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. :

SA-IT

परीक्षा प्रश्न-पुस्तिका / **EXAMINATION QUESTION BOOKLET**

परीक्षा पुस्तिका श्रृंखला :
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

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 अर्थात् कंप्यूटर साइंस या सूचना प्रोद्योगिकी 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.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 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 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. 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 हो। ऐसा ना करने पर, ओएमआर उत्तर पुस्तिका को अमान्य माना जाएगा/मूल्यांकन नहीं किया जा सकता है।**

Instructions to the Candidates

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

Direction (1-3) : Read the following information carefully and answer question number 1-3 given below :

In an engineering college, four students Diksha, Shreya, Tanvi and Akriti exhibit a very strange mix of hobbies and subject interests. One of them studies Computer Science and plays Golf and Lawn Tennis. Diksha and Shreya study Mechanical engineering. Diksha plays Billiards. Both the Mechanical Engineering students play chess. Tanvi is a student of Physics. The Physics student plays Chess and Badminton. All the friends play two games each and study one subject each. One of the students also does weight training.

1. How many games are played and subjects studied by all the four students ?

(A) 2, 1 (B) 3, 2

(C) 6, 3 (D) 5, 4

2. Who does not play Chess ?

(A) Diksha (B) Shreya

(C) Tanvi (D) Akriti

3. Who studies Mechanical Engineering and plays Billiards ?

(A) Diksha (B) Shreya

(C) Tanvi (D) Akriti

4. John's house is 100 m North of his uncle's office. His uncle's house is located 200 m West of his (uncle's) office. Kabir is the friend of John and he stays 100 m East of John's house. The office of Kabir is located 100 m South of his house. Then, how far is his uncle's house from Kabir's office ?

(A) 200 m (B) 300 m

(C) 400 m (D) 500 m

5. In a certain code language, '493' means 'Friendship Big Challenge', '961' means 'Struggle Big Exam' and '178' means 'Exam Confidential Subject'. What does 'Confidential' stand for ?

(A) 7 or 8 (B) 7 or 9

(C) 8 (D) 8 or 1

6. The day before the day before yesterday is three days after Saturday. What day is it today ?

(A) Tuesday (B) Wednesday

(C) Thursday (D) Friday

Direction (7-8) : What value should come in place of the question mark (**?**) in the series given below ?

7. 128, 61, Y, 64, 63, S, 32, 65, N, 16, 67, J, 8, 69, G, **?, ?, ?** :

(A) 2, 70, J (B) 3, 70, E

(C) 4, 70, E (D) 4, 71, E

8. BEAG, DGCI, FIEK, **?** .

(A) HMIE (B) HKGM

(C) HGKJ (D) HKLJ

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

A training college has to conduct a refresher course for teachers of seven different subjects - Mechanics, Psychology, Philosophy, Sociology, Economics, Science and Engineering from November 22 to November 29.

(i) Course should start with Psychology.

(ii) November 23, being Sunday, should be a holiday.

(iii) Science subject should be on the previous day of the Engineering subject.

(iv) Course should end with Mechanics subject.

(v) Philosophy should be immediately after holiday.

(vi) There should be a gap of one day between Economics and Engineering.

(vii) There should be a gap of two days between Sociology and Economics.

9. Which subject will be on Tuesday ?

(A) Psychology (B) Mechanics

(C) Economics (D) Sociology

10. How many days' gap is there between Science and Philosophy ?

(A) 1 (B) 2

(C) 3 (D) No gap

11. Which subject precedes Mechanics ?

(A) Psychology (B) Mechanics

(C) Economics (D) Sociology

12. The refresher course will start with which one of the following subjects ?

(A) Psychology (B) Mechanics

(C) Economics (D) Sociology

13. Which subject succeeds Science ?

(A) Psychology (B) Mechanics

(C) Engineering (D) Sociology

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

There are six women, Shalini, Divya, Ritu, Rashmi, Nisha and Renu in a family of 12 members. There are few married couples in the family and none of the grand children are married. Sunil is married into the family. Rohan, Mahesh and Jatin have a nephew Dipesh who is the son of Rashmi. Ravi is the paternal grandfather of Nisha. Ritu is the daughter-in-law of Shalini. Renu is the first cousin of Dipesh. Shalini has only three grand children. Mahesh has two brothers and only one sister Rashmi and a sister-in-law Divya. Dipesh's only unmarried maternal uncle Jatin is the brother-in-law of Sunil. Rohan is the paternal uncle of Nisha. Ritu has two daughters one of whom is Nisha.

