DO NOT BREAK THE SEAL OF THE BOOKLET UNTIL YOU ARE TOLD TODO SO

## QUESTION BOOKLET

SERIES III
Subjects : General English, Computer Science
BOOKLET SERIAL NO. 110007 Marks: 300

Read the following instructions carefully before you
begin to answer the questions.
INSTRUCTIONS TO CANDIDATES

1. This booklet contains $\mathbf{1 5 0}$ questions to be answered in a separate OMR Answer Sheet using Black Ball Pen in following three parts:
Part-A-General English : 50 questions
Part-B-Computer Science : 100 questions
2. All Questions are compulsory.
3. You will be supplied the Answer sheet separately by the invigilator. You must complete the details of particulars asked for.
4. Answers must be shown by completely blackening the corresponding circles in the Answer Sheet against the relevant question number by Black Ball Pen. OMR Answer Sheet without marking series/ double series marking shall not be evaluated.

## Example :

Supposing the following question is asked :-

## The Capital of Meghalaya is-

A. Guwahati
B. Kohima
C. Shillong
D. Delhi

You will have four alternatives in the Answer Sheet for your response corresponding to each question of the Question Booklet as below :-


In the above illustration, if your chosen response is altemative C i.e. Shillong, then the same should be marked on the Answer Sheet by blackening the relevant circle with a Black Ball Point Pen only as below :-


## WHICH IS THE ONLY CORRECT METHOD OFANSWERING

5. Answer the questions as quickly and as carefully as you can. Some questions may be difficult and others easy. Do not spend too much time on any one question.
6. There will NOT be any negative marking for wrong answers.
7. The Answer Sheet must be handed over to the invigilator before you leave the Examination Hall.
8. No rough work is to be done on the Answer Sheet. Space for rough work has been provided in the question booklet.

## PART-A-GENERAL ENGLISH <br> Marks :100

Each question carries 2 marks :
Directions : From the given underlined idioms, choose the best alternative which expresses the closest meaning of the idiom. Mark the correct answer in your answer sheet.

1. His behaviour compelled me to give him a piece of my mind
a) To scold him
b) To pardon him
c) To make him my friend
d) To take him into confidence
2. Please state your reasons in black and white
a) In short
b) Useless
c) In writing
d) In full swing
3. She is a tough nut to crack
a) Expensive thing
b) A difficult problem
c) A foolish search
d) An easy question
4. He spoke well though it was his maiden speech
a) First speech
b) Brief speech
c) Long speech
d) Emotional speech
5. The trial made a mockery of justice
a) It was a mock trial
b) There was no serious outcome
c) People mocked at the judgement
d) Made the system look ridiculous

Directions : In the following questions, substitute each sentence with a single word from among the given alternatives. Mark the correct answer in your answer sheet.
6. To keep a great person or event in people's memory :
a) Commensurate
b) Commiserate
c) Communicate
d) Commemorate
7. Lasting only for a very short while :
a) Temperate
b) Temporal
c) Transparent
d) Temporary
8. A number of stars grouped together :
a) Comet
b) Orbit
c) Solar system
d) Constellation
9. Found all over the world :
a) Provincial
b) Regional
c) Universal
d) International
10. The murder of a man :
a) Genocide
b) Homicide
c) Fraticide
d) Regicide

Directions : Read the following passage and answer the questions by selecting the answer choice from the alternatives given. Mark the correct answer in your answer sheet.

India is not, as you may imagine, a distant, strange, or at the very utmost, a curious country. India in the future belongs to Europe for it has its place in the Indo-European world; it has its place in our own history and in what is the very life of history, the history of the human mind. You know how some of the best talents and the noblest genius of our age have been devoted to the study of the development of the outward or material world- the growth of the earth, the first appearance of the living cells, their combination and differentiation leading up to the beginning of organic life, and its steady progress from the lowest to the highest stages. This also leads to the issue of the presence of the inward intellectual world also which has to be studied in its historical development- from the first appearance of predicative and administrative roots, their combination and differentiation, leading up to the beginning of rational thought in its steady progress from the lowest to the highest stages. In this regard, India occupies a place second to no other country. Whatever sphere of the human mind you may select for any special study, whether it be language, or religion, or mythology, or philosophy, whether it be laws or customs, primitive art or primitive science, everywhere you have to go to India- whether you like it or not, because some of the most valuable and
most instructive materials in the history of man are treasured up in India.
11. In what field of human endeavor has India surpassed the rest of mankind ?
a) In industrialization
b) In materialization
c) In games and sport's
d) In study of the history of the human mind
12. What position does India occupy in the study of the history of the human mind?
a) No place at all
b) First place
c) Third place
d) Second place
13. Philosophy means :
a) The study of human mind
b) The study of systems thought about soul, etc.
c) The study of political systems
d) The study of stars and cosmos
14. The historical development of intellectual world leads up to
a) The beginning of rational thought
b) Spiritual illumination
c) Physical development
d) Deflation
15. The word primitive in the passage would also mean
a) Custom
b) Ancient
c) Contemporary
d) Future

