TEST SERIES NTA-UGC-NET/JRF DEC. 2019

BOOKLET SERIES A

Paper Code 87

Test Type: TEST SERIES

Full Length Test Series-1

COMPUTER SCIENCE & APPLICATIONS

Duration: 03:00 Hours

Date: 22-11-2019
Maximum Marks: 300

Read the following instructions carefully:

1. Single Paper Test is divided into **TWO** Parts.

2. **Paper - I:** This part shall carry **50** questions. Each question shall be of **2 marks.**

3. **Paper - II:** This part shall contain **100** questions. Each question shall be of **2 marks**.

4. There will be no negative marking.

5. Darken the appropriate bubbles with HB pencil/Ball Pen to write your answer.

6. The candidates shall be allowed to carry the Question Paper Booklet after completion of the exam.

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PAPER – I

Common Data Questions for Q.1 To Q.5:

Below is given a table chart which shows the yearly expenditure of four farms (in lakhs) from 2010 to 2014. Based on the information provided in the table you have to answer the questions below?

	2010	2011	2012	2013	2014
A	45	44	35	46	25
B	20	18	32	34	26
C	15	25	23	27	50
D	15	18	22	28	32

1. Expenditure of B in the year 2010 is what percentage of the expenditure of C in the year 2014?
    (a) 30 (b) 20 (c) 50 (d) 40

2. Expenditure of D in 2013 is approximately. What percentage of the total expenditure of D over the years?
    (a) 25 (b) 20 (c) 30 (d) 35

3. In which year the total expenditure of all the farms was maximum ?
    (a) 2012 (b) 2013 (c) 2014 (d) 2011

4. Approximately by how much percentage the total expenditure of C over the years is less than the total expenditure of A over the years ?
    (a) 30 (b) 28 (c) 25 (d) 20

5. Expenditure of which of the following farm shows a increases trend consistently ?
    (a) D (b) C (c) A (d) B

6. A person goes into the house M who is the neighbour of V who has a daughter N. S is the father of A and is married to E. Whose sister is V. How is V related to A ?
    (a) Son (b) Brother (c) Nephew (d) Grand-son

7. What should come next following the same pattern in place of question mark (?) ?

    | 2 | 10 | 30 | 68 | ? |

    (a) 95 (b) 130 (c) 110 (d) 120

8. **Direction:** In the question below are few statements followed by the conclusions numbered accordingly. You have to take the given statements to be true even if they seem to be at variance from commonly known facts and then decide which of the given conclusions logically follows from the statements disregarding commonly known facts.

Statements:	Conclusions:
(i) All A are B	(1) All A are D
(ii) Some A are C	(2) Some D are A
(iii) All C are D	(3) All B are C

    (a) Only (1) (b) Only (2) (c) None (d) Only (3)

9. The relationship between the proposition and conclusion refers ....
    (a) deductive reasoning (b) inductive reasoning
    (c) Intuitive reasoning (d) None of these

10. "Anumana" basically define ....
    (a) comparison (b) verbal testimony (c) implication (d) inference

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11. What least number must be subtracted from 1936 so that the remainder when divided by 9, 10, 15 will leave in each case the same remainder 7 ?
(a) 30   (b) 39   (c) 23   (d) 29

12. Two-thirds of a consignment was sold at a profit of 6% and the rest at a loss of 3%. If there was an overall profit of ` 540 , find the value of the consignment ?
(a) ` 12000      (b) ` 24000   (c) ` 18000      (d) ` 15000

13. A can do a work in 6 days. B takes 8 days to complete it. C takes as long as A and B would take working together. How long will it take B and C to complete the work together?

(a) $4\dfrac{1}{3}$ (b) $2\dfrac{2}{3}$ (c) $2\dfrac{2}{5}$ (d) $3\dfrac{1}{2}$

14. A speaks truth in 60 % cases
B speaks truth in 40 % cases
The probability of contradicting each other in describing a single event is
(a) 0.38   (b) 0.24   (c) 0.52   (d) 0.4

15. A person divides his total route of journey into three equal arts and decides to travel the three parts with speeds of 40, 30 and 15 km/hr respectively. Find his average speed during the whole journey ?
(a) 18 km/hr   (b) 30 km/hr   (c) 24 km/hr   (d) 36 km/hr

16. 1. 'Saving energy and other resources for the future without sacrificing people's comform in the present' is the definition of which of the following concepts?
(a) Economic growth   (b) Economic development
(c) Sustainable development   (d) Human development

17. In the acid rain, the rainwater and snow is contaminated by which of the following pollutions?
1. Sulphur-dioxide   2. Nitrogen oxide   3. Carbon-dioxide   4. Methane
Code:
(a) 1, 2 and 4   (b) 1 and 2 only
(c) 1, 2 and 3   (d) 2 and 3 only

18. Which of the following statements about bio-fuel is not correct?
(a) Bio-fuel is eco-friendly.
(b) Bio-fuel is cost-effective.
(c) Bio-fuel can contribute to remedy energy crisis.
(d) Bio-fuel is also made from corn.

19. Which one of the following is not correctly matched?

Green House Gas	Source
(a) Carbon dioxide	Thermal Power Stations
(b) Chlorofluorocarbon	Automobile
(c) Nitrous Oxide	Waterlogged Paddy fields
(d) Sulphur dioxide	Brick Kilns

20. Consider the following statements:
1. Most of the world's coral reefs are in tropical waters.
2. More than one-third of the world's coral reefs are located in the territories of Australia, Indonesia and the Philippines.
3. Coral reefs hosted by tropical rainforests.
Which of the statements given above is/are correct?
(a) 1 and 2 only   (b) 3 only   (c) 1 and 3 only   (d) 1, 2 and 3

21. Match the following

    (a) Mountstuart   (1) 1823

    (b) English education act   (2) 1835

    (c) Wood's despatch   (3) 1854

    (d) Indian University Commission   (4) 1902

    Codes

	(A)	(B)	(C)	(D)
a	1	2	3	4
b	2	4	3	1
c	4	3	1	2
d	3	2	4	1

22. First Lieutenant Governors (LG) of Ladhakh (2019)
    (a) Murmu   (b) Y.V. Reddy   (c) Vijay Kelkar   (d) R.K. Mathur

23. Top university in India, according to NIRF Ranking 2019 (in correct sequence)
    (a) BHU, JNU, Indian Institute of Science, Bangalore
    (b) JNU, BHU, Indian Institute of Science, Bangalore
    (c) Indian Institute of Science, Bangalore, JNU, BHU
    (d) JNU, BHU, Calcutta university

24. Which one of the not a university?
    (a) Nalanda   (b) Vallabhi   (c) Takshasila   (d) Rajgir

25. Consider about the All India council for technical education (AICTE)
    (i) The all India council of technical education was setup in 1945.
    (ii) The AICTE has its headquarter in Dehradun
    Code
    (a) Only (i) correct   (b) Only (ii) corret
    (c) Both (i) and (ii) correct   (d) Niether (i) nor (ii) correct

Read the following passage and answer the questions (Question 26 - 30)
The concept of creative society refers to the phase of development of a society in which a large number of potential contradictions become articulate and active. This is most evident when oppressed social groups get politically mobilized and demand their rights. The upsurge of peasants and tribes, the movements for regional autonomy and self-determination, the environmental movements, and the women's movements in the developing countries are signs of emergence of creative society in contemporary times. The forms of social movements and thier intensity may vary from country to country and place to place within a country, but the very presence of movements for social transformations in various spheres of a society indicates the emergence of a creative society in a country.