14. Which of the following is true ?

(A) Dipesh is Mahesh's son.

(B) Ravi has only two married children.

(C) Ravi is the paternal grandfather of Renu.

(D) None of these.

15. Rashmi is _____.

(A) Mahesh's wife

(B) Renu's aunt

(C) Nisha's Mother

(D) None of these

16. How many married couples are there in the second generation ?

(A) 1 (B) 2

(C) 3 (D) 4

17. Which one of the following is a married couple ?

(A) Rohan and Ritu

(B) Shalini and Mahesh

(C) Renu and Sunil

(D) Mahesh and Ritu

18. Dipesh is _____.

(A) Mahesh's son

(B) Ravi's grand son

(C) Rohan's son

(D) Sunil's nephew

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

(i) Eleven students A, B, C, D, E, F, G, H, I, J and K are sitting in a row of the class facing the teacher.

(ii) D, who is to the immediate left to F, is second to the right of C.

(iii) A, is the second to the right of E, who is at one of the ends.

(iv) J is the immediate neighbor of A and B and third to the left of G.

(v) H is to the immediate left of D and third to the right of I.

19. Who is sitting in the middle of the row ?

(A) C (B) I

(C) B (D) G

20. Which of the following statements is true in the context of the above sitting arrangement ?

(A) There are three students sitting between D and G.

(B) G and C are neighbors sitting to immediate right of H.

(C) B is sitting between J and I.

(D) K is sitting between A and G.

21. Which of the following groups of friends is sitting to the right of G ?

(A) IBJA (B) ICHDF

(C) CHDF (D) CHDE

22. The untimely loss of life is a cause of serious global concern as thousands of people get killed _____ accidents every year while many other die _____ diseases like cardio vascular disease, cancer, etc.

(A) in, of (B) from, of

(C) during, from (D) from, from

23. "The judge's standing in the legal community, though shaken by false allegations of wrongdoing, remained _____." The word that best fills the blank in the above sentence is :

(A) undiminished (B) damaged

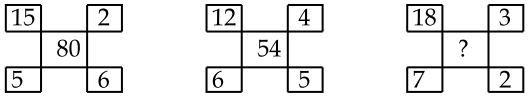
(C) illegal (D) uncertain

24. A certain sum of money amounts to ₹ 6600 in 4 years at a certain rate percent simple interest. If the rate of interest be increased by its 25%, the same sum would amount to ₹ 7000 during the same period. Find the sum.

(A) ₹ 6000 (B) ₹ 5500

(C) ₹ 5000 (D) ₹ 7000

25. Find the missing number :



(A) 46 (B) 15

(C) 55 (D) 32

26. The length, breadth and height of a room are in the ratio of 3 : 2 : 1. If its volume be 1296 m^3, find its breadth.

(A) 12 m (B) 18 m

(C) 16 m (D) 24 m

27. The LCM of two numbers is 45 times their HCF. One number is 125 and the sum of their HCF and LCM is 1150. Find the other number.

(A) 275 (B) 215

(C) 230 (D) 225

28. First bag contains 5 white and 4 black balls. Second bag contains 7 white and 9 black balls. A ball is transferred from the first bag to the second bag and then a ball is drawn from the second bag. Find the probability that the ball drawn is white.