Directions : In the following questions, choose a word that is opposite in meaning with the given word from among the given alternatives. Mark the correct answer in your answer sheet.
16. Widely
a) Spaciously
b) Succinctly
c) Narrowly
d) Limitedly
17. Development
a) Progress
b) Retardation
c) Impunity
d) Retrogression
18. Modern
a) Update
b) Recent
c) Ancient
d) Present
19. Covering
a) Hiding
b) Protecting
c) Avoiding
d) Exhibiting
20. Divided
a) Isolated
b) Unpleasant
c) United
d) Seperated

Directions : In the following questions, choose a word that is most similar in meaning with the given word from among the given alternatives. Mark the correct answer in your answer sheet.
21. Canny
a) Obstinate
b) Handsome
c) Clever
d) Stout
22. Alert
a) Energetic
b) Observant
c) Intelligent
d) Watchful
23. Indict
a) Condemm
b) Reprimand
c) Accuse
d) Allege
24. Lament
a) Complain
b) Comment
c) Condone
d) Console
25. Reckless
a) Courageous
b) Rash
c) Bold
d) Daring

Directions : In the following questions, a sentence is given in Direct / Indirect speech. Out of the four alternatives suggested, choose the one which best expresses the same sentence in Direct / Indirect speech. Mark the correct answer in your answer sheet.
26. My friend said, "I am leaving today."
a) My friend said that he is leaving today.
b) My friend said that he was leaving today.
c) My friend said that he leaves today.
d) My friend said that he was leaving that day.
27. She said to him, "what a cold day!"
a) She told him that it was a cold day.
b) She exclaimed that it was a cold day.
c) She exclaimed sorrowfully that it was a cold day.
d) She exclaimed that it was a very cold day.
28. The man exclaimed that his wallet was stolen.
a) "My wallet was stolen !" the man said.
b) "Somebody stole my wallet !" exclaimed the man.
c) The man exclaimed, "My wallet was stolen!"
d) The man cried, "My wallet was stolen".
29. Socrates said, "Virtue is its own reward."
a) Socrates said that virtue had its own rewards.
b) Socrates says that virtue is its own rewards.
c) Socrates said that virtue is its own rewards.
d) Socrates said that virtue was its own rewards.
30. Mr. Sam asked the boy if he could tell him where the nearest post office was.
a) Where is the nearest post office ? Mr. Sam asked the boy.
b) Mr. Sam asked the boy "Could you tell me where the nearest post office is" ?
c) Mr. Sam asked the boy "where is the nearest post office"?
d) Mr. Sam said to the boy "where is the nearest post office" ?

Directions : In the following questions, some sentences have errors and some do not. The underlined words are the key words where you can identify whether the sentence is erroneous or not. From the given set of choices, choose the correct alternative for the identified errors. Where there is no error, choose the specified option (d). Mark the correct answer in your answer sheet.
31. After the summer break, school will open after two weeks.
a) begin
b) reopen
c) start
d) No errors
32. The stream flowed gently under the bridge.
a) above
b) across
c) on
d) No errors
33. The train from Chennai arrived right in schedule.
a) on
b) by
c) over
d) No errors
34. The speeding driver is finally caught over LCS-19
the police.
a) over
b) under
c) by
d) No errors
35. The children enjoyed rowing the boat on the lake.
a) by
b) in
c) with
d) No errors

