

TEST SERIES UGC-NET/JRF JULY 2018

BOOKLET SERIES **A**

Paper Code **87**

Test Type: **TEST SERIES**

COMPUTER SCIENCE & APPLICATIONS

Duration: 02:00 Hours

Date: 15-06-2018

Maximum Marks: 140

Read the following instructions carefully:

1. Single Paper Test is divided into **TWO** Parts.
2. **Part - I:** This part shall carry **20** questions. Each question shall be of **2 marks**.
3. **Part - II:** This part shall contain **50** 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.



CAREER ENDEAVOUR

Best Institute for IIT-JAM, NET & GATE

CORPORATE OFFICE :

33-35, Mall Road, G.T.B. Nagar,
Opp. G.T.B. Nagar Metro Station
Gate No. 3, Delhi-110 009

T : 011-27653355, 27654455

E : info@careerendeavour.com

REGISTERED OFFICE :

28-A/11, Jia Sarai, Near IIT
Metro Station, Gate No. 3,
Delhi-110 009

T : 011-26851008, 26861009

w : www.careerendeavour.com

For Online Test



DOWNLOAD CAREER ENDEAVOUR APP



PAPER – I

1. If ROAST is coded as PQYUR in a certain language, then how will SLOPPY coded in that language?
(a) MRNAQN (b) NRMNQA (c) QNMRNA (d) RANNMQ
2. If neena says, “Anita’s father Raman is the only son of my father-in-law Mahipal”, then how is Bindu, who is the sister of Anita, related to Mahipal?
(a) Grand-daughter (b) Daughter (c) Wife (d) Niece
3. **Statement:** Are nuclear families better than joint families?
Argument: (I) No joint families ensure security and also reduce the burden of work
(II) Yes, nuclear families ensure greater freedom
Code:
(a) If only argument I is strong (b) If only argument II is strong
(c) If neither I nor II is strong (d) If both I and II are strong
4. If the statement ‘some member of Mohan’s family are honest’ is True, which of the following code can be claimed may be True?
(I) All member of Mohan’s family are honest
(II) No member of Mohan’s family is honest
(III) Some member of Mohan’s family are not honest
(IV) Some honest people are the member of Mohan’s family
Codes:
(a) I and II (b) II and IV (c) I, III and IV (d) II and III
5. The consumption of harmful drugs by the people can be prevented not only by banning their sale in the market but also by instructing users about their dangerous effects which they must understand for their safety. Also, the drug addicts may be provided with proper medical facilities for their rehabilitation. This will help in scaling down the use of drugs.
The passage best supports the statement that consumption of harmful drugs
(a) Are on increase in the society (b) Can always be reduced
(c) Are due to lack of medical facilities (d) Can be eliminated with the help of banning their sale
6. Video transmission over the internet that looks like delayed live casting is called
(a) Virtual video (b) Direct broadcast (c) Video shift (d) Real-time video
7. The binary equivalent of $(-10)^{10}$ is (2’s complement is used)
(a) 11100101 (b) 11110110 (c) 10010101 (d) None of these

(Q.8 to Q.10) : The table shows the populations of three states over the year 2006 to 2010
Population (In Lakhs) of three states over the years

State/Year	2006	2007	2008	2009	2010
Delhi	2.5	2.9	3.2	3.7	3.9
U.P.	3.6	3.8	4.1	4.8	5.2
M.P.	4.2	4.8	5.0	5.6	5.7

