उम्मीदवार इस पुस्तिका के सबसे ऊपरी सील को खोलकर पृष्ठ संख्या 2 और 3 के मध्य स्थापित **OMR** उत्तर शीट को निकाल लें।
Candidates should open the top side of the seal of this Booklet and take out the OMR Answer Sheet placed at page no. 2 and 3.

पुस्तिका सं. :
Booklet No. :

SB-IT

परीक्षा प्रश्न-पुस्तिका / EXAMINATION QUESTION BOOKLET

परीक्षा पुस्तिका शृंखला :
Test Booklet Series : **A**

INFORMATION TECHNOLOGY

निर्धारित समय : 180 मिनट
Time Allowed : 180 Minutes

अधिकतम अंक : 120
Maximum Marks : 120

रोल नं.
Roll No. :

उत्तर शीट सं.:
Answer Sheet No. :

प्रश्नों के उत्तर देने से पहले निम्नलिखित अनुदेशों को ध्यान से पढ़ लें।/ **Read the following instructions carefully before you begin to answer the questions.**

उम्मीदवारों के लिए अनुदेश	Instructions to the Candidates

1. प्रश्नों के उत्तर लिखना आरंभ करने से पहले आप इस पुस्तिका की जाँच करके सुनिश्चित कर लें कि इसमें पूरे पृष्ठ (1-16) हैं तथा कोई पृष्ठ या उसका भाग कम या दुबारा तो नहीं आ गया है। उम्मीदवारों को यह भी जाँच करनी है कि उनको केवल उस स्ट्रीम की सही परीक्षा-पुस्तिका मिली है जिसके लिए उन्होंने आवेदन किया है और जो उनके Admit Card में छपा है अर्थात कंप्यूटर साइंस या सूचना प्रौद्योगिकी या इलेक्ट्रॉनिक्स। यदि आप इस पुस्तिका में कोई त्रुटि पाएं, तो *तत्काल* इसके बदले दूसरी पुस्तिका ले।

2. ओएमआर उत्तर-शीट प्रश्न पुस्तिका में ही उपलब्ध रहेगी। कृपया सुनिश्चित करें कि ओएमआर शीट संख्या और परीक्षण पुस्तिका संख्या समान हैं। ओएमआर शीट पर जानकारी भरने से पहले ओएमआर शीट पर छपे निर्देशों को ध्यान से पढ़ें। आपको ओएमआर उत्तर-पत्रक पर सभी विवरणों को सही ढंग से पूरा और कोड करना होगा, ऐसा न करने पर आपकी उत्तर पुस्तिका का मूल्यांकन नहीं किया जा सकता है। प्रश्नों का उत्तर देना शुरू करने से पहले आपको ओएमआर उत्तर-पत्रक पर दिये गए निर्धारित स्थान पर अपने हस्ताक्षर करने होंगे। इन निर्देशों का पूर्ण रूप से पालन किया जाना चाहिए, ऐसा न करने पर आपकी ओएमआर उत्तर-पुस्तिका का मूल्यांकन नहीं किया जा सकता है। (दृष्टिहीन उम्मीदवारों के लिए यह विवरण लेखक द्वारा भरे जायेंगे। फिर भी, सभी दृष्टिहीन उम्मीदवारों को ओएमआर उत्तर-शीट में निर्धारित स्थान पर अपने बाएं हाथ के अंगूठे का निशान अवश्य लगाना चाहिए। इसके अतिरिक्त, जो दृष्टिहीन उम्मीदवार अपना हस्ताक्षर कर सकते हैं, वे अंगूठे के निशान के अलावा अपने हस्ताक्षर भी करें।)

3. ओएमआर उत्तर-शीट तीन प्रतियों में होंगी (मूल तथा कार्बन की दो प्रतिलिपियाँ)। परीक्षा समाप्ति के बाद ओ.एम.आर. की मूल शीट तथा एक कार्बन प्रतिलिपि निरीक्षक को सौंपने के पश्चात् उम्मीदवार अपने साथ एक कार्बन प्रतिलिपि ले जा सकते/सकती हैं। यदि कोई भी उम्मीदवार ऐसा करने में असफल रहता/रहती है तो उसकी उम्मीदवारी रद्द कर दी जायेगी। यदि कोई उम्मीदवार अपनी कार्बन प्रतिलिपि में किसी भी प्रकार का फेर-बदल कर उसका दावा करता/करती है तो इस स्थिति में भी उसका/उसकी उम्मीदवारी रद्द कर दी जायेगी।

4. इस प्रश्न-पुस्तिका में **120** बहुविकल्पीय प्रश्न हैं। प्रत्येक प्रश्न के 4 विकल्प दिए गए हैं, (A), (B), (C) और (D)। किसी भी स्थिति में प्रत्येक प्रश्न का केवल एक विकल्प ही सही उत्तर है। यदि आपको एक से अधिक विकल्प सही लगें तो सबसे अधिक उचित एक विकल्प का चुनाव करें और उत्तर शीट में सम्बंधित प्रश्न के सामने वाले उपयुक्त गोले को काला करें।