26. What does the author imply be creative society?
    (A) A scociety where diverse art forms and literary writings seek incentive.
    (B) A society where social inequalities are accepted as a norm.
    (C) A scosiety where a large number of contradictions are articulate.
    (D) A society where the exploited and the oppressed groups grow conscious of their human rights and upliftment.
    Select the correct answer using the codes given below:
    (a) (A), (B) and (C)   (b) (D) only
    (c) (C) and (D)   (d) (B) and (D)

27. According to the passage, what are the manifestations of social movements?
   (A) Being aggressive
   (B) Involvement of the whole society
   (C) Quest for social equality and individual freedom
   (D) None of the above
   (a) (A) and (B) only   (b) (C) only   (c) (B) and (C)   (d) (A), (B) and (C)

28. With reference to the passage, consider the following statements.
   (A) To be a creative society, it is essential to have a variety of social movements.
   (B) To be a creative society, it is imperative to have potential contradictions and conflicts.
   Which of the statements given above is/are correct?
   (a) (A) only   (b) (B) only   (c) Both (A) and (B)   (d) Neither (A) nor (B)

29. Which of the following are examples of different social movements?
   (A) Upsurge of peasants and tribes
   (B) The movements for regional autonomy and self-determination
   (C) The environmental movements
   (D) The women's movements
   Codes
   (a) (A), (B) and (C)   (b) (B), (C) and (D)   (c) (A), (B) and (D)   (d) All of the above

30. Which of following can be described as the most appropriate aim/s for various social movements?
   (A) To acheive the status of a creative society
   (B) To achieve rights
   (C) Social transformation
   Codes
   (a) (A) and (B)   (b) (B) and (C)   (c) (A) and (C)   (d) Only (C)

31. An effective comunication does not require
   (a) Change in speech pattern   (b) Appropriate gestures
   (c) Mastery of content   (d) Handsome personality

32. Recording a television programme on a VCR is an example of
   (a) Time-shifting   (b) Content reference
   (c) Mechanical clarity   (d) Media synchronization

33. Level C of the effectiveness of communication is defined as
   (a) Channel noise   (b) Semantic noise   (c) Psychological noise   (d) Source noise

34. Which of the following cannot be a good way in promoting literacy among vilagers?
   (a) Demonstration
   (b) Reading and writing
   (c) Providing material on TV and filf projector
   (d) Large group discussion

35. Which group of communication aspects does not disrupt the communication process in the class?
   (a) Reversing-evaluating-focussing   (b) Evaluating-focussing-illustrating
   (c) Evaluating-focussing-edaggerating   (d) Focussing-illustrating-exaggerating

36. An Internet e-mail message consists of
   (I) Message envelope
   (II) Message header
   (III) Message body
   (a) I and II   (b) II and III   (c) I and III   (d) All of the above

37. Which of the following symbols is in e-mail addresses to separate the username from the ISP?
(a) $ (b) @ (c) % (d) *

38. The size of the IPv4 is:
(a) 16 Bits (b) 32 Bits (c) 64 Bits (d) 128 Bits

39. Which of the following is not an example of primary memory?
(a) RAM (b) ROM (c) Cache Memory (d) Magnetic Tape

40. Convert the following decimal number to 8 Bit binary 187.
(a) $(10111011)_2$ (b) $(11011101)_2$ (c) $(101111101)_2$ (d) None of these

41. Match List I with List II

List I		List II	
(Level of teaching)		(Main proponent)	
A.	Memory Level	I.	Herbart
B.	Understanding Level	II.	Morrison
C.	Reflective Level	III.	Hunt

Code
(a) A-I, B-II, C-III (b) A-I, B-III, C-II (c) A-II, B-III, C-I (d) A-II, B-I, C-III

42. Good teaching is best reflected by
(a) Attendance of students
(b) Number of distinctions
(c) Meaningful questions asked by students
(d) Pin-drop silence in teh class

43. In which of the following is instructional procedure the main component?
(a) Synectics teaching model (b) Basic teaching model
(c) Inductive model (d) Social stimulation

44. The most important challenge before a teacher is
(a) To maintain discipline in the class (b) To make students do their homework
(c) To prepare question paper (d) To make teaching-learning process enjoyable

45. The best way to react to a wrong answer given by a student is
(a) To scold him for not having learnt the lesson
(b) To explain why the answer is wrong
(c) To ask another student to give the correct answer
(d) To ignore the wrong answer and pass on the next question.

46. The quality of research is judged by the
(a) Relevance of research
(b) Methodology adopted in conducting the research
(c) Depth of research
(d) Physics of weather

47. Research in which the researcher uses the qualitative paradigm for one phase and the quantitative paradigam for another phase is know as
(a) Action research (b) Basic research
(c) Quantitative research (d) Mixed method research

48. In the context of survey research, the following steps are taken in a certain order
(I) Sampling (b) Inference
(c) Data analysis (d) Data collection
(a) (II), (III), (I), (IV) (b) (I), (IV), (I), (IV)
(c) (III), (II), (IV), (I) (d) (IV), (I), (II), (III)

49. Match the following two list

List I		List II	
A.	Experimental	I.	Criticism
B.	Historical	II.	Control
C.	Case study	III.	Interpretative
		IV	Intensive
D.	Ethnography	V	Intuitive

Codes

(a) A-II, B-III, C-IV, D-V   (b) A-I, B-II, C-V, D-III

(c) A-III, B-I, C-IV, D-V   (d) A-II, B-I, C-IV, D-III

50. Which of the following statements is correct?
    (a) Objectives of research are stated in first chapter of the thesis.
    (b) Researcher must possess analytical ability.
    (c) Variability is the source of problem
    (d) All of the above

PAPER – II

1. Which of the following statements is/are true?
   (i) Mesh topology is fault tolerant, reliable and secure.
   (ii) Class D IP addressing scheme is used for the broadcasting and multicasting.
   (iii) Ping is used to check reachability.
   (iv) The IPv4 meets IOT's requirements. Therefore Scale cannot be met only by IPv6 and reuse IPv4.
   (a) i, ii, iii   (b) ii, iii   (c) ii, iii, iv   (d) None of these