Directions : In the given questions below, there are jumbled up sentence parts. Rearrange these parts, which are labelled $a, b, c$ and d to produce the correct sentence. Choose the correct sequence from the given set of alternatives. Mark the correct answer in your answer sheet.
36. water supply / locality / this / has a good /
A) water supply
B) locality
C) this
D) has a good
a) $A B C D$
b) ABDC
c) $A C B D$
d) CBDA
37. to memorize / all the actors have / the new play / the lines of /
A) to memorize
B) all the actors have
C) the new play
D) the lines of
a) $B A D C$
b) CDBA
c) ADCB
d) BDAC
38. the garden / Maria / vegetables in / grows /
A) the garden
B) Maria
C) vegetables in
D) grows
a) ACBD
b) $B D C A$
c) $B A C D$
d) DCAB
39. work on time / she tells / to leave / Donbok 1
A) work on time
B) she tells
C) to leave
D) Donbok
a) DCAB
b) CBAD
c) DCAB
d) BDCA
d) neither me nor Andy gives
40. the / nightfall / their hooting calls at / owls began /
A) the
B) nightfall
C) their hooting calls at
D) owls began
a) DCAB
b) ADCB
c) ABCD
d) DCBA

Directions : In the following cloze passage, there are blank spaces which are numbered. Against each number, choose the most appropriate choice in meaning from the set of given alternatives. Mark the correct answer in your answer sheet.

It is neither the size nor the length of life which makes man 41 . The growth of the mind and intellect is 42 in proportion to the human body. Man may physically 43 the state of the giant yet he may remain 44 a dwarf. The true worth of man 45 upon his action, deed and thought.
41. a) human
b) polite
c) better
d) humble
42. a) roughly
b) usually
c) ever
d) never
43. a) eam
b) attain
c) keep
d) grow
44. a) morally
b) spiritually
c) socially
d) intellectually
45. a) depends
b) lies
c) revolves
d) gathers

Directions : In the following questions, the sentences have blank spaces followed by four alternative answers. Choose the correct grammar alternative from the given choices. Mark the correct answer in your answer sheet.
46. $\qquad$ have been to the football match.
a) neither Andy nor I
b) neither I nor Andy
c) neither Andy nor me

## PART-B-COMPUTER SCIENCE

## Marks :200

## Each question carries 2 marks :

51. The loss in signal power as light travels down the fibre is called
a) scattering
b) delay
c) interruption
d) attenuation
52. In an optical fiber, the inner core is $\qquad$ the cladding
a) the same density as
b) more dense than
c) less dense than
d) another name for
53. Error detection at the DLL is achieved by
a) hamming codes
b) bit stuffing
c) framing
d) cyclic redundancy codes
54. In the OSI model, this layer provides errorfree delivery of data
a) Data Link Layer
b) Transport Layer
c) Network Layer
d) Session Layer
55. A binary tree $T$ has $n$ leaf nodes. The number of nodes of degree 2 in $T$ is
a) $\log _{2} \mathrm{n}$
b) $2 n$
c) $\mathrm{n}-1$
d) n
56. Let R be a symmetric and transitive relation on a set A. Then
a) $R$ is reflexive and hence a partial order
b) $R$ is reflexive and hence and equivalent relation
c) $R$ is not reflexive and hence not an equivalence relation
d) None of the above
57. The minimum number of edges in a connected graph of n vertices is
a) $n-1$
b) $\mathrm{n}+1$
c) $n$
d) $\mathrm{n}-1+2$
58. Which one of the following regular expressions over $\{0,1\}$ denotes the set of all strings not containing 100 as a substring ?
a) $0 *(1+0)^{*}$
b) $0^{*} 1010^{*}$
c) $0^{*}(10+1)^{*}$
d) $0^{*} 1^{*} 01 *$
59. Which one of the following is not decidable?
a) Equivalence of two given Turing machines
b) Language accepted by a given finite state machine is non empty
c) Given a Turing Machine, a string $s$ and an integer $\mathrm{k}, \mathrm{M}$ accepts s within k steps
d) Language generated by a context-free grammar is non empty
60. Which of the following statements is false ? a) A labeled rooted binary tree can be uniquely constructed given its postorder and preorder traversal results
b) A tree with n nodes has ( $\mathrm{n}-1$ ) edges
c) A complete binary tree with $n$ internal nodes has $(\mathrm{n}+1)$ leaves
d) The maximum number of nodes in a binary tree of height $h$ is $\left(2^{h+1}-1\right)$
61. Regarding the power of recognition of languages, which of the following statements is false?
a) The non-deterministic FSA are equivalent to a deterministic FSA
b) Non-deterministic Turing machines are equivalent to deterministic Turing machines
c) Non-deterministic PDA are equivalent to deterministic PDA
d) Multi-tape Turing machines are equivalent to

