SEAL

उम्मीदवार इस पुस्तिका के सबसे ऊपरी सील को खोलकर पृष्ठ संख्या 2 और 3 के मध्य स्थापित OMR उत्तर पुस्तिका 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. : 247985

STA

परीक्षा प्रश्न-पुस्तिका/EXAMINATION QUESTION BOOKLET

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

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 लिखना आरम्भ करने से पहले आप 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

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। यदि आप इस पुस्तिका में कोई त्रुटि पाएं, तो *तत्काल* इसके बदले दूसरी पुस्तिका ले लें।
2. ओ.एम्.आर उत्तर पुस्तिका, 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 सावधानी पूर्वक पढ़ना चाहिए। आपको ओ एम् आर उत्तर-पुस्तिका में दिए गए अनुदेशों के अनुसार सावधानी पूर्वक उसमें विवरण और कोड लिखने चाहिए। प्रश्नों के उत्तर वास्तविक रूप में लिखना आरंभ करने से पहले आपको ओ एम् आर उत्तर-पुस्तिका 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 पत्रक तीन प्रतियों में होंगी (मूल तथा कार्बन की दो प्रतिलिपियाँ) परीक्षा समाप्ती के बाद ओ.एम्.आर. का मूल पत्रक 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 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 है इस मामले में भी उसका/उसकी उम्मीदवारी रद्द की जायेगी।
4. इस प्रश्न-पुस्तिका में 120 बहुविकल्पीय प्रश्न हैं, (भाग ए और भाग बी दोनों में प्रत्येक में 60 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 पुस्तिका 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. उम्मीदवार को दोनों भागों के उत्तर लिखना अनिवार्य है।
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-पुस्तिका 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।

Instructions to the Candidates

1. Before you start to answer the questions you must check up 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 book 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 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 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. (Section A and Section B both contains 60 Questions each). 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 questions.
5. For each **correct** answer One mark will be given and for each **incorrect** answer **0.25 marks will be deducted.**
6. Candidate has to attempt both sections 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.

जब तक आप से 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 : _____

SEAL

SEAL

SECTION - A

Direction for question numbers 1 to 5 :

Have a word followed by four answer choices. You will choose the word that is a necessary part of the word.

1. party

   (A) celebration (B) tuxedo

   (C) appetizer (D) orator

2. oligopoly

   (A) corrupt (B) gigantic

   (C) market (D) rich

3. electric bulb

   (A) electricity (B) thunder

   (C) brightness (D) rain

4. Cello

   (A) Teacher (B) Cell Phone

   (C) Strings (D) Band

5. Simile

   (A) Comparison (B) Speech

   (C) Literature (D) Novel

Direction for question numbers 6 and 7 :

Each question presents a situation and asks you to make a judgement regarding that particular circumstance. Choose an answer based on given information.

6. Zineb Fez has invited her three friends over to watch the basketball game on her wide-screen television. They are all hungry, but no one wants to leave to get food. Just as they are arguing about who should make the food run, a commercial comes on for a local pizzeria that delivers. The phone number flashes on the screen briefly and they all try to remember it. By the time Zineb grabs a pen and paper, each of them recollects a different number.

   #1 : All of the girls agree that the first three numbers are 995.

   #2 : Three of them agree that the fourth number is 9.

   #3 : Three agree that the fifth number is 2.

   #4 : Three agree that the sixth number is 6; three others agree that the seventh number is also 6.

   Which of the numbers is most likely the telephone number of the pizzeria ?

   (A) 995-9266

   (B) 995-9336

   (C) 995-9268

   (D) 995-8266

SEAL

7. A Hollywood film director wants a woman for the lead role of Leez who perfectly fits the description that appears in the original screenplay. However he is not willing to consider women who do not resemble the character as she is described in the screenplay, no matter how talented they are. The screenplay describes Leez as an average-sized, forty something redhead, with deep brown eyes, very fair skin, and a brilliant smile. The casting agent has four actresses in mind.