2. How many hosts can be located on a network, where the IPv4 sub-netmask is 27 bits?
   (a) 27   (b) 30   (c) 32   (d) None of these

3. A small slotted Aloha system has only k customers, each of whom has a probability 1/k of transmitting during any slot (both new and retransmission). What is maximum value the channel throughput as a function of k?
   (a) 18 %   (b) 28 %   (c) 36 %   (d) 38 %

4. What is the maximum length of cable you are allowed to use in 100BASET?
   (a) 50   (b) 100   (c) 150   (d) None of these

5. The link utilization is 100% if the sender transmits 10 KB of information every second. If we are using a frame size of 1 KB, what is the maximum link utilization with the basic stop-and-wait protocol?
   (a) 20   (b) 40   (c) 50   (d) None of these

6. Using the RSA public key crypto system, if p=3; q=11, M=5 and d = 3, then the value of cipher text is
   (a) 11   (b) 13   (c) 14   (d) None of these

7. Match the following with respect to their meaning:

   (a) Networked-Controlled Handoff (NCHO)   (i) It is a standard for 4G wireless broadband technology that offers increased network capacity and speed to mobile device users.

   (b) Mobile-Assisted Handoff (MAHO)   (ii) It is a third-generation (3G) broadband, packet-based transmission of text, digitized voice, video, and multimedia.

   (c) Universal Mobile Telecommunications Service (UMTS)   (iii) First generation (1G) mobile computing with analog cellular system

   (d) Long-Term Evolution (LTE)   (iv) Second generation (2G) mobile computing digital cellular system

   (a) A-2, B-4, C-3, D-1   (b) A-1, B-4, C-2, D-3
   (c) A-3, B-4, C-2, D-1   (d) A-1, B-2, C-4, D-3

8. If 2100 frequency bands are uses in cellular network then what is/are number of users in 4 and 7-cell reuse factors?
   (a) 515, 300   (b) 525, 295   (c) 515, 295   (d) 525, 300

9. Match the following terms to their implications:

Group 1	Group 2
(I) Application layer	(A) Frame
(II) Transport layer	(B) Datagram
(III) Network layer	(C) Segment
(IV) Data link layer	(D) Massege

   (a) I-C, II- A, III- B, IV-D   (b) I-D, II- B, III- A, IV-C
   (c) I-D, II- A, III- B, IV-C   (d) I-D, II- C, III- B, IV-A

10. If data word 1101011011 is transmitted using the standard CRC method with generator $X^4 + X + 1$. Compute CRC.
    (a) 1011   (b) 1101   (c) 1111   (d) None of these

11. If A and B are two fuzzy sets:
    A = (0.4, 0.6, 0.8, 0.9, 0.95, 1), and B = (0.2, 0.3, 0.6, 0.8, 0.98, 1)
    Then what is the value of $(A \cap B)^C$?
    (a) (0.4, 0.3, 0.6, 0.8, 0.9, 1)   (b) (0.6, 0.8, 0.9, 1, 0.95, 1)
    (c) (0.8, 0.7, 0.4, 0.2, 0.02, 0)   (d) None of these

12. The following perceptron can solve which problem ?
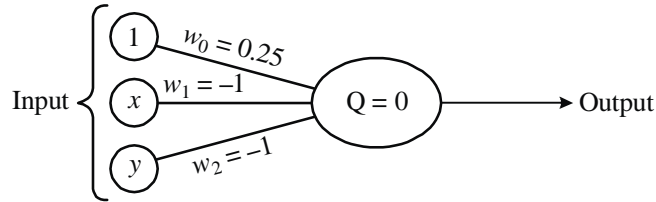
    (a) XOR   (b) NOR   (c) NAND   (d) XNOR

13. If mid-point crossover between chromosomes in search space does not produce significantly different children, what does it infer?

    (i) The crossover operation is not successful.
    (ii) Solution is about to be reached.
    (iii) Diversity is so poor that the parents involved in the crossover operation are similar.
    (iv) The search space of the problem is not ideal for Genetic sAlgorithmto operate.
    (a) (ii), (iii) & (iv) only (b) (ii) & (iii) only   (c) (i), (iii) & (iv) only   (d) All of these

14. If R and S are two fuzzy relations, then compute the value of R (min max) S ?

$$R = \begin{array}{c} \\ x_1 \\ x_2 \end{array} \begin{array}{ccc} y_1 & y_2 & y_3 \\ \begin{bmatrix} 0.5 & 0.8 & 0.9 \\ 0.6 & 0.9 & 1 \end{bmatrix} \end{array}, \quad S = \begin{array}{c} \\ y_1 \\ y_2 \\ y_3 \end{array} \begin{array}{cc} z_1 & z_2 \\ \begin{bmatrix} 0.8 & 0.9 \\ 0.6 & 0.8 \\ 0.7 & 0.9 \end{bmatrix} \end{array}$$

(a) $\begin{bmatrix} 0.5 & 0.8 \\ 0.9 & 1 \end{bmatrix}$ (b) $\begin{bmatrix} 0.5 & 0.9 \\ 0.8 & 1 \end{bmatrix}$ (c) $\begin{bmatrix} 0.8 & 0.8 \\ 0.8 & 0.9 \end{bmatrix}$ (d) None of these

15. The Product metrics are as follows:

    Effort: 12
    Cost: £50,000
    Thousand lines of code: 600k
    Defects: 540
    What is the productivity of the project using COCOMO Model?
    (a) 0.5   (b) 5   (c) 50   (d) 500

16. Consider a 1 MBPS hard disk is interfaced to the processor in burst mode of DMA operations whenever 64 bytes of data is available in the buffer. CPU takes 2 μsec (1 machine cycle) to initiate the DMA operation. % CPU utilization time during the DMA operation will be
    (a) 1 %   (b) 2 %   (c) 3 %   (d) 4 %

17. There are two scenario in first scenario, If 0.87 is risk probability, 10000 $ is loss, and in second scenario, If 0.95 is risk probability, 9000 $ is loss .Then identify by using Spiral Model which is better?
    (a) First   (b) Second   (c) Both   (d) None of these

18. In a company system software was verified using the error seeding scheme in which 2000 errors were seeded in the code. When the code was tested using the complete test suite, 700 of the seeded errors were detected. The same test suite also detected 20000 non-seeded errors. What is the estimated number of undetected errors in the code after this testing?