(A) 7/18 (B) 5/9

(C) 4/9 (D) 11/18

29. Which of the following is true ?

(A) $\log_{17} 275 = \log_{19} 375$

(B) $\log_{17} 275 > \log_{19} 375$

(C) $\log_{17} 275 < \log_{19} 375$

(D) None of these

30. If the numerator of a fraction is increased by 2 and the denominator is decreased by 1, then it becomes 2/3. If the numerator is increased by 1 and the denominator is increased by 2, then it becomes 1/3. Find the fraction.

(A) 2/9 (B) 2/7

(C) 1/6 (D) 1/5

31. Out of 13 applicants for a job there are 5 women and 8 men. Two persons are to be selected for the job. Find the probability that at least one of the selected persons will be a women.

(A) 25/39 (B) 10/21

(C) 14/27 (D) 12/51

32. In a company ABC Ltd. a certain number of engineers can develop a design in 40 days. If there were 5 more engineers, it could be finished in 10 days less. How many engineers were there in the beginning ?

(A) 18 (B) 20

(C) 25 (D) 15

33. Abha can do some work in 10 days, Billu can do it in 20 days and Chintu can do it in 40 days. They start working in turns with Abha starting to work on the first day followed by Billu on the second day and by Chintu on the third day and again by Abha on the fourth day and so on, till the work is completed fully. Find the time taken (approx.) to complete the work fully.

(A) 16 days (B) 15 days

(C) 17 days (D) 20 days

34. How many eight letter words can be formed from the letters of the word "COURTESY" beginning with C and ending with Y ?

(A) 120 (B) 256

(C) 720 (D) 750

35. Choose the most appropriate word from the options given below to complete the following sentence: He is _____ speaker, his discourses are always informative and inspirational.

(A) an eloquent

(B) an amateur

(C) a novice

(D) an inarticulate

36. $\log (x+3) + \log (x+5) = \log 35$, solve for x :

(A) 1 (B) 2

(C) 3 (D) 4

37. Given below question has an idiomatic expression followed by four options. Choose the one closest to its meaning :

"To smell a rat"

(A) science of plague epidemic

(B) bad smell

(C) suspect foul dealings

(D) to be in a bad mood

38. The length, breadth and height of a cuboid are in the ratio 3 : 4 : 5 and its volume is 3840 cm^3, The smallest side has a length of :

(A) 12 cm (B) 20 cm

(C) 15 cm (D) 18 cm

39. Find the wrong term in the series 5, 11, 29, 83, 245, 765, 2189, 6563 :

(A) 245 (B) 765

(C) 2189 (D) 6563

40. An aeroplane at an altitude of 3000 m observes the angles of depression of opposite points on the two banks of a river to be 45° and 60° respectively. Find the width of the river in metre.

(A) 4730 (B) 4430

(C) 4150 (D) 4650

Direction (41-42) : The question below consists of a pair of related words followed by four pairs of words. Select the pair that best expresses the relation in the original pair.

41. INTIMATE : CLOSE

(A) evanescent : permanency

(B) articulate : speech

(C) enclose : parentheses

(D) obsessed : attracted

42. QUISLING : BETRAY

(A) appreciate : provoke

(B) inception : termination

(C) juggernaut : crush

(D) obstinate : preserve

PART - B

TECHNICAL

43. Identify the error in the following code :

```
1   class exam
2   { public :
3   virtual void show () = 0;
4   };
5   int main (void)
6   {exam e;
7   exam * ep ;
8   return 0 ; }
```

(A) compiler error at line 6 and 7

(B) compiler error at line 6

(C) compiler error at line 7

(D) compiler error at 2, 4 and 6

44. The address of a variable temp of type float is :

(A) float &temp

(B) float temp&

(C) *temp

(D) &temp

45. Which of the following is done in the development phase of a software by the debuggers ?

(A) Coding

(B) Testing

(C) Implementation

(D) Debugging

46. Which database design approach is a bottom-up approach that works on the principle of examining the relationship between attributes ?