5. प्रश्न पुस्तिका में दो भाग हैं: भाग A : सामान्य (42 प्रश्न) और भाग B : तकनीकी (78 प्रश्न)। उम्मीदवार को दोनों भागों के उत्तर लिखना अनिवार्य हैं।

6. प्रत्येक **सही** उत्तर के लिए 1 अंक दिया जाएगा **और प्रत्येक गलत उत्तर के लिए 0.25 अंक काट लिया जाएगा।**

7. गोले को काला करने के लिए केवल काले/नीले बॉल प्वाइंट पेन का प्रयोग करें। गोले को एक बार काला करने के बाद इसको मिटाने या बदलने की अनुमति नहीं है। यदि किसी प्रश्न के सामने एक से ज्यादा गोले काले किये गए हों तो मशीन द्वारा उसके लिए **शून्य अंक** दिया जाएगा।

8. किसी भी स्थिति में उत्तर शीट को न मोड़ें।

9. उत्तर-पुस्तिका पर कोई भी रफ कार्य नहीं करना है। रफ कार्य के लिए इस पुस्तिका में स्थान दिया गया है।

10. परीक्षा हॉल/कमरों में मोबाइल फ़ोन तथा बेतार संचार साधन पूरी तरह निषिद्ध हैं। उम्मीदवारों को उनके अपने हित में सलाह दी जाती है कि मोबाइल फ़ोन/किसी अन्य बेतार संचार साधन को स्विच ऑफ करके भी अपने पास न रखें। इस प्रावधान का अनुपालन न करने को परीक्षा में अनुचित उपायों का प्रयोग माना जायेगा और उनके विरुद्ध कार्यवाही की जाएगी, जिसमें उनकी उम्मीदवारी रद्द करना भी शामिल है।

11. अभ्यर्थी अपनी उत्तर पुस्तिका पर्यवेक्षक को सौंपे बिना और अपने रोल नंबर के सामने उचित स्थान पर उपस्थिति पत्रक पर हस्ताक्षर किए बिना परीक्षा हॉल/कक्ष से बाहर नहीं जा सकता। इसके अलावा अभ्यर्थी को उपस्थिति पत्रक पर हस्ताक्षर करने से पहले यह भी सुनिश्चित करना चाहिए कि बुकलेट नंबर, बुकलेट सीरीज और ओएमआर उत्तर पुस्तिका संख्या सही ढंग से लिखी गई है। ऐसा ना करने पर, ओएमआर उत्तर पुस्तिका को अमान्य माना जाएगा/मूल्यांकन नहीं किया जा सकता है।

1. Before you start to answer the questions you must check this booklet and ensure that it contains all the pages (1-16) and see that no page or portion thereof is missing or repeated. Candidates are also required to check that they have got the right question booklet strictly from the stream candidate has applied for and printed on the Admit Card i.e. Computer Science OR Information Technology OR Electronics. If you find any defect in this Booklet, you must get it replaced *immediately*.

2. **OMR Answer-Sheet is within the Question Booklet. Please ensure OMR Answer-Sheet number and Test Booklet No. of Question Paper are same. Read the instructions printed on OMR Answer-Sheet carefully before filling the information on the OMR Answer-Sheet. You must complete and code all the details on the OMR answer sheet correctly failing which your answer sheet may not be evaluated. You must also put your signature on the OMR Answer-Sheet at the prescribed place before you actually start answering the questions. These instructions must be fully complied with, failing which, your OMR Answer-Sheet may not be evaluated.** (For V.H. candidates these details will be filled in by the scribe. However, all V.H. candidates must put their left-hand thumb impression at the space provided in the OMR Answer-Sheet. In addition, those V.H. candidates who can sign should also put their signatures in addition to thumb impression.)

3. The OMR Answer-Sheet will be in triplicate (Original and two carbon copies). Candidate has to take one carbon copy (marked as 'candidate copy') with him/her after examination and handover the original OMR along with one carbon copy to invigilator. If candidate fails to handover the original OMR along with one carbon copy to invigilator, his /her candidature will be cancelled. Further, if the candidate tampers with candidate OMR carbon copy and claims for same, in that case also his/her candidature will be cancelled.

4. This booklet consists of **120** Multiple Choice Questions. Each question has 4 (four) alternatives (A), (B), (C) and (D). In any case only one alternative will be the correct answer. In case if you find more than one correct answer, then choose the most appropriate single option and darken the appropriate circle in the answer sheet in front of the related question.

5. Question Booklet consists of two parts : Part A : Generic (having 42 questions) and Part B : Technical (having 78 questions). Candidates has to attempt both parts compulsorily.

6. For each **correct** answer One mark will be given and **for each incorrect answer 0.25 marks will be deducted.**

7. Use Black/Blue ball point Pen to darken the circle. Answer once darkened is not allowed to be erased or altered. Against any question if more than one circle is darkened, machine will allot **zero mark** for that question.