(a) 10000   (b) 11000   (c) 12000   (d) 13000

19. What are the four symbols when diagramming a DFD in the Software Engineering?

(a) context, level 0, level 1 and level 2
(b) entity, relationship, process, and data flow
(c) fragment, diagram, scenario, and visualization
(d) process, data flow, data store, and external entity

20. Organize the following steps to form Software Engineering Process Model.

(1) Test   (2) Design   (3) Install   (4) Specification
(5) Maintain

(a) 2, 4, 1, 5, 3   (b) 4, 2, 1, 3, 5   (c) 2, 4,1, 3, 5   (d) 4, 2, 1, 5, 3

21. What is/are various Agile Software Development techniques?

(i) Extreme programming(XP)
(ii) Crystal. Dynamic Systems Development Method (DSDM)
(iii) Scrum
(iv) Feature driven development(FDD)

(a) I only   (b) ii only   (c) iii only   (d) All of these

22. Which of the following statements is/are correct?

(i) A software engineer must design the modules with the goal of high cohesion and low coupling.
(ii) Usability categorized under Product Operation of McCall's Software Quality Factors.
(iii) Prototype methodology is defined as a Software Development model in which a prototype is built, test, and then reworked when needed until an acceptable prototype is achieved...
(iv) Validation is used to find out whether they meet the specified requirements whereas Verification is used to determine whether software meets the customer expectations and requirements.

(a) i, ii, iii   (b) i, iii,iv   (c) ii, iii,v   (d) None of these

23. Match the problem domains in GROUP I with the solution technologies in GROUP II

GROUP I	GROUP II
(P) COCOMO	(1) It is a process of recovering the design, requirement specifications and functions of a product from an analysis of its code.
(Q) Version Control	(2) To assess agile methods, COSTS integration, or architectural approaches such as service-oriented architectures
(R) Reverse Engineering	(3) Modeling technique that defines the features to be implemented and the resolution of any errors that may be encountered.
(S) Re-engineering	(4) To track every individual change by each contributor and helping prevent concurrent work from conflicting.

(a) P-1, Q-2, R-3, S-4   (b) P-3, Q-1, R-2, S-4
(c) P-2, Q-4, R-1, S-3   (d) None of these

24. Which is/are the Data Warehouse tools?

(i) OLAP(OnLine Analytic Processing)   (ii) ROLAP(Relational OLAP)
(iii) End User Data Access tool   (iv) Data Transformation services
(a) i, ii, iii   (b) i, iii,iv   (c) ii, iii,iv   (d) All of these

25. Compute Cyclomatic complexity of the following code
```
i = 0;
n=4;
while (i<n-1) do
     j = i + 1;
while (j<n) do
     if A[i]<A[j] then
     swap(A[i], A[j]);
end do;
     i=i+1;
end do;
```
(a) 3   (b) 4   (c) 5   (d) 6

26. Match the problem domains in GROUP I with the solution technologies in GROUP II

GROUP I	GROUP II
(P) PERT	(1)) In which no constraints exist with change in variables.
(Q) Sensitive Analysis	(2) It is a network model that allows for randomness in activity completion times.
(R) Kuhn-Tucker conditions	(3) Where the objective is to assign a number of resources to an equal number of activities so as to optimize cost and profit.
(S) Assignment Models	(4) If the objective function is concave and each constraint is linear.

(a) P-1, Q-2, R-3, S-4   (b) P-3, Q-1, R-2, S-4
(c) P-2, Q-1, R-4, S-3   (d) None of these

27. Let us find the feasible solution for the problem of a decorative item dealer whose LPP is to maximize profit function.

$Z = 50x + 18y$

Subject to the constraints

$2x + y \leq 100$

$x + y \leq 80$

$x \geq 0, y \geq 0$

What is optimal solution ?
(a) 2000   (b) 2500   (c) 3000   (d) None of these

28. Match the following codes:

(P) Shadow-mask method	(1) Maintain the picture display
(Q) Aspect ratio	(2) Vector display
(R) Random-scan monitor	(3) The ratio of image's height to its width
(S) The role of flood gun in direct view strorage tube (DVST) device is to	(4) Raster-scane system

Codes:
(a) P-4, Q-3, R-2, S-1   (b) P-4, Q-3, R-1, S-2
(c) P-4, Q-1, R-2, S-3   (d) None of these

29. Consider the line from (5,5) to (13,9). Find the 4 points if we apply the Breshanham's line drawing algorithm?
(a) (5,5), (6,6), (7,6), (8,10)   (b) (5,5), (6,6), (7,6), (8,7)
(c) (5,5), (6,6), (8,6), (8,7)   (d) None of these

30. What is the co-ordinate after magnifying the triangle with vertices A(0,0), B(1,1) and C(5,2) to twice its size, while keeping C(5,2) fixed.
    (a) {(-5,-2),(-3,0),(5,2)}   (b) {(-5,-2),(-3,0),(7,2)}
    (c) {(-5,-2),(-3,0),(3,0)}   (d) {(-5,2),(-3,0),(5,-2)}

31. Which of the following is/are True?
    S_1: The region code is used to specify a point in region in cohen Sutherland algorithm.
    S_2: Sutherland Hodgeman algorithm is an algorithm for Polygon clipping.
    (a) S_1 only   (b) S_2 only   (c) S_1, S_2 (d) None of these

32. Which of the following are single user operating system?

    (i) MS-DOS   (ii) UNIX   (iii) XENIX   (iv) OS_2
    (a) (i) and (ii) only   (b) (ii) and (iv) only   (c) (i) and (iii) only   (d) None of these

33. Consider a system has p processes, each process need a maximum of m resource and a total of r resources available. What condition must hold to make the system deadlock free?

    (a) $r \le p(m-1)+1$ (b) $r \ge p(m-1)$ (c) $r \ge p(m-1)+1$ (d) None of these

34. Consider a set of 5 processes whose arrival time and CPU time needed are given below:

Process	Arrival time	CPU time
P_1	0	10
P_2	0	5
P_3	2	3
P_4	5	20
P_5	10	2

    If the CPU scheduling policy is SJF, the average waiting time (without pre-emption) will be
    (a) 12.8 ms   (b) 6.8 ms   (c) 17 ms   (d) None of these

35. Which of the following statements is/are True for multiprogramming system ?
    S1: Multiprogramming system are easier to develop than single programing system.
    S2 : Multiprogramming system are used only on large multi-frame computers.
    S3 : Multiprogramming system execute more Jobs in the sometime period.
    (a) S1 and S2 only   (b) S2 only   (c) S3 only   (d) S1 only

36. At a particular time of computation the value of a counting semaphore is 8. Then 22 P operation and 16V operations were completed on this semaphore. The resulting value of semaphore is?
    (a) 1   (b) 3   (c) 4   (d) None of these

37. Match the following codes:
    (A) Spooling   (1) Synchronized method
    (B) Fork   (2) Overlapping I/O are computations
    (C) Multi-threaded programming   (3) Creates a new process
    (a) A-2, B-1, C-3   (b) A-2, B-3, C-1   (c) A-3, B-2, C-1   (d) None of these

38. In a simple paging system 2^{24} byte of physical memory, 256 pages of logical address space and a page size of 2^{10} bytes, how many bits are in logical address?
    (a) 4   (b) 14   (c) 18   (d) None of these