- Actress #1 is a stunning red-haired beauty who is 5'9" and in her mid-twenties. Her eyes are brown and she has an olive complexion.
- Actress #2 has red hair, big brown eyes, and a fair complexion. She is in her mid-forties and is 5'5".
- Actress #3 is 5'4" and of medium build. She has red hair, brown eyes, and is in her early forties.
- Actress #4 is a blue-eyed redhead in her early thirties. She's of very slight build and stands at 5'.

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

Direction for question numbers 8 and 9 :

There is a certain relation between two given words on one side of : : and one word is given on another of : : while another word is to be found from the given alternatives, having the same relation with this word as the given pair has.

Select the best alternative.

8. Skirmish : War : : Disease : ?
(A) Medicine
(B) Patient
(C) Epidemic
(D) Infection

9. Jade : Green : : Garnet : ?
(A) Blue
(B) Orange
(C) Red
(D) Yellow

10. Who is the first Indian woman to win an Asian Games gold in 400 m run ?
(A) M.L. Valsamma
(B) P.T. Usha
(C) Kamaljit Sandhu
(D) K. Malleshwari

11. What is the name of World's Smallest spacecraft launched by the Indian Rocket ?
(A) Aryabhatta (B) Bhaskara II
(C) Sprites (D) INSAT - 1 A

12. The head quarters of Sahitya Akademi is at :
(A) Mumbai (B) Chennai
(C) New Delhi (D) Kolkata

13. The first death anniversary day of Sri Rajiv Gandhi was observed as the :
(A) National Integration Day
(B) Peace and Love Day
(C) Secularism Day
(D) Anti-Terrorism Day

14. In which Indian state did the game of Polo originate ?

(A) Meghalaya (B) Rajasthan

(C) Manipur (D) West Bengal

15. Which festival was promoted by the Environment Minister recently ?

(A) National Memorial Scheme

(B) Performing Arts Grant Scheme

(C) Van Mahotsav Festival

(D) Scheme for Promoting International Related Scheme Festival

16. Which of the following has banned its women from wearing veils ?

(A) Afghanistan (B) Kyrgyzstan

(C) Uzbekistan (D) Tajikistan

17. Who approved 20 lakh houses for urban poor under PM Awas Yojna recently ?

(A) Shri Venkaiah Naidu

(B) Shri Arun Jaitley

(C) Shri Naveen Patnaik

(D) Shri Suresh Menon

18. The 9th edition of BRICS summit-2017 held in _____.

(A) Tianjin (B) Chongqing

(C) Xiamen (D) Beijing

19. The 'Dronacharya Award' is given to :

(A) Sportsmen

(B) Coaches

(C) Umpires

(D) Sports Editors

20. Indian School of Mines is located in :

(A) Dhanbad (B) Asansol

(C) Tatanagar (D) Rourkela

21. Which institute launched Rocket to produce Colourful Artificial Clouds ?

(A) National Institute of Technology

(B) Indian Space Research Organisation

(C) National Aeronautics and Space Administration (NASA)

(D) Manipal University

22. The international township built near Pondicherry in India in collaboration with UNESCO is called :

(A) Elbaville (B) Auroville

(C) Gayaville (D) Broadway

23. In which of the following years was the Indian rupee devalued for the first time ?

(A) 1949 (B) 1955

(C) 1966 (D) 1974

24. 'Grand Vitara' is a SUV from which car major ?

(A) General Motors

(B) Hyundai Motors

(C) Maruti Udyog Ltd.