(A) Functional dependency

(B) Database modeling

(C) Normalization

(D) Decomposition

47. The correct way to round of variable x, float to an integer is to write statement :

(A) $y = (\text{int})(x + 0.5);$

(B) float $y = (\text{float})(x + 0.5);$

(C) int $y = \text{int}(x + 0.5);$

(D) float $y = (\text{int})(x + 0.5);$

48. The number of modes in which a transaction may request a Lock in multiple-granularity Locking is :

(A) Two (B) Three

(C) Five (D) Six

49. What will be the order of complexity with respect to time of the following function ?

```
int func(int n)
{int count = 0;
for (int i = n, i > 0; i/= 2)
for (int j = 0; j<i; j++)
count + = 1;
return count;
}
```

(A) $O(n^2)$ (B) $O(n\log n)$

(C) $O(n)$ (D) $O(n^{\log n})$

50. Which segment do e-Commerce sites like Flipkart, Tatacliq belong ?

(A) B2Bs (B) B2Cs

(C) C2Bs (D) C2Cs

51. With usual notations, the properties of maxima and minima under various conditions are _____.

	(I)		**(II)**
(P)	Maxima	(i)	$rt - s^2 = 0$
(Q)	Minima	(ii)	$rt - s^2 < 0$
(R)	Saddle Point	(iii)	$rt - s^2 > 0, r > 0$
(S)	Case of failure	(iv)	$rt - s^2 > 0, r < 0$

(A) (P) - (i), (Q) - (iii), (R) - (iv), (S) - (ii)

(B) (P) - (ii), (Q) - (i), (R) - (iii), (S) - (iv)

(C) (P) - (iii), (Q) - (iv), (R) - (ii), (S) - (i)

(D) (P) - (iv), (Q) - (iii), (R) - (ii), (S) - (i)

52. Which of the following is not a part of the four main types for e-commerce ?

(A) B2B (B) B2C

(C) C2B (D) C2C

53. If R and D are the radius and diameter of the graph $K_{4,7}$, then the ordered pair (R, D) is equal to :

(A) (2, 2) (B) (1, 2)

(C) (2, 4) (D) (1, 3)

54. Consider following process details scheduled for execution. Consider pre-emptive shortest job first scheduling strategy. Find average waiting time.

Process	**Arrival Time**	**Burst time**
P0	0	8
P1	1	4
P2	2	9
P3	3	5

(A) 6.2 ms (B) 6.5 ms

(C) 5.6 ms (D) 5.2 ms

55. The process each manager follows during the life of a project is known as :

(A) Project Management

(B) Project Management Life Cycle

(C) Manager life cycle

(D) All of the mentioned

56. At the time of sorting an array of size N by normal selection sort, the number of comparisons made in first iteration is :

(A) N (B) $N - 1$

(C) $Nx(N - 1/2)$ (D) NlogN

57. Let the predicates $D(x, y)$ mean "team x defeated team y" and $P(x, y)$ mean "team x has played team y". The quantified formula for the statement that there is a team that has beaten every team it has played, is :