39. Given reference to the following pages by a program:
0,1,4,2,0,2,6,5,1,2,3,2,1,2,6,2,1,3,6,2
Number of page faults will occur, if the program has three page available to it and uses, optimal page replacement algorithm.
(a) 9   (b) 8   (c) 10   (d) 11

40. Consider the situation in which the disk read/write head is currently located track 50 (on track 0-255) and moving in the positive direction. Assume that the following track requests have been made in this order : 39,66,10,239,86. What is the total seek distance if C-SCAN disck scheduling is used ?
(a) 448   (b) 483   (c) 488   (d) None of these

41. A linker program
(i) places the program in the memory for the purpose of execution.
(ii) links the program with other programs need for its execution.
(iii) interface the program with the entities generating its input data.
Which the following is/are False?
(a) (i) and (ii) only   (b) (ii) and (iii) only   (c) (i) and (iii) only   (d) (i), (ii) and (iii)

42. If $A = \{2, 4\}$ and $B = \{3, 4, 5\}$, then $(A \cap B) \times (A \cup B)$ is

(a) $\{(2,2),(3,4),(4,2),(5,4)\}$ (b) $\{(2,3),(4,3),(4,5)\}$

(c) $\{(2,4),(3,4),(4,4),(4,5)\}$ (d) $\{(4,2),(4,3),(4,4),(4,5)\}$

43. Let $A = \{1,2,3,4\}$ and let $R = \{(2,2),(3,3),(4,4),(1,2)\}$ be a relation on A. Then R is a relation on A. Then R is
(a) retlexive   (b) symmetric   (c) transitive   (d) None of these

44. The set of the non-zero real numbers the operation * defined on it by $a * b = \dfrac{ab}{2}$ is an abelian group. The identity of the group is

(a) 1   (b) 2   (c) 1/2   (d) 1/3

45. Let G be a connected plannar graph with 35 regions, degree of each region is 6 then find the number of vertex V.

(a) 70   (b) 71   (c) 72   (d) 73

46. Which of the following statements are/is True
S1: if all the vertices have same degree them the graph is called as regular graph,
S2: Every complete graph is a regular graph but every regular graph need not be complete.

S3: Maximum number of edges possible in a simple graph with n vertices is $\dfrac{n(n-1)}{2}$

(a) S1, S2 only   (b) S1, S3 only   (c) S1, S2, S3   (d) None of these

47. Express the following predicates in symbolic form. here: $C(x)$ denotes x clever, $S(x)$ denotes x is succesful

(i) $\forall x C(x)$ (ii) $\exists x(\neg S(x))$ (ii) $\forall x (C(x) \to S(x))$
Find the sentences is/are True

S1: $\forall x C(x)$: All student are clevel

S2: $\exists x(\neg S(x))$: Some students are not successful

S3: $\forall x (C(x) \to S(x))$: Every clevel student is successful
(a) S1, S2 only   (b) S2, S3 only   (c) S1, S2, S3   (d) None of these

48. Which of the following Boolean algebra expressions is/are False?

(i) $\overline{ABC} + BC + AC = \overline{A} + C$

(ii) $(A + B)\left[\overline{A(\overline{B} + \overline{C})}\right] + \overline{B}\overline{C} + \overline{A}\overline{C} = A + \overline{C} + B$

(iii) $AB + AC + BC = AB + \overline{A}C$

   (a) (i) and (ii) only   (b) (ii) and (iii) only   (c) (i), (ii), (iii)   (d) None of these

49. Which of the following statement(s) is/are not TRUE?

S1 : The inverse of the identify element in a group is identity element itsself.
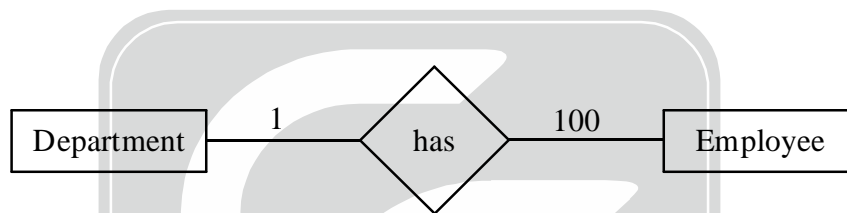
S2 : In the group $G = \{2, 4, 6, 8\}$ under multiplication modulo 10, the identify element is 6.

   (a) S1 only   (b) S2 only   (c) S1, S2   (d) Nither S1 nor S2

50. Under what condition, a table may have partial dependencies

   (a) If table consists one prime attribute   (b) If table consists only one attribute
   (c) If table consists only two attributes   (d) If table consists two prime attributes

51.

Consider the above ER diagram and state which of the following statements is/are correct?
(1) Each employee must belong to a department.
(2) Each Department can have maximum 100 employees.
(3) Each Department can have maximum 100 employees.
(4) Each Department must have some employees.

   (a) 1 and 2   (b) 2 and 3   (c) 3 and 4   (d) None of these

52. Consider the following non serial schedule
S : $W_4(E), R_1(C), R_3(A), R_1(E), W_2(A), R_4(A), W_3(A), R_3(B), W_4(A), W_2(D), W_1(A), R_4(C), W_1(B), R_4(D)$
Which of the following is true statement?
(a) The schedule S is conflict serializable
(b) The schedule S is not view serializable
(c) The schedule S is view equivalent to more than one serial schedule
(d) The schedule S is view serializable and equivalent to only one serial schedule

53. Customer (cname, street, city)
Account (acno, cname, bal)
Loan (loanno, cname, amount)
Query (i) : Select distinct cname From Customer
    Where cname in (Select cname From Account where cname
    = any (select cname From loan));
Query (ii) : ($\prod$ cname((Customer $\bowtie$ Account $\bowtie$ loan))
Query (iii) : Select cname From Customer C
                   Where exist ((Select cname From loan) Intersect
    (Select cname From Account where cname = C.cname));
Which of the following is TRUE statement?
(a) Query (i) and Query (ii) only gives the same result
(b) Query (ii) and Query (iii) only gives the same result
(c) Query (i) and Query (iii) only gives the same result
(d) Query (i), Query (ii) and Query (iii) gives the same result

54. Consider the following FDs for the relation R = ABCDEFGHIJ

 FDs : AB → C, A → DE, B → F, F → GH, D → IJ

 If 'R' is split into ABC, ADE, BF, FGH, DIJ then this dicomposition is
 (a) Lossy and dependency preserving
 (b) Lossless and dependency preserving
 (c) Lossy and not dependency preserving
 (c) Lossless and not dependency preserving

55. If X → A is FD on a relation and it is allowed in 3 NF, if
 (i) X is a proper subset of some key
 (ii) X is not a proper subset of any key
 (iii) X is a key
 (iv) A is a part of some key
 (a) (I) and (III) are correct
 (b) (I) and (II) are correct
 (c) (III) and (IV) are correct
 (d) (I) and (II) are not correct