Single tape Turing machines
62. Context free languages are closed under
a) Union, intersection
b) Intersection, complement
c) Union, Kleene closure
d) Complement, Kleene Closure
63. If L 1 is a CF language and L 2 is a regular language, which of the following is false?
a) L1-L2 is not context free
b) $\sim \mathrm{L} 1$ is context free
c) L1 intersection L2 is context free
d) $\sim \mathrm{L} 2$ is regular
64. The advantage if CMOS technology over NMOS is
a) lower power dissipation
b) smaller chip size
c) greater speed
d) fewer masks for frabication
65. The operation which is commutative but not associative is
a) AND
b) OR
c) XOR
d) NAND
66. In a modern digital computer, a subtractor is normally not used because
a) subtractors are very expensive
b) the design of a subtractor is very complex
c) the adder is geared for doing subtraction also
d) most of the programs do not require subtraction
67. A bus is a group of $\qquad$ carrying digital signals
a) wires
b) transistors
c) gates
d) registers
68. A half adder adds $\qquad$ bits
a) 4
b) 3
c) 2
d) 1
69. Express - 7 as 16 bit signed binary number
a) 0000000000000111
b) 1000000000000111
c) 0111000000000001
d) 0111000000000000
70. With a NAND latch, a low $R$ and a low $S$ produce a $\qquad$ condition
a) race
b) reset
c) set
d) no change
71. With positive clocking, the clock signal must be $\qquad$ for the flip flop a respond
a) high
b) low
c) set
d) race
72. How many full adders are required to construct an m-bit parallel adder ?
a) $m / 2$
b) m
c) $\mathrm{m}-1$
d) $\mathrm{m}+1$
73. In which code the successive code characters differ in only one bit position ?
a) gray code
b) excess 3 code
c) 8421 code
d) algebraic code
74. The highest decimal number that can be represented with 10 bits is
a) 1024
b) 1022
c) 1023
d) 1021
75. An audit trail
a) is used to make backup copies
b) is the recorded history of operations performed on a file
c) can be used to restore lost information
d) All of the above
76. A network schema
a) restricts the structure to a one-to-many relationship
b) stores data in tables
c) permits many-to-many relationships
d) all of the above
77. The most common hash functions use $\qquad$ to compute the hash address
a) Multiplication method
b) Union method
c) Subtraction method
d) Division method
78. Devices on one network can communicate with devices on another network via a
a) file server
b) printer server
c) gateway
d) switch
79. A central computer surrounded by one or more satellite computers is called a
a) bus network
b) ring network
c) mesh network
d) star network
80. The communication mode that supports two way traffic but only one direction at a time is
a) simplex
b) half duplex
c) full duplex
d) multiplex
81. How many pairs of stations can simultaneously communicate on Ethernet LAN ?
a) 1
b) 2
c) 3
d) 4
82. Modulation is the process of
a) sending a file from one computer to another
b) converting analog signal to digital
c) converting digital signal to analog
d) amplifying the signal strength
83. Four bits are used for packet sequence num-
bering in a sliding window protocol. What is the maximum window size ?
a) 4
b) 15
c) 8
d) 16
84. A T-switch is used to
a) control how messages are passed between computers
b) transmit characters one at a time
c) echo every character that is received
d) rearrange the connections between computing equipment
85. The interactive transmission of data within a time sharing system may be best suited to
a) simplex lines
b) half duplex lines
c) biflex lines
d) full duplex lines
86. The X. 25 standard specifies a
a) technique for start-stop data
b) technique for dial access
c) DTE/DCE interface
d) data bit rate
87. The synchronous modems are more costly than asynchronous modems because
a) they contain clock recovery circuits
b) they produce large volumes of data
c) they transmit data with start and stop bits
d) they operate with a larger bandwidth
88. Which type of switching uses the entire capacity of the dedicated link ?
a) circuit switching
b) datagram approach to packet switching
c) virtual circuit approach to packet switching
d) message switching
89. A repeater takes a signal and $\qquad$ it
a) amplifies
b) reroutes
c) regenerates
d) resamples
90. Which transmission mode is used for data communication along telephone lines ?
a) Parallel
b) Serial
c) Synchronous
d) Asynchronous
91. A DNS response is classified as $\qquad$ if the information comes from cache memory