(A) $\exists x \forall y \ (P(x, y) \rightarrow D(x, y))$

(B) $\forall x \exists y \ (P(x, y) \rightarrow D(x, y))$

(C) $\forall y \exists x \ (P(x, y) \rightarrow D(x, y))$

(D) $\exists x \forall y \ (D(x, y) \rightarrow P(x, y))$

58. Block cyphers is defined as :

(A) One that encrypts a digital data system one bit at a time

(B) Which treats block of plain text as a whole

(C) Which treats complete file as a whole

(D) Which treats segmented file

59. The last index of a string array contains the null terminated character :

(A) \0 (B) \n

(C) \t (D) \1

60. In a max heap the smallest key is at :

(A) Root

(B) Leaf

(C) Node

(D) Either root or node

61. A dummy header is :

(A) A head node in the linked list before actual data nodes

(B) Header used in dummy operations

(C) Header used to indicate starting of a stack

(D) Header used to indicate starting of queue

62. Turnaround time does not include :

(A) Waiting time

(B) Time spent in IO

(C) Execution time

(D) Time for CPU to cache data transfer

63. The main measure for efficiency of algorithm is :

(A) Processor and capacity

(B) Data and time

(C) CPU and RAM

(D) Time and memory space

64. In context of Computer Architecture and Organisation, what does MBR stand for ?

(A) Main Buffer Register

(B) Memory Buffer Routine

(C) Main Buffer Routine

(D) Memory Buffer Register

65. A complete graph of n nodes will have _____ number of spanning trees.

(A) n^{n-2}

(B) 1

(C) 0

(D) n/2

66. The purpose of analysing an N-Ary association in databases is :

(A) To capture a parent-child relationship

(B) To deal with one to many relationships

(C) To deal with relationships that involve more than two tables

(D) To represent an inheritance relationship

67. Match the following :

(a)	Merge sort	(i)	Greedy approach
(b)	8 Queens problem	(ii)	Dynamic programming
(c)	Single source shortest path	(iii)	Divide and conquer
(d)	Optimal binary search tree	(iv)	Backtracking

(A) (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)

(B) (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii)

(C) (a)-(iii), (b)-(ii), (c)-(iv), (d)-(i)

(D) (a)-(ii), (b)-(iv), (c)-(i), (d)-(iii)

68. An inverted file :

(A) An Inverted file is an index data structure that maps content to its location within a database file, in a document or in a set of documents.

(B) A file which stores information about records of a system.

(C) A file which is always in a read only mode.

(D) None of the options.

69. A set of activities that ensure that software correctly implements a specific function is known as :

(A) Verification

(B) Testing

(C) Implementation

(D) Validation

70. Which of the following communicates with server-side CGI scripts through HTML form submissions and can be written without the use of JavaScript ?

(A) Static Web Pages

(B) Interactive Web Pages

(C) Conditional Web Pages

(D) All Web Pages

71. In which of the following node locking mechanism, if a node is locked, then explicit locking is being done at a lower level, with exclusive-mode or shared-mode locks ?

(A) Intention lock modes

(B) Intention-shared-exclusive mode

(C) Intention-exclusive (IX) mode

(D) Intention-shared (IS) mode

72. The grey code for decimal 7 is :

(A) 0111 (B) 1011

(C) 0100 (D) 0101

73. Consider the function :

```
int func(int n)
{int s = 0;
while (n>1)
{n=n/2;
s++;
}
Return s;
}
```

What is the asymptotic complexity of this function with respect to time ?

(A) O(nlogn) (B) O(logn)

(C) $O(n^{logn})$ (D) $O(2^{logn})$

74. The binary representation of 36_8 will be :

(A) 110110 (B) 101101

(C) 001110 (D) 011110

75. To split a Linked list into smaller and smaller possible sub-problem and then solving individual sub problems to get final answer after joining individual results is :

(A) Greedy algorithms approach

(B) Dynamic programming approach

(C) Divide and Conquer approach

(D) Static programming approach

76. Which of the following is the correct way to send mail in HTML ?

(A) <a href = "mailto: xy@y">

(B) <a href = "xy@y">

(C) <mail xy@y</mail>

(D) <a.mail = mailtoxy@y

77. Communication between devices of computer is almost always :

(A) Serial data transfer

(B) Parallel data transfer

(C) Serial parallel data transfer

(D) Parallel serial data transfer

78. By default a real number is treated as :

(A) double

(B) single

(C) double precision

(D) depends upon the declaration

79. Which testing strategy is used to test the application as a whole ?

(A) Requirement Gathering

(B) Verification testing

(C) Validation testing

(D) System testing

80. Which of the following is not considered as a risk in project management ?

(A) Specification delays

(B) Product competition

(C) Testing

(D) Staff turnover

81. Which of the following terms means that the data used during the execution of a transaction cannot be used by a second transaction until the first one is completed ?