(D) Mahindra and Mahindra

25. The year 1991 was observed in India as the year of :

(A) Population control

(B) Girl child

(C) Literacy

(D) Tourism

26. The ratio of width of our National flag to its length is :

(A) 3 : 5 (B) 2 : 3

(C) 2 : 4 (D) 3 : 4

27. The marketing guru Shunu Sen of the past decade was associated with :

(A) Nestle

(B) Britannia Industries

(C) Hindustan Unilever Limited

(D) Marico Industries

28. India and this country have recently signed pacts for technical cooperation in the field of Railways :

(A) Bhutan (B) Nepal

(C) Malaysia (D) Switzerland

29. Which of the following is a market research firm in India ?

(A) SOTC (B) ORG.MARG

(C) AT&T (D) CRY

30. Badrinath is situated on the bank of river :

(A) Ganga (B) Yamuna

(C) Alaknanda (D) Saraswathi

31. In how many different ways can the letters of the word 'MATHEMATICS' be arranged so that the vowels always come together ?

(A) 10080

(B) 4989600

(C) 120960

(D) None of the options

32. Irvin sold a book at a profit of 12%. If Irvin had sold it for ₹ 18 more, then 18% would have been gained. Find the cost price.

(A) ₹ 600 (B) ₹ 300

(C) ₹ 400 (D) ₹ 200

33. Rishi got two halls in his house painted. It cost him ₹ 6,000 and ₹ 6,100 respectively to paint the 4 walls of his 2 square halls, of the same height. If the length of one hall exceeds the length of the other by 1 m and the cost of painting is ₹ 5 per sq. m, what is the height of the two halls ?

(A) 3 m (B) 5 m

(C) 7.5 m (D) 10 m

34. Ali is thrice as good as workman as Birju and therefore is able to finish a job in 60 days less than Birju. If both Ali and Birju, work together, they can do it in :

(A) 20 days (B) 22.5 days

(C) 25 days (D) 30 days

35. A college cricket team with 11 players consists of 4 batsmen, 3 all-rounders, 3 bowlers and 1 wicket keeper. 3 players are selected randomly. Find the probability that the selection contains a batsman, a bowler and an all-rounder.

(A) $\frac{12}{60}$ (B) $\frac{13}{25}$

(C) $\frac{12}{55}$ (D) $\frac{104}{165}$

36. If $\log_x y = 100$ and $\log_2 x = 10$, then the value of y is :

(A) 2^{10} (B) 2^{100}

(C) 2^{1000} (D) 2^{10000}

37. My father gifted me a digital watch that runs fast at the rate of 15 seconds per hour. If I have set the watch correctly at 10 a.m. on Tuesday, what will be the time shown by the watch at 6 p.m. on Saturday ?

(A) 6.16 p.m (B) 6.30 p.m

(C) 6.26 p.m (D) 5.34 p.m

38. The equations $ax-(a+b)y=1$ and $(a-b)x+ay=5$ have a unique solution :

(A) for all values of a and b

(B) only when $a=b$

(C) only when $a^2 : b^2 = 1 : 2$

(D) only when $a=0$ and $b=0$

39. After the price of apples reduced, it enabled a person to purchase 3 apples for ₹ 1 instead of ₹ 1.25. What is the percentage reduction in price ?

(A) 20 (B) 25

(C) 30 (D) 33.33

40. An hour after Aishwarya started from her college towards Ananya's home, a distance of 53 km, Ananya started from her home on the same road towards Aishwarya's college. If Aishwarya's speed was 4 km per hour and Ananya's was 3 km per hour, how many km from Ananya's home did the two meet ?

(A) 24 (B) 22

(C) 21 (D) 19.5

41. The velocity of a boat relative to water is $3i+4j$ and that of water relative to earth is $i-3j$, the velocity of the boat relative to the earth is :

(A) $3i+4j$ (B) $4i+j$

(C) $4j+i$ (D) $i+4j$

42. A boat takes 90 minutes less to travel 36 miles downstream than to travel the same distance upstream. If the speed of the boat in still water is 10 mph, the speed of the stream is :

(A) 2 mph (B) 2.5 mph

(C) 3 mph (D) 4 mph

43. The value of $[(10)^{150} \div (10)^{146}]$:

(A) 1000 (B) 10000

(C) 100000 (D) 10^6

44. If a fair coin is tossed 5 times and comes up heads four times out of five. Then if the coin is tossed a sixth time under the same conditions, the probability of it turning up heads is :

(A) 80% (B) 125%

(C) 50% (D) 20%

45. Anand invested ₹ 8,000 as a fixed deposit scheme for 2 years at compound interest rate 5% p.a. How much amount will Anand get on maturity of the fixed deposit ?

