

उम्मीदवार इस पुस्तिका में ऊपर की तरफ लगी हुई सील को खोलकर पृष्ठ संख्या 2 और 3 के मध्य स्थापित OMR उत्तर शीट को निकाल लें।  
Candidates should open the seal on the top side of this Booklet and take out the OMR Answer Sheet placed between page no. 2 and 3.

पुस्तिका सं.: 294397  
Booklet No.:

STA

परीक्षा प्रश्न-पुस्तिका/EXAMINATION QUESTION BOOKLET

परीक्षा पुस्तिका शृंखला: A  
Test Booklet Series:

निर्धारित समय : 3 घंटे (दृष्टिबाधित उम्मीदवारों के लिए : 4 घंटे)

Time Allowed : 3 Hours (For V.H. Candidates : 4 Hours)

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। इस पुस्तिका में प्रश्न अंग्रेजी में दिए गए हैं।

Read the following instructions carefully before you begin to answer the questions. This booklet contains questions in English.

## 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 (20) 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 स्टीम की सही परीक्षा-पुस्तिका मिली है जिसके लिए उन्होंने आवेदन किया है। यदि आप इस पुस्तिका में कोई त्रुटि पाएं, तो तत्काल इसके बदले दूसरी पुस्तिका ले लें।
2. ओ एम् आर उत्तर-शीट, प्रश्न पुस्तिका में ही उपलब्ध रहेगी। ओ एम् आर उत्तर-शीट में विवरण भरने से पहले, आपको ओ एम् आर उत्तर-शीट पर मुद्रित अनुदेशों को सावधानीपूर्वक पढ़ना चाहिए। आपको ओ एम् आर उत्तर-शीट में दिए गए अनुदेशों के अनुसार सावधानीपूर्वक उसमें विवरण और कोड लिखने चाहिए। प्रश्नों के उत्तर वास्तविक रूप में लिखना आरंभ करने से पहले आपको ओ एम् आर उत्तर-शीट में निर्धारित स्थान पर अपने हस्ताक्षर करने चाहिए। इन अनुदेशों का पूर्ण अनुपालन किया जाना चाहिए, ऐसा न किये जाने पर आपकी ओ एम् आर उत्तर-शीट का मूल्यांकन नहीं किया जायेगा। (दृष्टिहीन उम्मीदवारों के लिए यह विवरण लेखक द्वारा भरे जायेंगे। फिर भी, सभी दृष्टिहीन उम्मीदवारों को ओ एम् आर 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. ओ एम् आर उत्तर-शीट तीन प्रतियों में होंगी (मूल तथा कार्बन की दो प्रतिलिपियाँ)। परीक्षा समाप्ति के बाद ओ एम् 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 उसका/उसकी उम्मीदवारी रद्द कर दी जायेगी। यदि कोई उम्मीदवार अपना/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 की 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. प्रत्येक सही उत्तर के लिए 1 अंक दिया जाएगा और प्रत्येक गलत उत्तर के लिए 0.25 अंक काट लिया जाएगा।
6. 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।
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. परीक्षार्थी को अपनी उत्तर-शीट निरीक्षक को सौंपे बिना और उपस्थिति पत्रिका पर हस्ताक्षर किये बिना परीक्षा हॉल/कमरा नहीं छोड़ना चाहिए, ऐसा नहीं करने पर अयोग्य घोषित कर दिया जाएगा।

1. Before you start to answer the questions you must check up this booklet and ensure that it contains all the pages (20) 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 as per the post applied. If you find any defect in this Booklet, you must get it replaced immediately.
2. OMR Answer-Sheet will be within the Question booklet. Read the instructions printed on OMR Answer-Sheet carefully before filling the information on the OMR Answer-Sheet. You must complete and code the details as per the instructions given in the OMR Answer-Sheet carefully. 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 will 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 candidates fails to handover the original OMR along with one carbon copy to invigilator, his/her candidature will be cancelled. Further, if the candidate tempts with candidate OMR carbon copy and claims for same, in that case also his/her candidature will be cancelled.
4. This question 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. For each correct answer One mark will be given and for each incorrect answer 0.25 marks will be deducted.
6. Question Booklet consists of two parts : Part A : Generic (having 42 questions) and Part B : Technical (having 78 questions). Candidate has to attempt both parts compulsorily.
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. Failing in doing so, will amount to disqualification.

SEAL

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.

मैंने सभी अनुदेशों को स्पष्टतः पढ़कर समझ लिया है और मैं उस पर बाध्य रहूँगा। ऐसा नहीं करने पर मेरी उम्मीदवारी को रद्द करने के विषय में मेरी सहमति होगी।

I have read and understood the instructions clearly and shall abide by the same. Failure to do so shall made me liable for cancellation of my candidature.