56. How many clustered indexes a table can have?
 (a) One
 (b) Many
 (c) Can't say
 (d) None of the above.

57. Find equivalent Relational Algebra (RA) expression for the following SQL query.
 Select distinct C.sid from catalog C, parts P
 where (P.color = red or P.color = green) and P.pid = C.pid

 (a) $\prod \text{sid} \left(\sigma_{\text{color=red or color=green}} \left(\text{parts} \right) \bowtie \text{catalog} \right)$

 (b) $\prod \text{sid} \left(\sigma_{\text{color=red and color=green}} \left(\text{parts} \right) \bowtie \text{catalog} \right)$

 (c) $\prod \text{pid} \left(\sigma_{\text{color=red or color=green}} \left(\text{parts} \right) \bowtie \text{catalog} \right)$

 (d) $\prod \text{pid} \left(\sigma_{\text{color=red and color=green}} \left(\text{parts} \right) \bowtie \text{catalog} \right)$

58. DROP is a _____ statement in SQL.
 (a) Query
 (b) Embedded SQL
 (c) DDL
 (d) DCL

59. A 4 digit number uses all the symbols of the number system with 75 as its decimal equivalent. The number in hexadecimal form is

 (a) E4
 (b) 93
 (c) 4B
 (d) 27

60. If T1 denotes the time taken for a single instruction execution on a pipelined CPU and T2 denotes the time on a non-pipelined but identical CPU, then
 (a) T1 < T2
 (b) T1 ≤ T2
 (c) T1 ≥ T2
 (d) None of these

61. Given below is the characteristic table of a flip-flop with A, B as its input.

A	B	Q^+
0	0	1
0	1	Q
1	0	$\bar{Q}$
1	1	0

 If this flip-flop is implemented with a JK-flip-flop, then
 (a) $J = \bar{A}, K = B$
 (b) $J = A, K = B$
 (c) $J = B, K = A$
 (d) $J = \bar{B}, K = A$

62. Match the following columns:

Column-1	Column-2
1. Encoder	A. Sequential memory
2. Shift register	B. Data selector
3. Multiplexer	C. Decimal to binary conversion

(a) 1-A, 2-B, 3-C   (b) 1-C, 2-A, 3-B   (c) 1-B, 2-A, 3-C   (d) 1-C, 2-B, 3-A

63. Consider the following statement:

S_1: Fixed point arithmatic is faster than floating point arithmatic.

S_2: Zero can be written in 2 ways in its normalized form.

The correct statements are

(a) S_1 only   (b) S_2 only   (c) Both S_1 and S_2 (d) None of these

64. Consider the following statements:

S1: Loop instructions can't be interrupted till they complete.

S2: When an interrupt occurs, an operating system will change state of interrupted process to 'blocked' and schedule another process.

True statement(s) are:

(a) S1 only   (b) S2 only   (c) Both S1 and S2   (d) Neither S1 nor S2

65. Match the following:

Column-1	Column-2
A. Indexed addressing mode	1. Writing relocatable code
B. Base register addressing mode	2. Array implementation
C. Indirect addressing mode	3. Passing array as parameter

(a) A-3, B-1, C-2   (b) A-2, B-1, C-3   (c) A-1, B-3, C-2   (d) A-3, B-2, C-1

66. Match the following pairs:

(A) GoogleAppEngine   (B) Google CloudEndPoints
(C) Google ComputeEngine   (D) Apache HDFS
(1) You can create and run virtual machines on Google infrastructure
(2) You can migrate your web app to Google Cloud Platform for better performance
(3) The Hadoop Distributed File System is a distributed file system designed to run on commodity hardware.
(4) You can scale your app according to the demand/ service requests

(a) A-2,B-3,C-4 D-1   (b) A-3,B-1,C-2, D-4   (c) A-3,B-2,C-4 D-1   (d) None of these

67. The value of the carry flag (CY) and the content of the accumulator (A) after the execution of the following 8085 assembly program is

```
MVI   A,   45H
RAL
RI    1
HLT
```

(a) CY = 0, A = 8AH   (b) CY = 1, A = 8AH
(c) CY = 0, A = 8BH   (d) CY = 1, A = 8BH

68. Usinghe following table for calculations of function count weightings:

Factors	Weights		
	Simple	Average	Complex
Number of user inputs	3	4	6
Number of user outputs	4	5	7
Number of user inquiries	3	4	6
Number of files	7	10	15
Number of external interfaces	5	7	10

A system being developed has the following characteristics:
Number of user inputs   10 (simple)
Number of user outputs   7 (simple)
Number of user inquiries   3 (average)
Number of files   6 (average)
Number of external interfaces   1 (complex)
What is the function count for the system if each TCF factor achieves maximum value?
(a) 140   (b) 159   (c) 169   (d) 189

69. Consider the following 2-D array: a[–10 ..... +10, –15 ..... +15]
whose base address (BA) = 1000, cell size (C) = 2B and its row major order. Find address of a[9] [12] ?
(a) 2210   (b) 2211   (c) 2212   (d) 2213

70. Consider $-$ and $+$ has same priority, $-$ and $\wedge$ is right associativity and $+$ and $*$ is left associativity.
Priority relation is as follows $\wedge > * > -, +$. Find postfix expression of infix expression
$a - b + c - d - f \wedge g \wedge h * i$?
(a) $a\,b\,c + d\,f\,g\,h \wedge \wedge i\, - - - *$ (b) $a\,b\,c + d\,f\,g\,h \wedge \wedge i\, - * - -$
(c) $a\,b\,c + d\,f\,g\,h \wedge \wedge i\, * - - -$ (d) $a\,b\,c + d\,f\,g\,h \wedge * i \wedge - - -$

71. A binary tree has 200 leaf nodes the number of nodes in binary tree having two children is
(a) 198   (b) 199   (c) 197   (d) 196

72. Consider a queue is implemented using stack (algorithm is given below)
```
void insert (Q, x)
{
    push (S₁, x);
}
void delete (Q, x)
{
    if (stack S₂ is empty)
    if (stack S₁ is empty)
    {
        printf ("Q is empty");
        return;
    }
    else
    {
        while (stack S₁ not empty)
        {
            x = pop from S₁;
            push x to S₂;
        }
```

x = pop from S_2;
}
}

Now consider the following opteration: 4 insert, 2 delete, 3 insert, 3 delete operation performed. Then how many push and pop operation will be required for this.

(a) 10 push, 08 pop   (b) 12 push, 10 pop   (c) 10 push, 09 pop   (d) 14 push, 12 pop

73. Consider the following C segment

```
struct node
{
    struct node * left;
    int ele;
    struct node * right;
};
int getValue (struct node * ptr)
{
    int value = 0;
    if (ptr! = NULL)
    {
        if ((ptr → left == NULL) && (ptr → right == NULL))
        value = 100;
        else
        {
        a = getValue (ptr → left);
        b = getValue (ptr → right);
        value = value + a + b;
        }
    }
    return value;
}
```

(a) 100 times of the number of nodes   (b) height of tree plus 100
(c) 100 times of number of internal nodes   (d) 100 times of number of leaf nodes

74. For conversion of infix to postfix expression which data structure is used ?
(a) Stack   (b) Queue   (c) Hash table   (d) None of these

75. Consider following program

```
void main ( )
{
    int i = 0, j = 1, k = 0;
    m = (i++ || j++ || k++);
    printf ("%d%d%d%d", i, j, k, m)
}
```

What is output of above program?