(A) ₹ 8,600

(B) ₹ 8,620

(C) ₹ 8,820

(D) None of the options

In each of the following questions (**46 - 50**) find the word pair that is related to the same way as the word pair provided.

46. Soup : Liquid

(A) water : thirst

(B) book : knowledge

(C) oxygen : gas

(D) writer : publisher

47. TRAINING : HEREDITY

(A) unnatural : usual

(B) ornithologist : birds

(C) habits : instincts

(D) astute : ingenious

48. TRIANGLE : HEXAGON

(A) cone : sphere

(B) rectangle : octagon

(C) pentagon : heptagon

(D) angle : quadrilateral

49. ABRIDGE : LENGTHEN

(A) root : trunk

(B) stop : end

(C) lend : borrow

(D) prize : reserve

50. FRAGRANT : INCENSE

(A) frequent : sound

(B) sneeze : nostrils

(C) noxious : garbage

(D) noisome : pleasant

Direction for question numbers 51 to 55 :

There are five short passages given below. Read each of the passages and answer the question that follows it.

51. It was 1950s when the new genre of rock and roll music started as a young man's medium. Rock music is still best performed by young men of 20s and 30s. As rock performers step into their 40s, or even 50s, they are less physically capable of producing the kind of exhilarating music they did when they were younger.

All the following assumptions underlie the argument above EXCEPT

(A) as rock performers mature, their performances tend to become less exciting.

(B) rock music is dominated by male performers.

(C) women performers have always played a significant role in rock music.

(D) the physical demands of performing rock are better met by the young.

52. Las Vegas is certainly one of the honeymooner's heaven among the moderately rich Americans. Why should it not be? Las Vegas has much more to offer than shops and slot machines. However, unfortunately, tourists seldom stray off the beaten track. 2001 Guide is a book that encourages the visitors to do so and discover the living museum that is the Las Vegas city.
Which of the following information about 2001 Guide will weaken the intended impact of the book ?
(A) The greatest attraction of Las Vegas that sets it apart from other places is its casino.
(B) 2001 Guide does not give a detailed account of the geography of the lesser known facts of Las Vegas.
(C) An increasing number of young couples are taking to adventures and undiscovered land.
(D) Las Vegas has many more visitors than first honeymooners.

53. The famous theory of relativity was given by Albert Einstein. It stated that time travel is theoretically possible. Let us assume that time travel were to be made possible through some technological breakthrough. Would it not be advantageous to send someone back in time to prevent the assassination of Archduke Franz Ferdinand in 1914 and thus keep World War I from ever occurring ?
Which of the following assumptions can be deduced from above argument ?
(A) It is not possible to alter a significant current in world history merely by changing a single event.
(B) The technology necessary for time travel is likely to be developed in the near future.
(C) If Franz Ferdinand had not been assassinated, some other catalytic event would have led to the start of World War I.
(D) The assassination of Franz Ferdinand was the crucial event that triggered the start of World War I.

54. The movie Jurassic Park was a super-hit in the 90s. The movie shows scientists creating live dinosaurs by replicating dinosaur DNA found inside an insect that had bitten a dinosaur centuries back and was then trapped in amber. Though such a feat has not been accomplished in the real world, yet one day modern science will possibly succeed in recreating prehistoric creatures in a similar manner.

All of the following assumptions underlie the conclusion of the passage above EXCEPT

(A) the genetic information in DNA is sufficient to permit the recreation of an entire animal.

(B) it will someday be possible to accurately replicate DNA in a laboratory.

(C) enough DNA can be extracted from an insect to recreate an entire animal.

(D) scientists will never fully understand how DNA functions.

55. Violation of an Apartment Lease happens when a tenant does something prohibited by the legally binding document that she has signed with a landlord. Which situation below is the best example of violating an Apartment Lease ?

