statements is/are true?

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

50. Consider the following statements about syntax or semantic errors in Python programming language:

  A   A program with syntax errors will not run to the end of the program.

  B   A program with only semantic errors will not run to its end.

  C   Syntax errors in programs are also called logical errors.

  D   Programs with semantic errors may not produce correct outputs for some inputs.

Which of the following statements is correct?

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

* * *