उम्मीदवार का नाम/Name of Candidate :

उम्मीदवार के हस्ताक्षर/Signature of Candidate :

दिनांक/Date :

स्थान/Place :



## PART - A GENERIC AREA

Choose the most appropriate option.

(Q. No. 1 to 42)

**Directions for question number 1 and 2 :**

*Study the following information carefully and answer the question :*

Group of girls' gossip with each other. All are sitting surrounding a round table. The name of the girls are Shiksha, Radha, Chinu, Snigdha and Rani. It is not necessary that they are sitting in the order of the name as mentioned here. Radha is second to the right of Shiksha. Shiksha doesn't sit with Chinu. Rani is second to the right of Radha. Radha sits near Snigdha.

1. Who sits to the left of Shiksha ?  
(A) Rani  
(B) Radha  
(C) Chinu  
(D) Snigdha
2. If Radha and Snigdha change their places then who will be second to the left of Rani ?  
(A) Radha  
(B) Snigdha  
(C) Shiksha  
(D) None of the options
3. A is the father of B and C is the son of D. E is the brother of A. B is the sister of C. How is D related to E ?  
(A) Daughter  
(B) Brother  
(C) Brother in Law  
(D) Sister in Law

4. Pointing towards a picture, Ramesh said, "That picture is of sister of grandson of father of my maternal uncle". How is that lady in the picture related to Ramesh ?

- (A) Mother's sister  
(B) Cousin (maternal brother)  
(C) Cousin (maternal sister)  
(D) Father's sister

**Directions for question number 5 to 7 :**

*Two statements followed by four conclusions numbered from (I) to (IV) are given. You have to take the two statements to be true even if these seem to be at variance from the commonly known facts. Read all the conclusions and decide which of the given conclusions logically follow from the two given statements disregarding commonly known facts.*

5. All Shoes are Socks

Some Socks are Gloves

**Conclusions :**

- (I) Some Shoes are Gloves  
(II) Some Socks are Shoes  
(III) All Gloves are Shoes  
(IV) No Shoes are Gloves

- (A) Only (I) follows  
(B) Only (II) follows  
(C) Only (III) follows  
(D) Only (IV) follows

6. All Boys are Girls

No Girl is a Man

**Conclusions :**

- (I) No Boy is a Man  
(II) Some Boys are Man  
(III) All Girls are Boys  
(IV) Some Man are Boys

- (A) Only (III) follows  
(B) Only (I) follows  
(C) All follows  
(D) None follows

7. All Sentences are Words

All Words are Alphabets

**Conclusions :**

- (I) All words are sentences  
(II) All sentences are alphabets  
(III) All alphabets are words  
(IV) Some alphabets are words

- (A) Only (I) and (III) follows  
(B) Only (II), (III) and (IV) follows  
(C) Only (II) and (IV) follows  
(D) All follows

8. If 'CONTEMPORARY' is coded as NOCTEMROPARY then 'BODARDSITAND' is the code of which letter ?

- (A) DOBARDTISAND  
(B) BODDRASITDNA  
(C) DOBDRATISDNA  
(D) DOBARDSITAND

9. Refer the statement and solve the question according to the conclusions.

**Statement :**

Some Pigeons are Bird;

Some Birds are Alive

**Conclusion :**

- (I) Some Pigeons are Alive  
(II) Some Birds are Pigeons

- (A) Only (I) follows  
(B) Only (II) follows  
(C) Both (I) & (II) follows  
(D) None follows

10. Find the number which does not fit into the series 8 12 20 32 50 68.

- (A) 20  
(B) 32  
(C) 68  
(D) 50

11. 5 16 49 104 181 \_\_\_\_\_

- (A) 271  
(B) 298  
(C) 280  
(D) 281

12. 14, 28, 20, 40, 32, 64, \_\_\_\_\_

- (A) 52  
(B) 56  
(C) 96  
(D) 128

13. In a certain code, 'CONSIDER' is written as RMNBSFEJ, how is 'MONOPOLY' written in that code ?
- (A) LNMNZMPQ  
(B) NMNLZMPQ  
(C) POPNXKNO  
(D) NMNLXKNO

Directions for question number 14 to 18 :

Answer the questions on the basis of the following information provided :

The students of a school participates in various sports activities, the distribution of the same is given below :

Football	-	17%
Handball	-	26%
Badminton	-	16%
Table Tennis	-	22%
Basketball	-	19%

Total number of students in the school are 800.