8. What is the average population of state U.P. for all the years together (in Lakhs)?
(a) 4.0 (b) 4.3 (c) 3.9 (d) 4.5

9. What is the percentage increase in population of state Delhi between 2006 to 2009
(a) 48% (b) 52% (c) 30% (d) 60%
10. The population of Delhi of all years is approximately. What percentage of the population of state M.P. of all year?
(a) 40% (b) 55% (c) 64% (d) 70%
11. Find the missing numbers : 8, 35, ?, 143, 224, 323
(a) 68 (b) 80 (c) 92 (d) 108
12. A car travels 25 km South from garage. It turns left and travels 30 kms, then turns right and travels 15 kms. How far is from garage and which direction ?
(a) 40 North-East (b) 70 South-East (c) 50 North-East (d) 50 South-East
13. HTML tags define :
(a) The data types of elements of document.
(b) Presentation of specified elements of a document.
(c) Contents of document.
(d) The structure of document.
14. The most important objective of teaching is to :
(a) facilitate students when it comes to the construction of knowledge and understanding.
(b) cover the Syllabus timely.
(c) create a friendly environment inside the classroom or teaching learning process.
(d) attend and takes the classes regularly.
15. Dynamic approach to teaching means :
(a) Teaching should be forceful and effective.
(b) Teacher should be energetic and dynamic.
(c) Topic of teaching should be dynamic.
(d) The students should be required to learn through activities.
16. Jupiter and Venus are planets like Earth. They borrow light from Sun and moves around the Sun as Earth does. So those planets are inhabited by various order of creatures as the Earth is
What type of argument is contained in above passage ?
(a) Astrological (b) Mathematical (c) Inductive (d) Analogical
17. 'Selfie is self portrait photograph, typically taken with a smartphone which is held in hand', what type of definition it is ?
(a) Lexical (b) Stipulative (c) Persuasive (d) Precising
18. Which of the following is most stable ecosystem ?
(a) Ocean (b) Dessert (c) Forest (d) Mountain
19. The main advantage of research paper is ?
(a) To communicate the research work carried out by researcher.
(b) To put the result for wider criticism or approved.
(c) To modify the research process if there is any discrepancy in it.
(d) All of the above.
20. What does representative sample mean ?
(a) A miniature or replica of the population atleast with respect to the characteristic under investigation if not in all respects.
(b) A sample similar to population in all aspects.
(c) A sample which is smaller in size than the population.
(d) A sample whose mean is estimated to be within sampling errors of population mean.

PAPER – II

21. Let us consider a function f defined on all stack S and all integers i
- $$f(\phi) = 0;$$
- $$f(\text{push}(S, i)) = f(S) + \text{Max}(i, 0)$$
- If the stack S contains 3, 2, 5, 6, 8, 1 from top to bottom then what is the value of f for stack S ?
- (a) 30 (b) 32 (c) 40 (d) 25
22. If $T(1) = 8$ and $T(n) = T(n-1) + 6n^2 + 2n$ then $T(n) = ?$
- (a) $n(n+1)^2$ (b) $2n(n+1)^2$ (c) $2n(n-1)^2$ (d) None of the above
23. If a stack S additionally supports $\text{mulpop}(S, i)$ operation which pops i elements from stack S at a time. What is the condition of underflow for such stack?
- (a) $\text{top} + 1 > i$ (b) $\text{top} + 1 < i$ (c) $\text{top} - 1 > i$ (d) $\text{top} + i + 1 > 0$
24. Let us consider two linked list L_1 and L_2 with n and m nodes respectively. If the data part takes d bytes and pointer takes p bytes then what is the minimum total memory required for L_1 and L_2 ?
- (a) $(d+p)(m+n)$ bytes (b) $(d+m)(m+p)$ bytes
(c) $(d+n)(p+n)$ bytes (d) $(d*p)(m+n)$ bytes
25. A number n is written in binary and represented as linked list. For example if $n = 11$ then its binary is 1011 and it is represented using linked list as [1, 1, 0, 1]. If we want to replace n by $\frac{n}{8}$ then what is the cost to do this?
- (a) $O(n)$ (b) $O(n^2)$ (c) $O(\log n)$ (d) $O(1)$
26. If the keys {1, 2, 3, 4, 5, 6, 7, 8} are used to create a binary search tree of height 7 then how many such binary search tree are possible?
- (a) 42 (b) 128 (c) 14 (d) 64
27. A full n -ary tree is a tree in which every node has either 0 or n child. Let
 L = Number of leaves
 I = Number of internal nodes
 If $L = 71$ and $n = 8$ then what is the value of I ?
- (a) 11 (b) 12 (c) 15 (d) 10
28. If there are 2048 keys are stored into a hash table of size 32. What is the load factor if collision is resolved by chaining?
- (a) 30 (b) 64 (c) 32 (d) 512
29. Consider a set of 200 elements to find minimum and maximum elements in the given set, the minimum number of comparisons required is – You have given an array of 1024 elements, minimum number of comparisons required to find out second largest element among all will be – ?
- (a) 298, 1033 (b) 298, 1050 (c) 299, 1023 (d) 290, 1033
30. Let G be a complete undirected graph on 4 vertices, having 6 edges with weights being 1, 2, 3, 4, 5 and 6. The maximum possible weight that a minimum weight spanning tree of G can have is – ?
- (a) 6 (b) 7 (c) 8 (d) 9