(a) 1210   (b) 1201   (c) 1101   (d) 1211

76. Consider the function defined below:

```
struct item
{
    int data;
    struct item * next;
```

```
};
    int func (struct item *p)
    {
    return ((p==NULL) || (p → next == NULL) || ( p → data > p → next → data) && func(p → next)));
    }
```
For a given linked list p,
(a) The function func rerurns 1, if the list is empty or has exactly one element.
(b) The function func returns 1, if the list are sorted in decreasing order.
(c) The function func returns 1, if the list are sorted in strictly decreasing order.
(d) Both (a) and (c)

77. What will be time complexity of the most time efficient implementation of enqueue and dequeue respectively, if queue is implemented with singly linked list having two pointers 'head' and 'tail' pointing to first and last node?
(a) $\theta(1), \theta(1)$ (b) $\theta(n), \theta(1)$ (c) $\theta(1), \theta(n)$ (d) $\theta(n), \theta(n)$

78. Arrange the following in descending order.
(i) $32^{\log_2 n} \cdot 4^{\log_4 n}$ (ii) $4^n/2^n$ (iii) $n^{10} \cdot 64^{\log_2 n}$
(a) (i) > (ii) > (iii)   (b) (ii) > (iii) > (i)   (c) (iii) > (i) > (ii)   (d) (ii) > (i) > (iii)

79. Minimum number of states required to construct DFA. On $\Sigma = \{a, b\}$, accepting string, starting with 'a' and even number of 'a's or starting 'b' and odd number of of 'a's ?
(a) 3   (b) 4   (c) 5   (d) 6

80. Consider the following regular expression:
$(00 + 10 + 11)(0 + 1)^* + (\varepsilon + 0 + 1)$
Which language is accepted by this regular expression ?
(a) All string starting with 00   (b) All string not start with 01
(c) All strings having substring of 00, 10 or 11   (d) None of these

81. Which of the following is/are TRUE ?
(i) DFA and NFA has same power.
(ii) PDA and NPDA has same power.
(iii) DTM and NTM has same power.
(a) (i) and (ii) only   (b) (ii) and (iii) only   (c) (i) and (iii) only   (d) All of these

82. Match the following:

List-1	List-2
P. Reg. language	1. TM
Q. CFL	2. PDA
R. REC language	3. Halting TM
S. RE language	4. DFA

(a) P-4, Q-2, R-1, S-3   (b) P-4, Q-2, R-3, S-1
(c) P-2, Q-4, R-1, S-3   (d) P-2, Q-4, R-3, S-1

83. Consider the following statements
S1 : A grammer is unambiguous if at least one string which is member of language generate single parse tree.
S2 : A recursive descent parser can not use right recursive production rule.
What of folloing is/are true?
(a) Both S1 and S2   (b) Only S1
(c) Only S2   (d) None of these

84. Consider the following grammer G

    S → AB
    A → aA/a
    B → b

    Number of states in SLR parser for G is
    (a) 6   (b) 7   (c) 8   (d) 9

85. Consider the following two languages

    S1 : $L_1 = \{\langle M\rangle | M \text{ is a TM and } |L(M)| > 5\}$

    S2 : $L_2 = \{\langle M\rangle | M \text{ is a TM and } |L(M)| < 5\}$

    Which of the following is/are correct
    (a) Both S1 and S2 are REC   (b) Only S1 is REC
    (c) Only S2 is REC   (d) None of above is REC

86. Consider the following SDT

    $E \rightarrow E\#T\{\text{Print}("*")\} / T\{\text{Print }"/"\}$

    $T \rightarrow T\$F\{\text{Print}("+")\} / F$

    $F \rightarrow num\{\text{Print}(num.val)\}$

    For number string $1\#13\$9\#1\$5$, this translation will print.
    (a) $**+/+519113$ (b) $113\#9\$5\#5$
    (c) $1/139+*15+*$ (d) None of these

87. Which of the following can be the best algorithm for all pair shortest path problem
    (i) Dijkstra's algorithm
    (ii) Bellman's ford algorithm
    (iii) Floyd-warshall algorithm
    Where V is number of vertices and E is number of edges
    (a) (i) only   (b) (ii) and (iii) only   (c) (iii) only   (d) (i), (ii) and (iii)

88. Suppose there are 4 sorted list of 12 elements each. If we merge these 4 list into a single sorted list. the number of comparisons will requried in worst case using efficient algorithim are
    (a) 96   (b) 95   (c) 93   (d) None of these

89. Consider the following statements :
    Q_1 : BFS is better than DFS in terms of time
    Q_2 : DFS is better than BFS in terms of space
    (a) Q_1 is true and Q_2 is false   (b) Q_1 is false and Q_2 is true
    (c) Q_1 and Q_2 both are false   (d) Q_1 and Q_2 both are true

90. Consider the following graph :
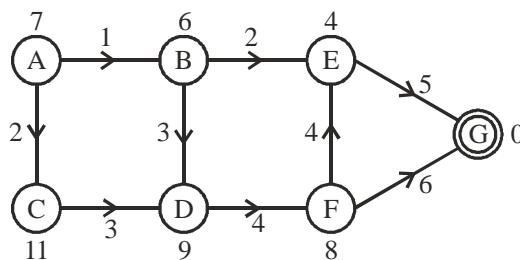
    Which of the following is correct if G is the goal node
    (a) heuristic always under estimates   (b) heuristic always over estimates
    (c) both (a) and (b)   (d) none of these

91. Consider the cryptoarithmetic puzzel, $E + 1 = N$; $N + R = E$

    SEND
    + MORE
    ─────
    MONEY

    What is the value of R
    (a) 9   (b) 6   (c) 8   (d) 7

92. Consider the following codes

    (A) $x > y$ (P) $\exists m(m + m = x)$

    (B) $x \mid y$ (Q) $\exists m(x \cdot m = y)$

    (C) $x \% 2 = 0$ (R) $\exists m(x = y + m)$

    (D) x is prime   (S) $\forall x \Big[(x > 1) \wedge \big(\forall y(\exists z(y \cdot z = x)) \rightarrow (y = 1) \vee (y = x)\big)\Big]$

    Match the above codes

	A	B	C	D
(a)	P	R	Q	S
(b)	R	Q	P	S
(c)	R	P	Q	S
(d)	S	Q	P	R

93. If $h = 0$ in A^* algorithm then A^* behaves like
    (a) BFS   (b) AO^*
    (c) uniform cost search   (d) best first search

94. Which of the following operator can not be overloaded in C++?
    (a) : :   (b) .   (c) ++   (d) both (a) and (b)

95. What is the correct syntax of the declaration which defines the XML version?

    (a) $\langle$XML version $= "A \cdot 0"/\rangle$ (b) $\langle$?XML version $= "A \cdot 0"?\rangle$

    (c) $\langle$?XML version $= "A \cdot 0"/\rangle$ (d) None of these

96. Consider following Java Programm

```
Public class Net 20
{
    Public static void main (string [ ] java)
    {
        try
        {
            int data = 25/0;
            System. out. print in (data);
        }
        catch (ArithmeticException)
        {
            System.out.println (e);
        }
        finally
        {
            System.out.println ("Finally block");
```

```
        }
    System.out.println("Further code");
        }
    }
```

What will be the output of above program?