(A) Consistency (B) Atomicity

(C) Durability (D) Isolation

82. Which of these methods are used to register a mouse motion listener ?

(A) addMouse()

(B) addMouseListener()

(C) addMouseMotionListner()

(D) eventMouseMotionListener()

83. The number of comparisons needed to sort the array :

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

In ascending order using bubble sort method is :

(A) 5040 (B) 1220

(C) 10 (D) 14

84. What will be the output of the following code ?

```
int exam (int a = 0, int b = 0, int c)
{return (a + b+ c); }
int main ()
{cout<<exam(100);
return 0 ; }
```

(A) 100

(B) 200

(C) 0

(D) Compiler error

85. Let $C(n, r) = \binom{n}{r}$. The value of $\sum_{k=0}^{20}(2k + 1)\, C\,(41, 2k + 1)$ is :

(A) $40(2)^{40}$ (B) $40(2)^{39}$

(C) $41(2)^{40}$ (D) $41(2)^{39}$

86. A piece of icon or image on a web page associated with another webpage is called :

(A) url

(B) hyperlink

(C) plugin

(D) none of the above

87. Which model assumes that systems are created from reusable components, scripting or database programming ?

(A) An application-composition model

(B) A post-architecture model

(C) A reuse model

(D) An early design model

88. The deployment of telephone lines in city network that can connect to all city nodes is :

(A) Binary Search Tree

(B) AVL Tree

(C) Spanning Tree

(D) Height Balanced Search Tree

89. Which of the program has the highest run-time complexity ?

(A) Tower of Hanoi

(B) Fibonacci Series

(C) Prime Number Series

(D) Triangular Series Calculation

90. The largest number of faces in a simple connected maximal planar graph with 100 vertices is :

(A) 200 (B) 198

(C) 196 (D) 96

91. The two inputs of a NAND gate are connected together. The resulting circuit is :

(A) OR gate

(B) AND gate

(C) NOT gate

(D) EX - OR Gate

92. The real root of the equation $x^3 - x - 5 = 0$ lying between 1 and 2 after first iteration by Newton - Raphson method is _____, if initial approximation is taken as $x_0 = 2\epsilon[1, 2]$:

(A) 1.909 (B) 1.904

(C) 1.921 (D) 1.940

93. Let X be uniform random variable on [0, 4] and Y be uniform random variable on [0, 1]. If X and Y are independent, then $P(\max\{X, Y\} > 3)$ is equal to :

(A) 1/4 (B) 1/2

(C) 1/8 (D) 1

94. In which of the Computer Architecture, an external system bus exists ?

(A) Pascal Architecture

(B) Dennis Ritchie Architecture

(C) Charles Babbage Architecture

(D) Von Neumann Architecture

95. Maximum number of nodes in a binary tree with height k, where root is height 0, is :

(A) $2^k - 1$

(B) $2^{k+1} - 1$

(C) $2^{k-1} + 1$

(D) $2^k + 1$

96. $\iint \frac{xy}{\sqrt{1-y^2}}\, dxdy$ over the positive quadrant of the circle $x^2+y^2=1$ is _____.

(A) $\frac{1}{6}$ (B) $\frac{2}{3}$

(C) $\frac{5}{6}$ (D) $\frac{5}{3}$

97. An algorithm that works to arrange data in ordered way :

(A) Searching algorithm

(B) Merging algorithm

(C) Inverting algorithm

(D) Sorting algorithm

98. In which header file NULL macro is defined ?

(A) stdio.h and stddef.h

(B) iostream.h

(C) string.h

(D) pre-processor

99. Which of the following is not a method of public key distribution ?

(A) Publically available directory

(B) Public key certificate

(C) Public announcement

(D) Private announcement

100. How many 16K × 1 RAM chips are needed to provide a memory capacity of 128 K-bytes ?

(A) 8 (B) 4

(C) 16 (D) 64

101. Breath first traversal of a graph uses representation of graph in which data structure ?

(A) queue

(B) stack

(C) list

(D) doubly linked list

102. Calculate the page faults, if 5 number of frames are required to get the following sequence of page references : 13, 18, 12, 13, 19, 11, 16, 13, 18, 19, 13, 16, 12, 11, 13 (15 numbers of sequence given) according to FIFO page replacement and LRU :