8. Do not fold answer sheet in any case.

9. No rough work is to be done on the Answer-Sheet. Space for rough work has been provided in this booklet.

10. Mobile phones and wireless communication devices are completely banned in the examination hall/rooms. Candidates are advised not to keep mobile phones/any other wireless communication devices with them even switching it off, in their own interest. Failing to comply with this provision will be considered as using unfair means in the examination and action will be taken against them including cancellation of their candidature.

11. **Candidate should not leave the examination hall / room without handing over his/her Answer-Sheet to the invigilator and without signing on the attendance sheet at proper place against your roll number, further candidate should also ensure that booklet no., booklet series and OMR Answer-Sheet No. are correctly written on attendance sheet before signing on it, failing in doing so, may lead to disqualification / no evaluation of OMR Answer-Sheet.**

जब तक आपसे कहा न जाए तब तक प्रश्न-पुस्तिका न खोलें / **DO NOT OPEN THE QUESTION BOOKLET UNTIL YOU ARE TOLD TO DO SO.**
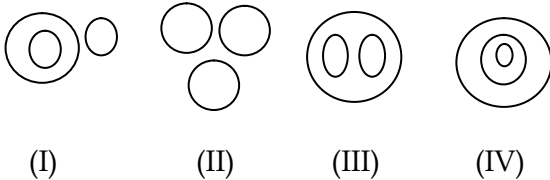
उम्मीदवार का नाम/**Name of Candidate** : _____   उम्मीदवार के हस्ताक्षर/**Signature of Candidate** : _____

PART - A
GENERIC

Directions (1-2) : Use following diagrams to answer question number 1 to 2 :

(I)　　　　(II)　　　　(III)　　　　(IV)

1. Cloud, River, Mountain :

   (A) II　　　　　　(B) I

   (C) IV　　　　　　(D) III

2. Oxygen, Atmosphere, Nitrogen :

   (A) II　　　　　　(B) I

   (C) IV　　　　　　(D) III

Directions (3-5) : In each of the following questions, one number is wrong in the series. Find out the wrong number.

3. 1, 9, 25, 49, 86, 121 :

   (A) 25　　　　　　(B) 121

   (C) 166　　　　　(D) 86

4. 701, 348, 173, 85, 41, 19, 8 :

   (A) 173　　　　　(B) 41

   (C) 19　　　　　　(D) 348

5. 3, 5, 12, 39, 154, 772, 4634 :

   (A) 5　　　　　　(B) 3

   (C) 39　　　　　　(D) 154

6. Rakesh is standing at a point. He walks 20 m towards the East and further 10 m towards the South, then he walks 35 m towards the West and further 5 m towards the North, then he walks 15 m towards the East. What is the straight distance in metres between his starting point and the point where he reached last ?

   (A) 0　　　　　　(B) 5

   (C) 10　　　　　　(D) 15

Directions (7 - 8) : In the given questions below, a statement is given followed by two conclusions numbered I and II. You have to take the statement to be true. Read both the conclusions and decide which of the two or both follow from the given statement. Give answer :

(A) If only conclusion I follows.

(B) If only conclusion II follows.

(C) If either I or II follows.

(D) If neither I nor II follows.

7. A study of planning commission reveals boom in revenues. However, this has been of little avail owing to soaring expenditure. In the event, there has been a high dose of deficit financing, leading to marked rise in prices. Large financial outlays year after year had little impact on level of living.

   I　A boom in revenues leads to rise in prices.

   II　Large financial outlays should be avoided.

8. The top management has asked the four managers either to resign by tomorrow or face the order of service termination. Three of them have resigned till this very evening.

   I   The manager who did not resign yesterday will resign tomorrow.

   II   The management will terminate the service of one manager.

Directions (9-13) : Read the information given below and on the basis of the information, select the correct alternative for each question given after the information.

There are five persons P, Q, R, S and T. One is football player, one is chess player, one is hockey player. P and S are unmarried ladies and do not participate in any game. None of the ladies plays chess or football. There is a married couple in which T is the husband. Q is the brother of R and is neither a chess player nor a hockey player.

9. Who is the hockey player ?

   (A) T   (B) S

   (C) R   (D) Q

10. Which of the following is the correct group of ladies ?

   (A) P, Q and R   (B) Q, R and S

   (C) P, Q and S   (D) P, R and S

11. Who is the football player ?

   (A) Q   (B) R

   (C) S   (D) T

12. Who is the wife of T ?

   (A) Q

   (B) R

   (C) S

   (D) None of these

13. Who is the chess player ?

   (A) Q   (B) R

   (C) S   (D) T

Directions (14-18) : Read the information given below and on the basis of the information, select the correct alternative for each question given after the information.

M and N are good at hockey and volleyball. O and M are good at hockey and baseball. P and N are good at cricket and volleyball. O, P and Q are good at football and basketball.

14. Who is good at baseball, hockey and volleyball ?

   (A) Q   (B) P

   (C) O   (D) M

15. Who among the following is good at four games ?

   (A) Q   (B) P

   (C) O   (D) M

16. Who is good at the largest number of games ?

   (A) Q   (B) P

   (C) O   (D) N

17. Who is good at cricket, baseball and volleyball ?

(A) Q   (B) P

(C) O   (D) N

18. Who is good at cricket, volleyball and hockey ?

(A) Q   (B) P

(C) O   (D) N

Directions (19-21) : Read the information given below and on the basis of the information, select the correct alternative for each question given after the information.