(a) Java. lang. Arithmetic Exception: / by zero   (b) Java. lang. Arithmetic Exception: / by zero
    Finally block   Finally block
    Further code

(c) Java. lang. Arithmetic Exception: / by zero   (d) O
    Further code   Finally block
                                                                     Further code

97. Consider the following C language program:

```
main ( )
{
    char a[ ] = "net 2019";
    printf ("% s", a + a[2] - a[0]);
}
```

What will be the output of above program ?

(a) 2019   (b) 19   (c) 9   (d) None of above

98. Consider the following C++ program

```
Class CareerEndeavour
    {
    };
    int main ( )
    {
    CareerEndeavour ce;
    return 0;
    }
```

What can we say about program?

(a) Compiler error   (b) The program is not valid
(c) Nothing will be printed by above program   (d) None of above

99. Following code finds LCS of 2 strings S_1 and S_2 of length m and n respectively. Where $m \geq n$

$LCS(S_1, m, S_2, n)$
{

     if $(m == 0 \| n == 0)$

     return 0;

     if $(S_1[m] == S_2[n])$

     $len = 1 + LCS(S_1, X, S_2, Y)$

     else

     $len = \max(LCS(S_1, P, S_2, Q), LCS(S_1, R, S_2, S));$

     return len;

}

What will be the value of X, Y, P, Q, R, S
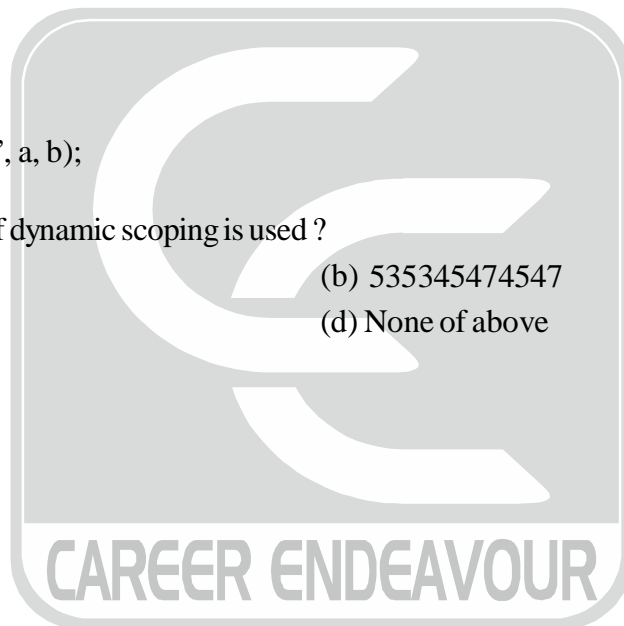
(a) m-1, n-1, n, m-1, m, n-1   (b) m-1, n-1, n, m-1, n-1, m
(c) m-1, n, m, n-1, m-1, n-1   (d) m-1, n-1, m-1, n, m, n-1

100. Consider the following code
```
int a = 2, b = 3;
main ( )
{
    int a = 5;
    printf ("% d % d", a,b);
    B ( );
    printf ("% d % d", a,b);
    D ( );
}
B ( )
{
    printf ("d % d % d", a,b);
    a = 4 ; b = 5;
    printf ("% d % d", a, b)
    D ( );
}
D ( )
{
    int b = 7;
    printf ("% d % d", a, b);
}
```
What will be outpur if dynamic scoping is used ?

(a) 535345274727

(b) 535345474547

(c) 532345275527

(d) None of above

CAREER ENDEAVOUR
Best Institute for IIT-JAM, NET & GATE

NTA-UGC-NET-COMPUTER SCIENCE & APPLICATIONS

Date: 22-11-2019

Test Series-A

ANSWER KEY

PAPER – I

1. (d)	2. (a)	3. (b)	4. (b)	5. (a)
6. (c)	7. (b)	8. (b)	9. (d)	10. (a)
11. (b)	12. (c)	13. (c)	14. (c)	15. (c)
16. (a)	17. (b)	18. (b)	19. (b)	20. (d)
21. (a)	22. (b)	23. (c)	24. (d)	25. (a)
26. (c)	27. (b)	28. (d)	29. (d)	30. (b)
31. (d)	32. (a)	33. (a)	34. (d)	35. (d)
36. (d)	37. (b)	38. (b)	39. (d)	40. (a)
41. (a)	42. (c)	43. (b)	44. (b)	45. (b)
46. (b)	47. (d)	48. (b)	49. (d)	50. (d)

PAPER – II

1. (a)	2. (b)	3. (c)	4. (c)	5. (c)
6. (c)	7. (c)	8. (d)	9. (d)	10. (d)
11. (c)	12. (b)	13. (b)	14. (c)	15. (c)
16. (c)	17. (b)	18. (d)	19. (d)	20. (b)
21. (d)	22. (a)	23. (c)	24. (d)	25. (b)
26. (c)	27. (b)	28. (a)	29. (b)	30. (a)
31. (c)	32. (c)	33. (c)	34. (b)	35. (c)
36. (d)	37. (b)	38. (c)	39. (a)	40. (b)
41. (c)	42. (c)	43. (c)	44. (b)	45. (c)
46. (c)	47. (c)	48. (c)	49. (c)	50. (d)
51. (c)	52. (b)	53. (d)	54. (b)	55. (c)
56. (a)	57. (a)	58. (c)	59. (c)	60. (c)
61. (d)	62. (b)	63. (a)	64. (b)	65. (b)
66. (c)	67. (c)	68. (d)	69. (c)	70. (c)
71. (b)	72. (d)	73. (d)	74. (a)	75. (b)
76. (d)	77. (c)	78. (b)	79. (a)	80. (b)
81. (c)	82. (b)	83. (d)	84. (a)	85. (d)
86. (c)	87. (c)	88. (c)	89. (b)	90. (d)
91. (c)	92. (b)	93. (c)	94. (d)	95. (b)
96. (a)	97. (c)	98. (c)	99. (d)	100. (b)