(A) Tina has decided to move to another town, so she calls her landlord to inform that she is not interested in renewing her lease when it expires next month.

(B) Varnika recently lost her advertising job and, for the last three months, has neglected to pay her landlord the monthly rent they agreed upon in writing when she moved into her apartment eight months ago.

(C) Mayank writes a letter to his landlord that lists numerous complaints about the apartment he has agreed to rent for one and a half years.

(D) Leena thinks that her landlord is neglecting the building in which she rents an apartment. She calls her attorney to ask for advice.

Directions for question numbers 56 to 60 :

In each of the following questions, various terms of a letter series are given with one term missing as shown by (?). Choose the missing term out of the given alternatives.

56. T, r, O, m, J, ?

(A) h (B) i

(C) I (D) g

57. C, F, J, O, ?, B

(A) S (B) T

(C) U (D) V

58. DF, GJ, KM, NQ, RT, ?

(A) UW (B) YZ

(C) XZ (D) UX

59. ABP, CDQ, EFR, (...?...)

(A) GHS (B) GHT

(C) HGS (D) GHR

60. C, G, L, R, ?

(A) Y (B) S

(C) U (D) Z

SPACE FOR ROUGH WORK

SECTION - B

61. Correct expression for UDP user datagram length is :
(A) length of UDP = length of IP − length of IP header's
(B) length of UDP = length of UDP − length of UDP header's
(C) length of UDP = length of IP + length of IP header's
(D) length of UDP = length of UDP + length of UDP header's

62. In binary search tree which traversal is used for getting ascending order values ?
(A) Inorder
(B) Preorder
(C) Postorder
(D) None of the options

63. The automaton which allows transformation to a new state without consuming any input symbols :
(A) NFA (B) DFA
(C) NFA-l (D) All of the options

64. Complement of a DFA can be obtained by :
(A) making starting state as final state.
(B) make final as a starting state.
(C) making final states non-final and non-final as final.
(D) None of the options

65. Concatenation Operation refers to which of the following set operations :
(A) Union
(B) Dot
(C) Kleene
(D) None of the options

66. Which of the following statement is **true** ?
(A) Melay and Moore machine are language acceptors.
(B) Finite State automata is language translator.
(C) NPDA is more powerful than DPDA.
(D) Melay machine is more powerful than Moore machine.

67. If file size is large and if it is to be accessed randomly then which of the following allocation strategy should be best to use in a system ?
(A) Linked allocation
(B) Indexed allocation
(C) Contiguous allocation
(D) None of the options

68. Microprocessors are used in which generation of computers ?
(A) I^{st} Generation
(B) IInd Generation
(C) IIIrd Generation
(D) IVth Generation

69. Operating System maintains the page table for :
(A) each process
(B) each thread
(C) each instruction
(D) each address

70. The function $f(x) = \frac{x^2 - 1}{x - 1}$ at $x = 1$ is :
(A) Continuous and differentiable
(B) Continuous but not differentiable
(C) Differentiable but not continuous
(D) Neither continuous nor differentiable

71. Closed-Loop control mechanism try to :

(A) Remove congestion after it occurs

(B) Remove congestion after sometime

(C) Prevent congestion before it occurs

(D) Prevent congestion before sending packets

72. In classless addressing, there are no classes but addresses are still granted in :

(A) Codes (B) Blocks

(C) IPs (D) Sizes

73. Which multiple access technique is used by IEEE 802.11 standard for wireless LAN ?

(A) CDMA

(B) CSMA/CA

(C) ALOHA

(D) None of the options

74. PGP encrypts data by using a block cipher called :

(A) international data encryption algorithm

(B) private data encryption algorithm

(C) internet data encryption algorithm

(D) none of the options

75. If L1 and L2 are regular sets then intersection of these two will be :

(A) Regular

(B) Non Regular

(C) Recursive

(D) Non Recursive

76. The smallest integer that can be represented by an 8-bit number in 2's complement form is :

(A) -256 (B) -128

(C) -127 (D) 0

77. Non-contiguous memory allocation splits program into blocks of memory called _____ that can be loaded in non-adjacent holes in main memory.