(i) Six flats on a floor in two rows facing North and South are allotted to P, Q, R, S, T and U.

(ii) Q gets a north facing flat and is not next to S.

(iii) S and U get diagonally opposite flats.

(iv) R next to U, gets a south facing flat and T gets a north facing flat.

19. If the flats of T and P are interchanged, who's flat will be next to that of U ?

(A) Q   (B) T

(C) P   (D) R

20. Whose flat is between Q and S ?

(A) T   (B) U

(C) R   (D) P

21. The flats of which of the other pairs than SU, is diagonally opposite to each other ?

(A) PT   (B) PQ

(C) QR   (D) TS

22. In a parallelogram ABCD, AP and BP are the angle bisectors of $\angle DAB$ and $\angle ABC$. Find $\angle APB$:

(A) 85°   (B) 90°

(C) 94°   (D) 86°

23. Instead of walking along two adjacent sides of a rectangular field, a boy took a short cut along the diagonal and saved a distance equal to half the longer side. Then, the ratio of the shorter side to the longer side is :

(A) 1/2   (B) 2/3

(C) 1/4   (D) 3/4

24. In a fraction, numerator is increased by 25% and the denominator is diminished by 10%. The new fraction obtained is 5/9. The original fraction is :

(A) 2/5

(B) 5/9

(C) 3/5

(D) None of the above

25. A, B and C rented a pasture by paying ₹ 2160 per month. They put 60, 40 and 20 sheep respectively. A sells 1/3 of his sheep to B after 6 months and after 3 months more C sells 2/5 of his sheep to A. Find the rent paid by C at the end of the year :

(A) ₹ 4355   (B) ₹ 3888

(C) ₹ 2464   (D) ₹ 6224

26. A cylindrical vessel 60 cm in diameter is partially filled with water. A sphere 30 cm in a diameter is dropped into it. The increase in the level of water in the vessel is :

(A)   2 cm   (B)   3 cm

(C)   4 cm   (D)   5 cm

27. A factory employs skilled workers, unskilled workers and clerks in the proportion 8 : 5 : 1, and the wages of a skilled worker, an unskilled worker and a clerk are in the ratio 5 : 2 : 3. When 20 unskilled workers are employed, the total daily wages of all (skilled workers, unskilled workers and clerks) amount to ₹ 318. The wages paid to each category of workers are :

(A)   ₹ 240, ₹ 60, ₹ 18

(B)   ₹ 200, ₹ 90, ₹ 28

(C)   ₹ 150, ₹ 108, ₹ 60

(D)   ₹ 250, ₹ 50, ₹ 18

28. If $x = p$, $y = q$ then which of following are p and q respectively for pair of equations $3x - 7y + 10 = 0$ and $y - 2x - 3 = 0$:

(A) $-1, 1$ (B) $1, 1$

(C) $1, 0$ (D) $0, 1$

29. $\frac{1}{2} \log_{10} 25 - 2 \log_{10} 3 + \log_{10} 18$ equals :

(A)   18

(B)   1

(C) $\log_{10} 3$

(D)   None of these

30. The students in a class are seated according to their marks in the previous examination. Once it so happens that four of these students get equal marks and therefore the same rank. To decide their seating arrangement, the teacher wants to write down all possible arrangements, one in each of separate bits of paper, in order to choose one of these by lots. How many bits of paper are required ?

(A)   9   (B)   12

(C)   15   (D)   24

31. A cuboid of dimension 24 cm × 9 cm × 8 cm is melted and smaller cubes of side 3 cm are formed. Find how many such cubes can be formed :

(A)   27   (B)   64

(C)   54   (D)   32

32. In a mixture of 60 L, the ratio of milk and water is 2 : 1. If the ratio of milk and water is to be 1 : 2, then the amount of water to be further added must be :

(A)   40 L   (B)   30 L

(C)   20 L   (D)   60 L

Directions (33-34) : Read the information given below and on the basis of the information, select the correct alternative for each question given after the information.

YEAR	RURAL		SEMI-URBAN		STATE CAPITAL		METROPOLITAN	
	App	Pass	App	Pass	App	Pass	App	Pass
2015	1652	208	7894	2513	5054	1468	9538	3214
2016	1839	317	8562	2933	7164	3248	10158	4018
2017	2153	932	8139	2468	8258	3159	9695	3038
2018	5032	1798	9432	3528	8529	3628	11247	5158
2019	4915	1668	9784	4015	9015	4311	12518	6328
2020	5628	2392	9969	4263	10725	4526	13624	6449

*App - Appeared   *Pass - Passed

33. In which of the following years was the percentage passed to appeared candidates from semi-urban area the least ?

(A)   2015   (B)   2016

(C)   2017   (D)   2018

34. What approximate value was the percentage drop in the number of semi-urban candidates appeared from 2016 to 2017 ?

(A) 15   (B) 10

(C) 5   (D) 8

35. "The dress _____ him so well that she immediately _____ him on his appearance." The words that best fill the blanks in the above sentence are :

(A) complemented, complemented

(B) complimented, complemented

(C) complimented, complimented

(D) complemented, complimented

36. He was not only accused of theft _____ of conspiracy.

(A) rather   (B) but also

(C) but even   (D) rather than

Each of these questions (37-38) has an idiomatic expression followed by four options. Choose the one closest to its meaning.