14. What is the number of girls who take part in handball, if the ratio of boys to girls is 3 : 10 respectively ?
- (A) 48  
(B) 80  
(C) 78  
(D) 160

15. What is the respective ratio between the total number of students taking part in Badminton and Table Tennis together and those participating in Basketball and Football together ?
- (A) 11 : 13  
(B) 18 : 19  
(C) 19 : 18  
(D) 29 : 28

16. What is the approximate average of number of participants in Handball, Badminton and Basketball ?
- (A) 162  
(B) 163  
(C) 104  
(D) 169

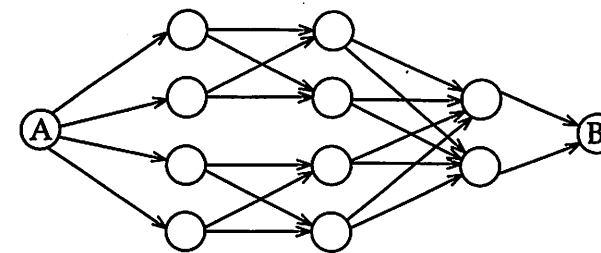
17. The number of students taking part in Basketball is approximately what percent more than those taking part in Football ?

- (A) 10.84%  
(B) 9.92%  
(C) 9.32%  
(D) None of the options

18. If out of the number of students in Basketball, 69 are girls, what is the difference between the number of boys and girls taking part in Basketball ?

- (A) 17  
(B) 23  
(C) 86  
(D) 14

19. What is the total number of ways to reach A to B in the network given ?



- (A) 12  
(B) 16  
(C) 20  
(D) 22

20. Complete the following series.

4, 27, 256, 3125, \_\_\_\_\_

- (A) 46656  
(B) 6250  
(C) 800000  
(D) 1024

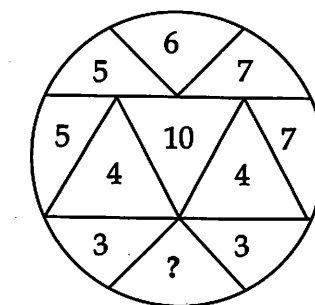
21. Ramesh's father is a paediatrician. Ram's father is a trader. Krishan's father is a school teacher. Krishan falls ill. Where should his father take him ?

- (A) to home  
(B) to school  
(C) to Ramesh's father  
(D) to Ram's father

22. Five people are standing in a row. Aman is standing next to Karan but not adjacent to Tanuj. Radhika is standing next to Priyanka who is standing on the extreme left and Tanuj is not standing next to Radhika. Who are Standing adjacent to Aman ?

- (A) Radhika and Karan  
(B) Karan and Tanuj  
(C) Karan and Priyanka  
(D) Radhika and Tanuj

23. Find the missing number.



- (A) 14  
(B) 10  
(C) 9  
(D) 3

24. If 5% income of P is equal to 15% income of Q and 10% income of Q is equal to 20% income of R. If income of R is ₹ 2000, then what are the incomes of P and Q respectively ?

- (A) ₹ 4000 and ₹ 8000  
(B) ₹ 12000 and ₹ 4000  
(C) ₹ 15000 and ₹ 5000  
(D) ₹ 18000 and ₹ 6000

25. A businessman purchases an item at a certain price and marks its price up by 30%. He sells the item at a certain discount on markup price and makes a net profit of 4% on the whole transaction. Find the discount given by businessman on markup price.

- (A) 10
- (B) 15
- (C) 26
- (D) 20

**Directions for question number 26 to 29 :**

Answer the questions on the basis of the data given below :

O is X's father  
Y is Z's mother  
P is O's mother  
X is Z's sister

26. How is O related to Z ?

- (A) Brother
- (B) Cousin
- (C) Father
- (D) Uncle

27. How is P related to X ?

- (A) Mother
- (B) Grandmother
- (C) Sister
- (D) Daughter

28. How is Y related to O ?

- (A) Wife
- (B) Sister
- (C) Mother
- (D) Daughter

29. If P has a daughter Q, then how is Q related to Z ?

- (A) Aunt
- (B) Mother
- (C) Sister
- (D) Daughter

30. Considering 5 as the 1<sup>st</sup> element in the sequence 5, 11, 23, 47. What is the 6<sup>th</sup> element in the sequence ?

- (A) 191
- (B) 172
- (C) 342
- (D) 106

31. A Class has 100 students with roll number from 101 to 200. All the even numbered students study Physics, whose roll number are divisible by 5 study Chemistry & students with roll numbers divisible by 7 study Biology. How many students do not study any of the given subject Physics, Chemistry or Biology ?

- (A) 35
- (B) 45
- (C) 51
- (D) 62

32. ₹ 1000 doubled in 10 years when compounded annually. How many more years will it take to get another ₹ 2000 compound interest ?