(A) Both provide same number of page faults

(B) FIFO incurs two more page faults than LRU

(C) FIFO incurs one more page fault than LRU

(D) LRU incurs two more page faults than FIFO

103. Which of the following is not project management goal ?

(A) Keeping overall costs within budget

(B) Delivering the software to the customer at the agreed time

(C) Maintaining a happy and well-functioning development team

(D) Avoiding customer complaints

104. Which of the following is used for multi programming ?

(A) Process scheduler

(B) Dispatcher

(C) Job scheduler

(D) Traffic controller

105. Express the time complexity of $(n-1)*(n-7)$ in terms of big O notation.

(A) O(logn) (B) $O(n^{logn})$

(C) O(1) (D) O(n)

106. Output for the statement :

```
int a=5;
cout<< "Hello"<<(a<<2)<<"Student";
```

(A) Hello 52 Student

(B) Hello 25 Hello

(C) Hello 50 Student

(D) None of the above

107. In HTML5, which of the following tag is used to initialize the document type ?

(A) <Doctype HTML>

(B) <\Doctype html>

(C) <Doctype>

(D) <!DOCTYPE html>

108. Which of the following is not true about Software Validation ?

(A) Validation ensures the product under development is as per the user requirements

(B) Validation is carried out at the end of the SDLC

(C) Validation emphasizes on user requirements

(D) Validation do not emphasize on user requirements

109. How to create an unordered list (a list with the list items in bullets) in HTML ?

(A) (B)

(C) (D) <i>

110. End to end connectivity is provided from host to host in :

(A) Network layer

(B) Session layer

(C) Data link layer

(D) Transport layer

111. The database model that consists of multiple tables which are linked together through matching data stored in each table is called :

(A) Hierarchical database

(B) Network database

(C) Object oriented database

(D) Relational database

112. If for the matrix A, $A^3 = I$ then

A^{-1} = _____.

(A) A^2

(B) A^3

(C) A

(D) None of these

113. The 32 bit internet address 10000000 00001010 00000010 00011110 will be written in dotted decimal notation as :

(A) 148.20.2.30 (B) 210.20.2.64

(C) 164.10.2.61 (D) 128.10.2.30

114. What will be the output of the following C program segment ?

```
char inchar = 'A';
switch (inchar)
{
case 'A' :
        printf ("Choice A\n") ;
case 'B' :
        printf ("Choice B ") ;
case 'C' :
case 'D' :
case 'E'  : break;
default:
        printf ("No Choice") ;
}
```

(A) No Choice

(B) Choice A
Choice B

(C) Choice A
Choice B No choice

(D) Choice A

115. class exam {int arr[10]; };
class e1: public exam {};
class e2: public exam {};
class derived : public e1, public e2 {};
int main (void)
{cout<< sizeof (derived);
return 0; }

assume that an integer takes 16 bits then predict output of above code.

(A) 40 (B) 80

(C) 0 (D) 4

116. Consider a disk queue with requests for I/O to blocks on cylinders 98, 183, 37, 122, 14, 124, 65, 67. The seek time is 4 ms per cylinder and the disk head is initially at 53. Calculate the total seek time, if the disk arm scheduling algorithm is SSTF (Shortest seek time first).

(A) 208 ms (B) 416 ms

(C) 832 ms (D) 944 ms

117. Quality planning is the process of developing a quality plan for :

(A) Team

(B) Project

(C) Customers

(D) Project manager

118. Which of the following Boolean algebra rules is correct ?

(A) $A.\overline{A} = 1$

(B) $A + AB = A + B$

(C) $A(A + B) = B$

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

119. Consider a situation in which physical memory contains 62 page frame. How many number of bits will be required in physical and logical address, if a memory management system has 128 pages with 1024 bytes page size ?

(A) 14 and 15 (B) 15 and 16

(C) 16 and 17 (D) 14 and 16

120. Von Neumann architecture is :

(A) SISD (B) SIMD

(C) MIMD (D) MISD

- o 0 o -

SPACE FOR ROUGH WORK