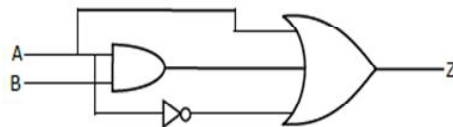
31. The number of spanning trees for a complete graph with 8 vertices is
 (a) 8^5 (b) 8^6 (c) 8^8 (d) 8^9
32. Let us consider a graph $G = (V, E)$ if the G has a CLIQUE of maximum Size K then G^c has a vertex cover of size —?
 (a) K (b) $|V|$ (c) $|V| - K$ (d) $K - |V|$
33. The cost of m -coloring problem for a graph using n vertices using backtracking is
 (a) $O(n^m)$ (b) $O(mn^m)$ (c) $O(m^n)$ (d) $O(nm^n)$
34. The number of Hamiltonian cycle in a complete graph with n vertices K_n is?
 (a) $\frac{(n-1)!}{4}$ (b) $\frac{(n-1)!}{2}$ (c) $\frac{n!}{2}$ (d) $\frac{(n-1)!}{3}$
35. The minimum number of multiplication for getting $A_1 A_2 A_3 A_4$ if the order array is $P = \langle 5, 4, 6, 2, 7 \rangle$
 (a) 414 (b) 350 (c) 244 (d) 158
36. Consider the 7 keys with $p(k_i) = \frac{1}{15}; 1 \leq i \leq 7$ and 8 dummy keys with $q(d_i) = \frac{1}{15}; 0 \leq i \leq 7$ what is the cost of Optimal Binary Search Tree?
 (a) $\frac{45}{15}$ (b) $\frac{46}{15}$ (c) $\frac{48}{15}$ (d) $\frac{49}{15}$
37. The number of ways to multiply 6 matrices to get a single matrix?
 (a) 14 (b) 42 (c) 88 (d) 128
38. The recurrence relation for matrix multiplication given by Strassen is?
 (a) $T(n) = 8T\left(\frac{n}{2}\right) + n^2$ (b) $T(n) = 8T\left(\frac{n}{2}\right) + n$
 (c) $T(n) = 7T\left(\frac{n}{2}\right) + n^2$ (d) $T(n) = 7T\left(\frac{n}{2}\right) + n^3$
39. QFD stands for
 (a) quality function design (b) quality function development
 (c) quality function deployment (d) none of the mentioned
40. If all tasks must be executed in the same time-span, what type of cohesion is being exhibited?
 (a) Sequential Cohesion (b) Temporal Cohesion
 (c) Functional Cohesion (d) None of the above
41. Which one is not a risk management activity?
 (a) Risk assessment (b) Risk generation
 (c) Risk control (d) None of the mentioned
42. Consider a banking application which requires 25,700 LOC. If the productivity of a person is 450 loc per month, consider the salary of the developer is 400 per month, find the cost of the application?
 (a) 28500 (b) 22845 (c) 19485 (d) none
43. Consider a digital image processing application which contains 3 modules
 $M_1 = 35.4$ KLOC $M_2 = 11.5$ KLOC $M_3 = 25.4$ KLOC
 If the productivity of the developer is 3KLOC per month, find the effort required in person-month(pm)?
 (a) 13.3 (b) 35.6 (c) 31.8 (d) 22.2