37. Talk shop :

(A) Talk about once profession

(B) Talk about shopping

(C) Ridicule

(D) Treat lightly

38. Stick to once guns :

(A) remain faithful to the cause

(B) suspect something

(C) make something fail

(D) be satisfied

39. Which of the following options is the closest in meaning to the word below ? DELETERIOUS

(A) delaying   (B) glorious

(C) harmful   (D) graduating

40. Identify the correct spelling out of the given options :

(A) Managable   (B) Manageable

(C) Mangaeble   (D) Managible

41. The fisherman, _____ the flood victims owed their lives, were rewarded by the govt.

(A) whom   (B) to which

(C) to whom   (D) to that

42. "Going by the _____ that many hands make light work, the school _____ involved all the students in the task." The words that best fill the blanks in the above sentence are :

(A) principle, principal

(B) principal, principle

(C) principle, principle

(D) principal, principal

PART - B
TECHNICAL

43. Which of the following type of search is easiest to implement ?
(A) Linear search
(B) Non linear search
(C) Multidimensional search
(D) Bidirectional search

44. Which TCP/IP protocol is used for file transfer with minimal capability and minimal overhead ?
(A) RARP   (B) FTP
(C) TFTP   (D) TELNET

45. Choose correct statement for code segment int multiply (int a, int b = 5),
(A) variable a and b are of int types and the initial value of a and b are 5
(B) variable b is of int type and will always have value 5
(C) variable b is of global scope and will have value 5
(D) variable b will have value 5 if not specified when calling a function in further program

46. What is the minimum no. of wires required for sending data over a serial communication link ?
(A) 1   (B) 3
(C) 2   (D) 4

47. What is virtual memory ?
(A) An illusion of an extremely large memory, that is physically not present
(B) A type of memory used in nano computers
(C) A memory that is in direct touch of CPU
(D) A memory that works on the principle of set associative mapping

48. Which of the following is the efficient medium which can be used for higher bandwidth in broadband network ?
(A) Coaxial cable
(B) Optical fibre
(C) CAT-V
(D) STP

49. The maximum number of binary trees that can be formed with three unlabeled nodes is :
(A) 1   (B) 5
(C) 4   (D) 3

50. Boundary value analysis is based on which testing :
(A) White Box Testing
(B) Black Box Testing
(C) White Box & Black Box Testing
(D) None of the options

51. Cardinality of relationship advisor to each entity sets instructor and student will be :
(A) One to many   (B) One to one
(C) Many to many   (D) Many to one

52. Consider a memory system in which the size of page is 8 KB. A CPU that generates the 32 bit Virtual address. What will be minimum size of TLB (translation look aside buffer) tag, If TLB has total 256 page table and is 8 way set associative ?
(A) 12 bit   (B) 13 bit
(C) 14 bit   (D) 15 bit

53. In a binary tree, the number of internal nodes of degree 1 is 5, and the number of nodes of degree 2 is 10. The number of leaf nodes in binary tree is :

(A) 10 (B) 11

(C) 12 (D) 15

54. Test levels are performed in which order ?

(A) Unit, Integration, Acceptance, System

(B) It depends on the nature of a project

(C) Unit, Integration, System, Acceptance

(D) Unit, System, Integration, Acceptance

55. Division in merge sort algorithm is based on which approach :

(A) Parallel (B) Random

(C) Interactive (D) Recursive

56. Consider a memory system where a request comes for disk driver for cylinders 10, 22, 20, 2, 40, 6, and 38 (head start at 20). The seek time is 6 ms per cylinder. The total seek time if the disk arm scheduling algorithm is FCFS :

(A) 850 ms (B) 906 ms

(C) 400 ms (D) 876 ms

57. In C++, dynamic memory allocation is accomplished with which of the following operator :

(A) this (B) new

(C) delete (D) malloc()

58. Assembly language _____.

(A) uses mnemonics or alphabetic codes in place of binary numbers used in machine language

(B) is the easiest language to write programs

(C) need not be translated into machine language

(D) is high level language

59. A page fault occurs when :

(A) the Deadlock happens

(B) the Segmentation starts

(C) the page is found in the memory

(D) the page is not found in the memory

60. In C language value of $ix + j$, if j is of integer type and ix long type would be :

(A) Integer

(B) Float

(C) Long integer

(D) Double precision

61. The number of swaps required to sort the array

8, 22, 7, 9, 31, 19, 5, 13

In ascending order using bubble sort is :

(A) 10 (B) 9

(C) 13 (D) 14

62. A sorting algorithm which passes through a list to exchange the first element with smallest element in the remaining elements is known as _____ .