- (A) 5 years
- (B) 10 years
- (C) 3 years
- (D) 4 years

33. Ram can do a piece of work in 5 days, and Sham can do the same in 10 days. With the help of Karan, they finished the work in 2 days. How many days would it take Karan to do the work ?

- (A) 5 days
- (B) 10 days
- (C) 15 days
- (D) 20 days

34. Choose the alternative to decide whether the data given in the statements is/are sufficient to answer the question based on the following information.

Five persons A, B, C, D and E are sitting in a row. Who is sitting in the middle ?

**Statements :**

- (I) E is to the left of B.
- (II) B is in-between C and E.
- (III) D is in-between E and A.

Choose which of the following will be sufficient to find out who is sitting in the middle ?

- (A) Only (I) and (II)
- (B) Only (II) and (III)
- (C) Only (I) and (III)
- (D) All (I), (II) and (III)

**Directions for question number 35 to 37 :**

Relationship between different elements is provided in the statements. The statements are followed by conclusions. Study the conclusions based on the given statement and choose the correct answer.

35.  $T \geq U = V \leq W < X; V \geq Y$

**Conclusions :**

- (I)  $Y \leq T$
- (II)  $U \geq X$

- (A) if only conclusion (I) follows
- (B) if only conclusion (II) follows
- (C) if neither (I) nor (II) conclusion follows
- (D) if both (I) and (II) conclusions follow

36.  $P \leq Q \leq R > S; T \geq R; S \geq U$

**Conclusions :**

- (I)  $T > S$
- (II)  $U < R$

- (A) if only conclusion (I) follows
- (B) if only conclusion (II) follows
- (C) if neither (I) nor (II) conclusion follows
- (D) if both (I) and (II) conclusions follow

37.  $A \leq B < C \geq D; C \leq E \leq F$

**Conclusions :**

- (I)  $F \geq D$
- (II)  $A > E$

- (A) if only conclusion (I) follows
- (B) if only conclusion (II) follows
- (C) if neither (I) nor (II) conclusion follows
- (D) if both (I) and (II) conclusions follow

**Directions - Question number 38 to 42 are based on following information :**

There are twelve persons named O, P, Q, R, S, T, U, V, W, X, Y and Z who live in a multi-storey apartment. The apartment has three floors and each floor has four rooms. These 12 persons who live in a set of 12 Rooms can be represented by a Matrix of 3 rows and 4 columns.

- Q lives immediate left below diagonally of a person who lives immediate left below diagonally of T.
- S lives immediate left above diagonally of a person who lives immediate left above diagonally of Z.
- X lives immediate right above diagonally of a person who lives immediate right below diagonally of O.
- P lives immediate right above diagonally of a person who lives immediate right above diagonally of Y.
- T lives immediate left above diagonally of a person who lives third to the right of V.
- Q lives immediate left of a person who lives two rooms below W in the same column.
- R lives to the immediate right of a person who lives immediate right above diagonally of Q. Z is living to the immediate left of U who receives ₹ 46000 as salary.
- The person who live on one of the floors (left to right) receive salary in the same order ₹ 50000, ₹ 48000, ₹ 47000 and ₹ 46000.
- The person who live on one of the floors (right to left) receive salary in the same order ₹ 45000, ₹ 38000, ₹ 35000 and ₹ 40000.
- The person who live on one of the floors (left to right) receive salary in the same order ₹ 37000, ₹ 42000, ₹ 36000 and ₹ 43000.

38. What is the salary received by a person who lives second to the right of S ?  
 (A) ₹ 35000  
 (B) ₹ 45000  
 (C) ₹ 37000  
 (D) ₹ 38000
39. Who among the following lives third to the left of U ?  
 (A) O  
 (B) Q  
 (C) T  
 (D) S
40. What is the sum of salaries of Y and P ?  
 (A) ₹ 90000  
 (B) ₹ 99000  
 (C) ₹ 93000  
 (D) ₹ 89000
41. What is the sum of the salaries received by the persons living on the top floor of the apartment ?  
 (A) ₹ 158000  
 (B) ₹ 193000  
 (C) ₹ 157000  
 (D) ₹ 161000
42. What is the aggregate salary of people living at the right end of the apartment ?  
 (A) ₹ 137000  
 (B) ₹ 134000  
 (C) ₹ 125000  
 (D) ₹ 131000

## PART - B

### TECHNICAL AREA

Choose the most appropriate option.