a) unauthorative
b) authoritative
c) iterative
d) recursive
92. In $\qquad$ resolution, the client could di-
rectly contact more than one sever
a) recursive
b) iterative
c) cache
d) none of the above
93. A DNS $\qquad$ server creates, maintains and updates the zone file
a) root
b) primary
c) secondary
d) tertiary
94. The functions performed by the paging system is
a) management of the physical address space
b) implementation of the access environment for all programs in the system
c) sharing and protection
d) all of the above
95. Page fault frequency in an OS is reduced when the
a) processes tend to be I/O bound
b) size of pages is reduced
c) processes tend to be CPU bound
d) locality of reference is applicable to the process
96. Functions of a Lexical Analyzer is
a) Removing white space
b) Recognize constants, identifiers and keywords
c) removing comments
d) all of the above
97. Lexical analyzer generates
a) trees
b) tokens
c) code
d) intermediate code
98. The problem of thrashing is affected significantly by
a) primary storage size
b) program size
c) program structure
d) all of the above
99. Round robin scheduling
a) allows processor bound tasks more time in the processor
b) is quite complex to implement
c) gives each task the same chance to the processor
d) allows interactive tasks quicker access to the processor
100. In which addressing mode, the effective address of the operand generated by adding a
constant value to the contents of the register ?
a) immediate mode
b) indirect mode
c) absolute mode
d) index mode
101. Banker's algorithm for resource allocation deals with
a) deadlock recovery
b) deadlock avoidance
c) mutual exclusion
d) race condition
102. Producer consumer problem can be solved using
a) semaphores
b) event counters
c) monitors
d) all of the above
103. Bottom-up parsing involves
a) shift-reduce
b) handle pruning
c) operator check
d) (a) and (b)
104. The main function of the dispatcher is
a) bring processes from the disk to the main memory
b) assigning ready processes to the CPU
c) suspending some of the processes when the CPU load is high
d) swapping a process to the disk
105. Daisy chain is a device for
a) interconnecting a number of devices to a number of controllers
b) connecting a number of devices to a controller
c) connecting a number of controllers to a device
d) none of the above
106. Which of the following terms refers to the degree to which data in a database system are accurate and correct ?
a) security
b) independence
c) integrity
d) privacy
107. The total time to prepare a disk drive mechanism for a block of data to be read from is
a) latency
b) latency with transfer time
c) latency with seek time
d) latency with seek time and transfer time
108. Thrashing
a) can always be avoided by swapping
b) is a natural consequence of virtual memory
system
c) always occurs if there is power failure
d) is a non-recoverable error
109. Input to code generator is
a) intermediate code
b) source code
c) target code
d) all of the above
110. LOC measure is
a) Function oriented metric
b) Size oriented metric
c) Operation oriented metric
d) both (a) and (b)
111. Cost benefit analysis
a) evaluates the tangible and non tangible factors
b) estimates hardware and software costs
c) compares cost with the benefits of introducing a computer based system
d) all of the above
112. The combination of top-down and bottomup approach may be referred to as
a) integrative approach
b) interpretive approach
c) interactive approach
d) none of the above
113. Cyclomatic complexity is given by $V(G)=$
a) $\mathrm{E}-\mathrm{N}$
b) $\mathrm{E}+\mathrm{N}-2$
c) $E+N$
d) $\mathrm{E}-\mathrm{N}+2$
114. Basis path testing is
a) both black box and white box testing
b) white box testing method
c) black box testing
d) integration testing
115. A structure chart is
a) a statement of information processing requirements
b) a hierachical partitioning of the program
c) a document of what has to be accomplished
d) all of the above
116. BVA does not test cases for
a) range
b) value
c) condition
d) both (b) and (c)
117. Which of the following is not part of DFD?
a) disk storage
b) arrow
c) data store
d) process
118. Which of the following is related to virtual circuit?
a) connection oriented
b) each packet sent is routed independently of its predecessors
c) successive packets may follow different routes
d) congestion control is difficult
119. Parsing is also known as
a) Lexical analysis