(A) Insertion sort

(B) Selection sort

(C) Heap sort

(D) Bubble sort

63. The complement of the expression
$Y = ABC + AB\overline{C} + \overline{A}\,\overline{B}\,C + \overline{A}BC$ is :

(A) $(\overline{A} + \overline{B})\,(A + \overline{C})$

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

(C) $(A + \overline{B})\,(\overline{A} + C)$

(D) $(A + \overline{B})(A + \overline{C})$

64. Consider a statement

Course(course_id,sec_id,semester)

Here the course_id,sec_id and semester will be termed as _____ and Course is a _____.

(A) Relations, Attribute

(B) Attributes, Relation

(C) Tuple, Relation

(D) Tuple, Attribute

65. Maintenance testing is performed using which methodology ?

(A) Breadth test and depth test

(B) Sanity testing

(C) Retesting

(D) Confirmation testing

66. _____ is used to write a comment in CSS.

(A) /* a comment */

(B) // a comment //

(C) / a comment /

(D) <'a comment'>

67. Mention which of the following is a special type of integrity constraint that relates two relations & maintains consistency across the relations.

(A) Entity Integrity Constraints

(B) Referential Integrity Constraints

(C) Domain Integrity Constraints

(D) Domain Constraints

68. In which types of following data structure, an element is inserted at one end called Rear and deleted at other end called Front ?

(A) Stack

(B) Queue

(C) Height balanced Avl tree

(D) Binary tree

69. SPAM usually _____.

(A) Contains no valuable content

(B) Contains valuable content

(C) Contains content about website and is an operating system

(D) Is a module of operating system that handles scheduling of a process

70. Which of these does not account for software failure ?

(A) Increasing Demand

(B) Low expectation

(C) Increasing Supply

(D) Less reliable and expensive

SPACE FOR ROUGH WORK

71. Let the random variable X has a mixed distributions with probability $P(X = 0) = \alpha$, and the density function

$$f_x(x) = \begin{cases} \beta x^2(1-x), & 0 < x < 1 \\ 0, & \text{otherwise} \end{cases}$$

If the expectation of X is α, then the value of $4\alpha + \beta$ is equal to :

(A) 9/2   (B) 6

(C) 9   (D) 5/2

72. The number of operations in matrix multiplication M1, M2, M3, M4 and M5 of sizes 5×10, 10×100, 100×2, 2×20 and 20×50 respectively will be :

(A) 5830   (B) 4600

(C) 6900   (D) 12890

73. A device that allows two or more computers on different networks to communicate with each other is _____.

(A) Hub   (B) Bridge

(C) Repeater   (D) Gateway

74. Indicate which representation is the logical design of the database, and which is a snapshot of the data in the database at a given instant in time.

(A) Instance, Range

(B) Relation, Schema

(C) Relation, Domain

(D) Schema, Instance

75. Choose the correct sequence of items mentioned in **List - 1** out of items mentioned in **List - 2** :

List - 1		List - 2
(a) Threads	(i)	operating system
(b) Non pre-emptive	(ii)	first come first serve
(c) Pre-emptive	(iii)	round robin algorithm
(d) Scheduling	(iv)	Context switch
(e) Process switch	(v)	light weight process with in reduced time

	(a)	(b)	(c)	(d)	(e)
(A)	(v)	(iii)	(iv)	(ii)	(i)
(B)	(ii)	(iii)	(v)	(iv)	(i)
(C)	(v)	(ii)	(iii)	(i)	(iv)
(D)	(ii)	(iv)	(v)	(i)	(ii)

76. The best statement to find out that value of a variable lies in the range 7 to 10 or 12 to 15 in C language is :

(A) switch   (B) while

(C) for   (D) continue

77. Cache memory works on the principle of :

(A) Locality of data

(B) Locality of memory

(C) Locality of reference

(D) Locality of reference & memory

78. Merge Sort divides the input list in :

(A) N equal parts

(B) Three equal parts

(C) Two parts which may not be equal

(D) N parts which may not be equal

79. Which of the following is not a JDBC connection isolation levels ?

(A) TRANSACTION_NONE

(B) TRANSACTION_READ_ COMMITTED

(C) TRANSACTION_REPEATABLE_ READ

(D) TRANSACTION_ NONREPEATABLE_READ

80. One root of $x^3 - x - 4 = 0$ lies in (1, 2). In bisection method, after first iteration the root lies in the interval _____.