(Q. No. 43 to 120)

43. In ICMP, in case of time exceeded error, when the datagram visits a router, the value of time to live field is \_\_\_\_\_.  
 (A) Remains constant  
 (B) Decrement by 2  
 (C) Incremented by 1  
 (D) Decrement by 1
44. Which among the following types of Server filters Website Traffic ?  
 (A) POP Server  
 (B) Database Server  
 (C) Proxy Server  
 (D) Mail Server
45. (<ALL) comparison operator means :  
 (A) more than the maximum value in the subquery  
 (B) less than the minimum value in the subquery  
 (C) is equivalent to IN  
 (D) none of the options

46. Assume that the SLR parser for a grammar G has  $n_1$  states and the LALR parser for G has  $n_2$  states. The relationship between  $n_1$  and  $n_2$  is :  
 (A)  $n_1$  is necessarily less than  $n_2$   
 (B)  $n_1$  is necessarily equal to  $n_2$   
 (C)  $n_1$  is necessarily greater than  $n_2$   
 (D) none of the options
47. Which of the following is not a part of the Test Implementation and Execution Phase ?  
 (A) Creating test suites from the test cases  
 (B) Executing test cases either manually or by using test execution tools  
 (C) Comparing actual results  
 (D) Designing the Tests
48. What is meant by the following relational algebra statement :  $STUDENT \times COURSE$  ?  
 (A) Compute the natural join between the STUDENT and COURSE relations  
 (B) Compute the left outer join between the STUDENT and COURSE relations  
 (C) Compute the cartesian product between the STUDENT and COURSE relations  
 (D) Compute the outer join between the STUDENT and COURSE relations

49. During exception handling, which of the following statements hold true ?
- (A) Single try can have multiple associated catch with it
- (B) A Single Catch can have multiple try associated with it
- (C) Finally block execute only when the class is inherited
- (D) For a given exception, multiple catch can execute
50. Some code optimizations are carried out on the intermediate code because :
- (A) they enhance the portability of the compiler to other target processors
- (B) program analysis is more accurate on intermediate code than on machine code
- (C) the information from data flow analysis cannot otherwise be used for optimization
- (D) the information from the front end cannot otherwise be used for optimization
51. Given  $r_{12} = 0.6$ ,  $r_{13} = 0.5$  and  $r_{23} = 0.8$ , the value of  $r_{123}$  is :
- (A) 0.47
- (B) 0.40
- (C) 0.74
- (D) 0.64
52. In case of the dynamic programming approach the value of an optimal solution is computed in :
- (A) Top down fashion
- (B) Bottom up fashion
- (C) Left to Right fashion
- (D) Right to Left fashion
53. Which of the following is not true for tree and graph ?
- (A) A tree is a graph
- (B) A graph is a tree
- (C) Tree can have a cycle
- (D) Tree is a DAG
54. How many AND, OR and XOR gates are required for implementation of full adder ?
- (A) 1, 2, 2
- (B) 2, 2, 1
- (C) 3, 2, 2
- (D) 3, 0, 1
55. A 26-bit address bus has maximum accessible memory capacity of \_\_\_\_\_.
- (A) 64 MB
- (B) 16 MB
- (C) 1 GB
- (D) 4 GB

56. SRD stands for \_\_\_\_\_.
- (A) Software Requirements Definition
- (B) Structured Requirements Definition
- (C) Software Requirements Diagram
- (D) Structured Requirements Diagram
57. Which of the following problem is not NP complete but undecidable ?
- (A) Partition Problem
- (B) Halting Problem
- (C) Hamiltonian Circuit
- (D) Bin Packing
58. A stack can be implemented using queue, but then we need to use atleast :
- (A) 3 queues
- (B) 2 queues
- (C) only one queue is sufficient
- (D) none of the options
59. Adding the style attributes in HTML elements, is known to be \_\_\_\_\_.
- (A) Internal
- (B) Inline
- (C) Outline
- (D) External
60. Term in the MVC architecture that receives events is called \_\_\_\_\_.
- (A) Receiver
- (B) Controller
- (C) Transmitter
- (D) Modulator

61. Find the mode of the following data :

Age	0-6	6-12	12-18	18-24	24-30	30-36	36-42
Freq- uency	6	11	25	35	18	12	6

- (A) 20.22
- (B) 19.47
- (C) 21.12
- (D) 20.14
62. A digital signature is required :
- (A) for non-repudiation of communication by a sender
- (B) for all e-mail sending
- (C) for all DHCP server
- (D) for FTP transactions
63. What is the product of following matrix using Strassen's matrix multiplication algorithm ?
- $$A = \begin{bmatrix} 1 & 3 \\ 5 & 7 \end{bmatrix} \quad B = \begin{bmatrix} 8 & 4 \\ 6 & 2 \end{bmatrix}$$
- (A)  $C_{11}=80; C_{12}=07; C_{21}=15; C_{22}=34$
- (B)  $C_{11}=82; C_{12}=26; C_{21}=10; C_{22}=34$
- (C)  $C_{11}=15; C_{12}=07; C_{21}=80; C_{22}=34$
- (D)  $C_{11}=26; C_{12}=10; C_{21}=82; C_{22}=34$
64. Which of the following is a correct time complexity to solve the 0/1 knapsack problem where n and w represents the number of items and capacity of knapsack respectively ?
- (A)  $O(n)$
- (B)  $O(w)$
- (C)  $O(nw)$
- (D)  $O(n+w)$