b) Syntax analysis
c) Semantic analysis
d) Code generation
120. The ATM layer deals with
a) voltages
b) reassembly of packets
c) bit timings
d) cell transport
121. A loading scheme in which loading and liking of external references are postponed until execution time
a) direct linking loader
b) dynamic loading
c) dynamic linking
d) relocating loader
122. Representation of characters using ASCII requircs
a) 7 bits
b) 8 bits
c) 10 bits
d) 12 bits
123. An EPROM module can be erased using
a) electric voltage
b) magnetic waves
c) UV light
d) microwaves
124. What is false about recursion ?
a) it uses a stack
b) it follows divide and conquer technique
c) it should have a termination condition
d) none of the above
125. The approach used in top-down analysis and design is
a) to identify the top level functions by combining many smaller components into a single entity
b) to identify a top level function and create a
hierarchy of lower level modules and components
c) to prepare flowcharts after programming has been completed
d) all of the above
126. Clean room approach involves
a) informal methods
b) formal methods
c) recursive methods
d) iterative methods
127. ATM uses $\qquad$ length packets
a) Fixed
b) Adaptive
c) Variable
d) Increasing
128. Critical path of the PERT chart is
a) path which takes the shortest time to complete a project
b) shortest path to complete a milestone
c) path which takes the longest time to complete a project
d) longest path to complete a milestone
129. A popular technique for forecasting is
a) linear programming
b) correlation analysis
c) regularisation
d) regression analysis
130. Frame relay does not provide
a) fixed length packets
b) variable length packets
c) crror chocking
d) none of the above
131. OLAP is an acronym for
a) Online Analytical Projection
b) Online Analytical Processing
c) Online Analytical Process
d) Online Analytical Performance
132. Decision support systems are based on
a) Query and Reporting
b) Data Mining
c) OLAP
d) All of the above
133. Which of the following identities belongs to DeMorgan's theorems ?
a) $x+x=1$
b) $x y=y x$
c) $(x y)^{\prime}=x^{\prime}+y^{\prime}$
d) $(x y)^{\prime}=x^{\prime} y^{\prime}$
134. Which of the following property is true in the context of well formed formula ?
a) each letter is a term
b) if $x$ and $y$ are terms, then $x=y$ is a formula
c) if P is a formula, then 7 P is a formula
d) all of the above
135. In a K-map, the adjacent squares represent minterms that differ by
a) one variable
b) two variables
c) three variables
d) four variables
136. T-flip flop means
a) timed
b) test
c) toggle
d) trigger
137. Master-slave flip flop is also referred to as
a) level triggered flip flop
b) pulse triggered flip flop
c) edge triggered flip flop
d) none of the above
138. Valid bit in cache memory is associated with
a) each memory byte in cache
b) each memory word in cache
c) one bit with all the memory words
d) none of the above
139. In J-K flip flop, the function $J=K$ is used to realise
a) D-flip flop
b) SR flip flop
c) T flip flop
d) master slave flip flop
140. An encoder with $2^{n}$ input lines will have
$\qquad$ output lines
a) $n$
b) $2 n$
c) $\mathrm{n}-1$
d) $n+1$
141. A floating point number is said to be normalised if the most significant digit of the mantissa is
a) zero
b) non-zero
c) one
d) -1
142. Which of the following is not a type of database ?
a) hierarchical
b) relational
c) network
d) transitional
143. Project join normal form is also referred to
a) 3 NF
b) 4 NF
c) 5 NF
d) DKNF
144. TRUNCATE statement in SQL is a
a) DML statement
b) DDL statement
c) DCL statement
d) DSL statement
145. Which of the following statement is false regarding SQL statement ?
a) they are case sensitive
b) can be written on one or more lines
c) keywords can be abbreviated or spilt across lines
d) clauses are usually placed on separate line
146. To discard all pending data changes
a) commit
b) delete
c) rollback
d) undo
147. To modify existing rows in a table
a) ALTER
b) MODIFY
c) UPDATE
d) CHECK
148. The address of the first element of an array is called
a) initial address
b) base address
c) start address
d) zero address
149. Which layer is not present in TCP/IP model
a) Internet
b) Application
c) Transport
d) Session
150. A solution to the problem where the source and destination hosts are one the same type of network but there is a different network in between
a) Hopping
b) Tunnelling
c) Linking
d) Routing