(A) (1, 1.5)

(B) (1.5, 2)

(C) (1.25, 1.75)

(D) (1.75, 2)

81. Let $P(x)$ be "x is perfect", $F(x)$ be "x is your friend" and the domain be all people. The statement, "At least one of your friends is perfect" is :

(A) $\forall x \ (F(x) \to P(x))$

(B) $\forall x \ (F(x) \wedge P(x))$

(C) $\exists x \ (F(x) \wedge P(x))$

(D) $\exists x \ (F(x) \to P(x))$

82. The preorder traversal of a binary search tree is given by   12, 8, 6, 2, 7, 9, 10, 16, 15, 19, 17, 20

Then postorder traversal will be :

(A) 2, 6, 7, 8, 9, 10, 12, 15, 16, 17, 19, 20

(B) 2, 7, 6, 10, 9, 8, 15, 17, 20, 19, 16, 12

(C) 7, 2, 6, 8, 9, 10, 20, 17, 19, 15, 16, 12

(D) 7, 6, 2, 10, 9, 8, 15, 16, 17, 20, 19, 12

83. Linked lists are not suitable data structures for which one of the following problems ?
(A) Insertion sort
(B) Binary search
(C) Radix sort
(D) Polynomial manipulation

84. Efficiency in a software product does not include :
(A) responsiveness
(B) processing time
(C) memory utilization
(D) licensing

85. Which of the following methods can be used to solve the Knapsack problem ?
(A) Brute force algorithm
(B) Recursion
(C) Dynamic programming
(D) Brute force, Recursion and Dynamic Programming

86. Match the following in from **List-1** and **List - 2** :

	List - 1		List - 2
(a)	Create new classes from existing class	(i)	Polymorphism
(b)	Using similar operations to do similar things	(ii)	Abstraction
(c)	Hiding implementation details	(iii)	Inheritance
(d)	Wrapping both operator and attributes with operations for model object	(iv)	Encapsulation
		(v)	Performance

	(a)	(b)	(c)	(d)
(A)	(iii)	(i)	(ii)	(iv)
(B)	(v)	(i)	(iii)	(ii)
(C)	(ii)	(v)	(iv)	(iii)
(D)	(i)	(ii)	(iii)	(iv)

87. Maximum number of bits required to represent any character from ASCII code set is :

(A) 10   (B) 8

(C) 7   (D) 3

88. Which testing is equivalent to Cyclomatic complexity ?

(A) Black box testing

(B) Green box testing

(C) Yellow box testing

(D) White box testing

89. A particular control flow graph has 15 nodes out of which 7 are decision nodes. The cyclomatic complexity and number of edges respectively can be given by the following :

(A) 7, 21   (B) 15, 24

(C) 8, 21   (D) 16, 16

90. ALU does not perform the operation of :

(A) data transfer

(B) logical operation

(C) arithmetic operation

(D) comparison operation

91. Arrange the following in increasing orders of asymptotic complexity.

$f1(n) = 2^n$, $f2(n) = n^{3/2}$, $f3(n) = nlogn$, $f4(n) = n^{logn}$

(A) f3, f2, f4, f1

(B) f3, f2, f1, f4

(C) f2, f3, f1, f4

(D) f2, f3, f4, f1

92. In dynamic programming approach the optimum solution is calculated in the following way :

(A) Divide and conquer

(B) Top up fashion

(C) Bottom up approach

(D) Mixed approach

93. Output of following code

main( ){printf("\n%%%");}

(A) Error message

(B) % %

(C) 00

(D) &&&&

94. Which of the following is true ?

(A) Unless enabled, a CPU will not be able to process interrupts

(B) Loop instructions cannot be interrupted till they complete

(C) A processor need not checks for interrupts before executing a new instruction

(D) Only level triggered interrupts are possible on microprocessors

95. Consider the following C function :

int f(int n) {

    static int i = 1 ;

if (n > = 5) return n ;

    n = n + i;i ++;

    return f(n) ; }

The value returned by f(1) is :

(A) 5   (B) 6

(C) 7   (D) 8

96. If a++ is replaced with ++a, which statement does not get affected ?

(A) printf("% d % d ", ++ a, a ++);

(B) a = 20; a++;

(C) while(a++ = 20) cout<<a;

(D) d = a++;

97. The size of the Physical address space of a processor is 2^P bytes. The word length is 2^W bytes. The capacity of cache memory is 2^N bytes. The size of each cache block 2^M words. For a K-Way set associative cache memory, the length (in number of bits) of the tag fields is :

(A) $P - N - M - W + logK$

(B) $P - N - M - W - log_2 K$

(C) $P - N + log_2 K$

(D) $P - N - log_2 K$

98. What will be the output of following 'C' program

void count(int n) { static int d = 1;

printf(" %d", n);printf(" %d", d);

    d++;

    if (n>1) count (n-1);

    printf(" %d",d); }

    void main ( ) { count(3); }

(A) 3 1 2 2 1 3 4 4 4

(B) 3 1 2 1 1 1 2 2 2

(C) 3 1 2 2 1 3 4

(D) 3 1 2 1 1 1 2

99. Specify, which of the following is preferred method for enforcing data integrity ?

(A) Constraints

(B) Stored Procedure

(C) Triggers

(D) Cursors

100. Which of the following operator cannot be overloaded ?

(A) ++   (B) ::

(C) ~   (D) ()

101. In E-R diagrams roles are indicated by labelling the lines that connect which two shapes :

(A) Diamond, Diamond

(B) Rectangle, Circle

(C) Rectangle, Rectangle

(D) Diamond, Rectangle

102. How to add a background color in HTML for marquee Tag ?

(A) <marquee bgcolor: "red">

(B) <marquee bg-color = "red">

(C) <marquee bgcolor = "red">

(D) <marquee color = "red">

103. The determinant of matrix $\begin{bmatrix} 0 & p-q & p-r \\ q-p & 0 & q-r \\ r-p & r-q & 0 \end{bmatrix}$ is _____.

(A) 0

(B) $(p-q)(q-r)(r-p)$

(C) pqr

(D) $3pqr$

104. On changing to spherical co-ordinates, the integral $\iiint_V dy\,dxdz$, where V is the volume of the hemisphere $x^2 + y^2 + z^2 = a^2$, is equivalent to the integral _____.