(A) Pages (B) Frames

(C) Partition (D) Segments

78. In a full binary tree number of nodes is 63 then the height of the tree is :

(A) 2 (B) 4

(C) 3 (D) 6

79. Let P, Q, R be a regular expression over Σ. If P does not contain null string, then $R = Q + RP$ has a unique solution _____.

(A) Q*P (B) QP*

(C) Q*P* (D) (P*O*)*

80. Total number of simple graphs that can be drawn using six vertices are :

(A) 2^{15} (B) 2^{14}

(C) 2^{13} (D) 2^{12}

81. The 2–3–4 tree is a self-balancing data structure, which is also called :

(A) 2–4 tree

(B) B+ tree

(C) B - tree

(D) None of the options

SPACE FOR ROUGH WORK

82. Which type of algorithm is used to solve the "8 Queens" problem ?

(A) Greedy

(B) Dynamic

(C) Divide and conquer

(D) Backtracking

83. A 3.5 inch micro floppy high density disk contains the data _____.

(A) 720 MB (B) 1.44 MB

(C) 720 KB (D) 1.44 KB

84. A subnet mask in class C can have _____ 1's with the remaining bits 0's.

(A) 10 (B) 24

(C) 12 (D) 7

85. What is the value of acknowledgement field in a segment ?

(A) Number of previous bytes to receive

(B) Total number of bytes to receive

(C) Number of next bytes to receive

(D) Sequence of zero's and one's

86. The number $(25)_6$ in base 6 is equivalent to ..... in binary number system.

(A) 11001 (B) 10001

(C) 11000 (D) 10000

87. Which of the following is a class B host address ?

(A) 230.0.0.0 (B) 130.4.5.6

(C) 230.7.6.5 (D) 30.4.5.6

88. There is a need to create a network that has 5 subnets, each with at least 16 hosts. Which one is used as classful subnet mask ?

(A) 255.255.255.192

(B) 255.255.255.248

(C) 255.255.255.240

(D) 255.255.255.224

89. What is Compaction ?

(A) a technique for overcoming internal fragmentation

(B) a paging technique

(C) a technique for overcoming external fragmentation

(D) a technique for overcoming fatal error

90. How can we set a Cookie visibility scope to local storage ?

(A) $ (B) %

(C) / (D) All of the options

91. A finite automaton accepts which type of language :

(A) Type 0 (B) Type 1

(C) Type 2 (D) Type 3

92. Which NetWare protocol provides link-state routing ?

(A) NLSP (B) RIP

(C) SAP (D) NCP

93. Which layer connects the network support layers and user support layers ?

(A) transport layer

(B) network layer

(C) data link layer

(D) session layer

94. Process is in a ready state _____.

(A) when process is scheduled to run after some execution

(B) when process is unable to run until some task has been completed

(C) when process is using the CPU

(D) none of the options

95. $(0+\varepsilon)\ (1+\varepsilon)$ represents :

(A) $\{0, 1, 01, \varepsilon\}$

(B) $\{0, 1, \varepsilon\}$

(C) $\{0, 1, 01, 11, 00, 10, \varepsilon\}$

(D) $\{0, 1\}$

96. The average search time of hashing, with linear probing will be less if the load factor :

(A) is far less than 1

(B) equals 1

(C) is far greater than 1

(D) none of the options

97. How many times the word "PROCESS" will be printed when executing the following program ?

```
main(){
printf("PROCESS");
fflush();
fork();
fork();
}
```

(A) 8 (B) 4

(C) 6 (D) 7

98. If a planner graph, having 25 vertices divides the plane into 17 different regions. Then how many edges are used to connect the vertices in this graph.