65. Finding the location of the element with a given value is :
- Traversal
  - Search
  - Sort
  - None of the options
66. Peephole optimization is a :
- Loop optimization
  - Local optimization
  - Constant folding
  - Data flow analysis
67. Which one of the following statements is FALSE ?
- Context-free grammar can be used to specify both lexical and syntax rules.
  - Type checking is done before parsing.
  - High level language programs can be translated to different Intermediate Representations.
  - Arguments to a function can be passed using the program stack.
68. Which of the following construct is not supported by Java Server Pages ?
- JSP Directives
  - JSP Scriptlets
  - JSP Actions
  - JSP Reaction
69. Type of conflicts that can arise in LR(0) techniques are \_\_\_\_\_.
- Shift-reduce conflict
  - Shift-Shift conflict
  - Both "Shift-reduce conflict" & "Shift-Shift conflict"
  - None of the options
70. A computer has a single cache (off-chip) with a 3 ns hit time and a 95% hit rate. Main memory has a 50 ns access time. If we add an on-chip cache with a 0.6 ns hit time and a 98% hit rate, the computer's effective access time :
- 2.8 ns
  - 5.5 ns
  - 0.7 ns
  - None of the options
71. \_\_\_\_\_ CSS property allow to wrap a block of text around an image.
- wrap
  - push
  - float
  - align
72. Let  $R = (A, B, C, D, E)$  having following FDs.  $F = \{A \rightarrow BC, CD \rightarrow E, B \rightarrow D, E \rightarrow A\}$  Which of the following is not a Candidate key ?
- A
  - B
  - E
  - BC
73. Anomalies are avoided by splitting the offending relation into multiple relations, is also known as \_\_\_\_\_.
- Accupressure
  - Decomposition
  - Precomposition
  - Both decomposition & precomposition
74. What is the output of following program ?
- ```
abstract class Sum
{
    public abstract int sumOfTwo(int n1, int n2);
    public abstract int sumOfThree(int n1, int n2, int n3);

    public void disp(){
        System.out.println("Method of class Sum");
    }
}
class DemoAbstract1 extends Sum
{
    public int sumOfTwo(int num1, int num2)
    {
        return num1+num2;
    }
    public int sumOfThree(int num1, int num2, int num3)
    {
        return num1+num2+num3;
    }
    public static void main(String args[]){
        Sum obj = new DemoAbstract1();
        System.out.println(obj.sumOfTwo(3, 7));
        System.out.println(obj.sumOfThree(4, 3, 19));
        obj.disp();
    }
}
```
- 10  
26  
Method of class Sum
  - 26  
10  
Method of class Sum
  - Method of class Sum  
26  
10
  - Error
75. The \_\_\_\_\_ field in IPv4 datagram is not related to fragmentation.
- Flag
  - Offset
  - TOS
  - Identifier
76. The default character encoding in HTML5 is \_\_\_\_\_.
- UTF-16
  - UTF-32
  - UTF-8
  - ISO-8859-1
77. Black Box Software Testing method focuses on the :
- Boundary condition of the software
  - Control structure of the software
  - Testing of User Interface only
  - Cyclomatic Complexity
78. Which of the following scenarios may lead to an irrecoverable error in a database system ?
- A transaction writes a data item after it is read by an uncommitted transaction.
  - A transaction reads a data item after it is read by an uncommitted transaction.
  - A transaction reads a data item after it is written by a committed transaction.
  - A transaction reads a data item after it is written by an uncommitted transaction.

79. Which of the following algorithms can be used to most efficiently find whether a cycle is present in a given graph ?
- (A) Prim's Minimum Spanning Tree Algorithm  
(B) Breadth First Search  
(C) Depth First Search  
(D) Kruskal's Minimum Spanning Tree Algorithm
80. A Software Requirements Specification (SRS) document should avoid discussing which one of the following ?
- (A) User interface issues  
(B) Non-functional requirements  
(C) Design solutions  
(D) Interfaces with third party software
81. In the Model-View-Controller (MVC) architecture, the model defines the \_\_\_\_\_.
- (A) Data-access layer  
(B) Presentation layer  
(C) Business-logic layer  
(D) Interface layer
82. To guarantee correction of upto 5 errors in all cases, the minimum Hamming distance in a block code must be \_\_\_\_\_.
- (A) 11  
(B) 6  
(C) 5  
(D) 2
83. Which of the following is correct recurrence for worst case of QuickSort ?
- (A)  $T(n) = T(n-4) + T(n-2) + O(1)$   
(B)  $T(n) = T(n-1) + T(0) + O(n)$   
(C)  $T(n) = 2T(n/2) + O(n)$   
(D)  $T(n) = 4T(n/2) + O(n)$
84. The static keyword word is used in public static void main() declaration in Java :
- (A) To enable the JVM to make call to the main(), as class has not been instantiated.  
(B) To enable the JVM to make call to the main(), as class has not been inherited.  
(C) To enable the JVM to make call to the main(), as class has not been loaded.  
(D) To enable the JVM to make call to the main(), as class has not been finalized.