(A) $\int_0^{2\pi} \int_0^{\frac{\pi}{2}} \int_0^a r^2 \sin\theta dr d\theta d\phi$

(B) $\int_0^{2\pi} \int_0^{\pi} \int_0^a r^2 \sin\theta dr d\theta d\phi$

(C) $\int_0^{\frac{\pi}{2}} \int_0^{\frac{\pi}{2}} \int_0^a r^2 \sin\theta dr d\theta d\phi$

(D) $\int_0^{2\pi} \int_0^{\frac{\pi}{2}} \int_0^a r^2 \cos\theta dr d\theta d\phi$

105. Which of the following is advantage of using JDBC connection pool ?

(A) Slow performance

(B) Using more memory

(C) Using less memory

(D) Better performance

106. Which is indicating use of virtual functions ?

(A) Overloading

(B) Overriding

(C) Static binding

(D) Dynamic binding

107. The time complexity of heap sort in worst case is :

(A) O($log n$) (B) O(n)

(C) O(n$log n$) (D) O(n^2)

108. Which one of the following contains date information ?

(A) java.sql.TimeStamp

(B) java.sql.Time

(C) java.io.Time

(D) java.io.TimeStamp

109. In the recurrence relation

$T(n) = 0.5 * T(n/2) + 1/n$, which case of Master Theorem is suitable ?

(A) Case 1

(B) Master Theorem not applicable in this situation

(C) Case 2

(D) Case 3

110. Which of the following tag is used for inserting the largest heading in HTML ?

(A) <h3> (B) <h1>

(C) <h5> (D) <h6>
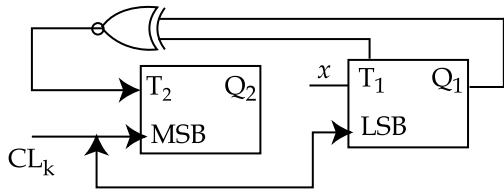
111. Consider a program with following data :

Unique operator = 10, unique operands = 15

Total operator = 30, Total operands = 40

What is the estimated length of program ?

(A) 132 (B) 92

(C) 32 (D) 82

112. Consider the following 2 bit counter using T flip-flops following 0-2-3-1-0 sequence. What should be the value of x ?

(A) Q_2

(B) $Q_1 + Q_2$

(C) $Q_1 \oplus Q_2$

(D) $Q_1 \oplus \overline{Q_2}$

113. Build & Fix Model is suitable for programming exercises of how many LOC (Line of Code) ?

(A) $100 - 200$

(B) $200 - 400$

(C) $400 - 1000$

(D) above 1000

114. Consider the following two statements :

(I) A Hash function, which is used for computing digital signatures, is an injective function

(II) An encryption technique such as DES performs a permutation on the elements of its input alphabet

(A) Both are false

(B) (I) is true (II) is false

(C) (II) is true (I) is false

(D) Both are true

115. If $z = \cos\left(\dfrac{x}{y}\right) + \sin\left(\dfrac{x}{y}\right)$, then $xz_x + yz_y$ is equal to _____.

(A) z

(B) $2z$

(C) $4z$

(D) 0

116. What is WordPress ?

(A) It is a software used to press text

(B) It is a text formatting software

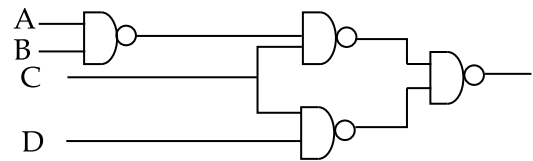(C) It is a CMS (Content Management System)

(D) It is mail service

117. The number of 4 digit numbers which contain not more than two different digits is :

(A) 576

(B) 567

(C) 513

(D) 504

118. The number of un-labeled non-isomorphic graphs with four vertices is :

(A) 12

(B) 11

(C) 10

(D) 9

119. The logic expression for the output of following circuit is :

(A) $\overline{A}C + \overline{B}C + CD$

(B) $A\overline{C} + B\overline{C} + \overline{C}D$

(C) $ABC + \overline{CD}$

(D) $\overline{AB} + \overline{BC} + \overline{CD}$

120. For which one of the following sequences CAN NOT be a degree sequence of a graph of order 5 ?

(A) 3, 3, 2, 2, 2

(B) 3, 3, 3, 3, 2

(C) 3, 3, 3, 2, 2

(D) 4, 3, 3, 2, 2

- o O o -

SPACE FOR ROUGH WORK