(A) 20 (B) 30

(C) 40 (D) 50

99. Merge sort uses :

(A) Divide-and-conquer

(B) Backtracking

(C) Heuristic approach

(D) Greedy approach

100. What is the relation between DFA and NFA on the basis of computational power ?

(A) DFA > NFA

(B) NFA > DFA

(C) Equal

(D) Can't be said

101. If a random coin is tossed 11 times, then what is the probability that for 7th toss head appears exactly 4 times ?

(A) 5/32

(B) 15/128

(C) 35/128

(D) None of the options

102. Which of the following is illegal declaration in C language ?

(A) char*str = "Raj is a Research Scholar";

(B) charstr[25] = "Raj is a Research Scholar";

(C) charstr[40] = "Raj is a Research Scholar";

(D) char[] str = "Raj is a Research Scholar";

103. When we use slow-start algorithm, the size of the congestion window increases _____ until it reaches a threshold.

(A) Additively

(B) Multiplicatively

(C) Exponentially

(D) None of the options

104. If X, Y and Z are three exhaustive and mutually exclusive events related with any experiment and the P(X) = 0.5P(Y) and P(Z) = 0.3P(Y). Then P(Y) = _____.

(A) 0.54 (B) 0.66

(C) 0.33 (D) 0.44

105. In IPv4 Addresses, classfull addressing is replaced with :

(A) Classless Addressing

(B) Classfull Addressing

(C) Subnet Advertising

(D) None of the options

106. An Ethernet destination address 07-01-12-03-04-05 is :

(A) Unicast address

(B) Multicast address

(C) Broadcast address

(D) All of the options

107. The open file table has a/an _____ associated with each file.

(A) file content

(B) file permission

(C) open count

(D) close count

108. The process of loading the operating system into memory is called :

(A) Booting (B) Spooling

(C) Thrashing (D) Formatting

109. Why is one-time password safe ?

(A) It is easy to generate

(B) It cannot be shared

(C) It is different for every access

(D) It can be easily decrypted

110. How many DFA's exits with two states over input alphabet {0, 1} ?

(A) 16 (B) 26

(C) 32 (D) 64

111. The demerits of the fragmentation are :

(A) Complex routers

(B) Open to DOS attack

(C) No overlapping of fragments

(D) (A) and (B) both

112. The address field of linked list :

(A) Contain address of next node

(B) May contain null character

(C) Contain address of next pointer

(D) Both (A) and (B)

113. Given two sorted list of size 'm' and 'n' respectively. The number of comparisons needed in the worst case by the merge sort algorithm will be :

(A) m*n

(B) minimum of m, n

(C) maximum of m, n

(D) $m+n-1$

114. Complement of $(a+b)^*$ will be :

(A) Phi(Φ) (B) Null

(C) a (D) b

115. In Boolean algebra $1+1+1+1+\ldots\ldots.800$ times ones = _____.

(A) 1 (B) 0

(C) 11 (D) 800

116. In a particular system it is observed that, the cache performance gets improved as a result of increasing the block size of the cache. The primary reason behind this is :

(A) Programs exhibits temporal locality

(B) Programs have small working set

(C) Read operation is frequently required rather than write operation

(D) Programs exhibits spatial locality

117. Starvation can be avoided by which of the following statements :

(i) By using shortest job first resource allocation policy.

(ii) By using first come first serve resources allocation policy.

(A) (i) only

(B) (i) and (ii) only

(C) (ii) only

(D) None of the options

118. Page fault frequency in an operating system is reduced when the :

(A) Processes tend to be I/O bound

(B) Locality of reference is applicable to the process

(C) Size of pages is reduced

(D) Processes tend to be CPU bound

119. The expression $5-2-3^*-2$ will evaluate to 18, if :

(A) '−' is left associative and '*' has precedence over '−'

(B) '−' is right associative and '*' has precedence over '−'

(C) '−' is right associative and '−' has precedence over '*'

(D) '−' is left associative and '−' has precedence over '*'

120. Finite automata requires minimum _____ number of stacks.

(A) 1

(B) 0

(C) 2

(D) None of the options

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