85. Which flip-flop is used to make all types of shift registers ?
- (A) JK flip-flop  
(B) D flip-flop  
(C) T flip-flop  
(D) All the options
86. A minimal super key (i.e, one of the super keys for which no proper subset is a super key) is called :
- (A) Super Key  
(B) Candidate Key  
(C) Primary Key  
(D) Both Candidate and Primary Key
87. Why does congestion occur ?
- (A) Because the routers and switches have tables  
(B) Because the routers and switches have queues  
(C) Because the routers and switches have cross-points  
(D) None of the options
88. The given array is  $arr = \{1, 2, 4, 3\}$ . Bubble sort is used to sort the array elements. How many passes will be done to sort the array ?
- (A) 4  
(B) 2  
(C) 1  
(D) 3
89. Which of the following Interface is not supported by JDBC for connecting to Database in Java Programming language ?
- (A) Statement Interface  
(B) Prepared Statement Interface  
(C) Callable Statement Interface  
(D) Database Interface
90. What does <main> include ?
- (A) Header  
(B) Sidebar  
(C) Article  
(D) Footer
91. With the following syntax  
INSERT INTO table [(column [, column...])]  
VALUES (value [, value...]);  
you can :
- (A) Insert one row at a time.  
(B) Insert multiple rows at a time.  
(C) Insert one column at a time.  
(D) Insert multiple columns at a time.
92. If we don't want to allow a floating div to the left side of an element, \_\_\_\_\_ CSS property will we use.
- (A) margin  
(B) clear  
(C) float  
(D) padding



93. When we perform in order traversal on a binary tree, we get the ascending order array. The tree is :
- (A) Heap tree  
(B) Almost complete binary tree  
(C) Binary search tree  
(D) Cannot be determined
94. Shift reduce parsing can also be called as :
- (A) Reverse of the Right Most Derivation  
(B) Right Most Derivation  
(C) Left Most Derivation  
(D) None of the options
95. The router table contains addresses belonging to \_\_\_\_\_ protocol(s).
- (A) a single  
(B) two  
(C) multiple  
(D) none of the options
96. In an undirected graph, if we add the degrees of all vertices, it is :
- (A) odd  
(B) even  
(C) cannot be determined  
(D) always  $n+1$ , where  $n$  is number of nodes
97. Domain constraints, functional dependency and referential integrity are special forms of \_\_\_\_\_.
- (A) Foreign key  
(B) Primary key  
(C) Assertion  
(D) Referential constraint
98. When retrieving data in a particular table in PostgreSQL, we use the \_\_\_\_\_ statement.
- (A) \dt  
(B) ORDER BY  
(C) SELECT FROM  
(D) \i
99. A bag contains 10 white balls and 5 blue balls. A ball is drawn from the bag and its color is noted. This ball is put back in the bag along with 3 more balls of the same color. A ball is drawn again from the bag at random. The probability that the first ball drawn is blue, given that the second ball drawn is blue, is :
- (A)  $1/3$   
(B)  $3/4$   
(C)  $8/9$   
(D)  $4/9$
100. The number of tokens in the following C/C++ statement is :
- ```
printf("i = %d, &i = %xx", i&i);
```
- (A) 9  
(B) 6  
(C) 10  
(D) 12

101. What is the time complexity of the following recursive function ?
- ```
int ComputFun (int n)
{
    if(n <= 2)
        return 1;
    else
        return (ComputFun (floor( sqrt (n))) + n);
}
```
- (A)  $\Theta(n)$   
(B)  $\Theta(\log n)$   
(C)  $\Theta(n \log n)$   
(D)  $\Theta(\log \log n)$
102. You have a network ID of 192.168.10.0 and require at least 25 host IDs for each subnet, with the largest amount of subnets available. Which subnet mask should you assign ?
- (A) 255.255.255.192  
(B) 255.255.255.224  
(C) 255.255.255.240  
(D) 255.255.255.248
103. Consider an array of positive integers between 123456 to 876543, which sorting algorithm can be used to sort these number in linear time ?
- (A) Impossible to sort in linear time  
(B) Radix Sort  
(C) Insertion Sort  
(D) Bubble Sort
104. Software consists of \_\_\_\_\_.
- (A) Set of instructions + operating procedures  
(B) Programs + documentation + operating procedures  
(C) Programs + hardware manuals  
(D) Set of programs
105. Assembly line scheduling and Longest Common Subsequence problems are an example of \_\_\_\_\_.
- (A) Dynamic Programming  
(B) Greedy Algorithms  
(C) Greedy Algorithms and Dynamic Programming respectively  
(D) Dynamic Programming and Branch and Bound respectively
106. Changes are made to the system to reduce the future system failure chances is called \_\_\_\_\_.
- (A) Preventive Maintenance  
(B) Adaptive Maintenance  
(C) Corrective Maintenance  
(D) Perfective Maintenance
107. In the given Program :
- ```
class Dialog1
{
    public static void main(String args[])
    {
        Frame f1=new Frame("INDIA");
        f1.setSize(300,300);
        f1.setVisible(true);
        FileDialog d=new FileDialog(f1,"MyDialog");
        d.setVisible(true);
        String fname=d.getDirectory()+d.getFile();
        System.out.println("The Selection is"+fname);
    }
}
```
- To make the Frame visible, which of the following statements are true ?
- (A) `f1.setClear(true);`  
(B) `f1.setVisible(true);`  
(C) `f1.setlook(true);`  
(D) `f1.setclean(true);`

108. Which of the following are two main types of overloading in Java ?

- (A) Overloading and linking
- (B) Overriding and linking
- (C) Reusability and data-hiding
- (D) Overloading and Overriding

109. A program P reads in 500 integers in the range [0..100] representing the scores of 500 students. It then prints the frequency of each score above 50. What would be the best way for P to store the frequencies ?

- (A) An array of 50 numbers
- (B) An array of 100 numbers
- (C) An array of 500 numbers
- (D) A dynamically allocated array of 550 numbers

110. In Java, for ensuring the persistence property, the class must implements :

- (A) Serializable Interface
- (B) Utilization Interface
- (C) Threadable Interface
- (D) Recognizable Interface

111. Encoders are made by three \_\_\_\_\_ gates.

- (A) AND
- (B) OR
- (C) NAND
- (D) XOR

112. In Java, the Dynamic Array are known as :

- (A) Vectors
- (B) Cycle
- (C) Remote
- (D) Kubernotos

113. Consider the following C program segment.

```
while (first <= last)
{
    if (array [middle] < search)
        first = middle + 1;
    else if (array [middle] == search)
        found = True;
    else last = middle - 1;
    middle = (first + last)/2;
}
if (first < last) not Present = True;
```

The cyclomatic complexity of the program segment is \_\_\_\_\_.

- (A) 3
- (B) 4
- (C) 5
- (D) 6

114. Priority queue is implemented by :

- (A) Doubly link list
- (B) Graph
- (C) Heap
- (D) Stack

115. A recursive problem like tower of hanoi can be rewritten without recursion using :

- (A) stack
- (B) priority queue
- (C) graph
- (D) cycles

116. In the context of modular software design, which one of the following combinations is desirable ?

- (A) High cohesion and high coupling
- (B) High cohesion and low coupling
- (C) Low cohesion and high coupling
- (D) Low cohesion and low coupling

117. In the following addressing mode, which of them performs better for accessing array ?

- (A) Register addressing mode
- (B) Direct addressing mode
- (C) Displacement addressing mode
- (D) Index addressing mode

118. The LL(1) and LR(0) techniques are \_\_\_\_\_.

- (A) Both same in power
- (B) Both simulate reverse of right most derivation
- (C) Both simulate reverse of left most derivation
- (D) Incomparable

119. Let R and S be two relations with the following schema

R (P, Q, R1, R2, R3)

S (P, Q, S1, S2)

Where {P, Q} is the key for both schemas. Which of the following queries are equivalent ?

- (I)  $\Pi_P (R \bowtie S)$
- (II)  $\Pi_P (R) \bowtie \Pi_P (S)$
- (III)  $\Pi_P (\Pi_{P,Q} (R) \cap \Pi_{P,Q} (S))$
- (IV)  $\Pi_P (\Pi_{P,Q} (R) - (\Pi_{P,Q} (R) - \Pi_{P,Q} (S)))$
- (A) Only (I) and (II)
- (B) Only (I) and (III)
- (C) Only (I), (II) and (III)
- (D) Only (I), (III) and (IV)

120. In CRC calculation if divisor is 1011, and dataword is 1001 what will be the CRC ?

- (A) 111
- (B) 101
- (C) 110
- (D) 100

- o O o -