44. Consider a DRDO application in the development, company predicts the size of the entire application as follows:
 4600 KLOC optimistic
 5900 KLOC most likely
 7600 KLOC pessimistic
 First calculate the predicated size using which find the productivity if the software development effort is 6 person month?
 (a) 995 (b) 690 (c) 1050 (d) 549
45. Consider the following R.R.

$$T(n) = nT(\sqrt{n}) + \sqrt{n}$$
 the solution of $T(n) = ?$
 (a) $T(n) = \theta(n \log \log n)$ (b) $T(n) = \theta(\log n \log \log n)$
 (c) $T(n) = \theta(n^2 \log \log n)$ (d) None of these
46. Which includes modifications and updations done in order to correct or fix the problems, that are either discovered by user or concluded by user error reports?
 (a) Perfective maintenance (b) Adaptive maintenance
 (c) Corrective maintenance (d) Preventive maintenance
47. Match the following **List-1** with **List-2**:
 (A) Good quality (I) Program does not fail for a specified time in a given environment
 (B) Correctness (II) Meets the functional requirements
 (C) Predictable (III) Meets both functional and non-functional requirements
 (D) Reliable (IV) Process is under statistical control Codes
 (a) A - III, B - II, C - IV, D - I (b) A - II, B - III, C - IV, D - I
 (c) A - I, B - II, C - IV, D - III (d) A - I, B - II, C - III, D - IV
48. The number of neutral function possible with 4 – binary bits (th neutral function is one which has equal number of one's and zero's in output)
 (a) 12 (b) 16 (c) 8 (d) none
49. The minimum number of two input NOR GATES are required to implement the simplified value of the following Boolean equation

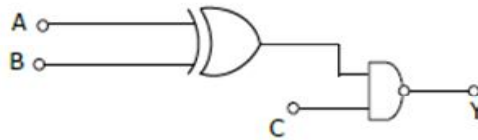
$$F(A, B, C, D) = \sum m(0, 2, 3, 8, 9, 10, 11)$$

 (a) one (b) two (c) three (d) four
50. The Number of Max term present in Canonical POS of Boolean function $F(A, B, C) = A + \bar{B}C$ is
 (a) 3 (b) 5 (c) 7 (d) 9
51. Output Z of a given logic circuit is

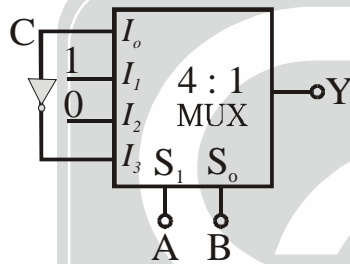


- (a) A.B (b) 1 (c) $AB + \bar{A}$ (d) A

52. The Boolean expression for the output of the logic circuit shown below is



- (a) $Y = \overline{A}\overline{B} + AB + \overline{C}$ (b) $Y = \overline{A}B + A\overline{B} + \overline{C}$
 (c) $Y = A + B + \overline{C}$ (d) $Y = AB + \overline{C}$
53. Let $X = (C4)_{16}$; $Y = (32)_{10}$ $Z = (76)_8$ then value of $X - (Y + Z)$ is
 (a) $(102)_8$ (b) $(66)_{10}$ (c) $(66)_8$ (d) $(66)_{16}$
54. Which of the following statement is Incorrect for the range of n bits binary numbers?
 (a) Range of unsigned numbers is 0 to $2^n - 1$.
 (b) Range of signed numbers is $-2^{n-1} + 1$ to $2^{n-1} - 1$
 (c) Range of signed 1's complement numbers is $-2^{n-1} + 1$ to 2^{n-1}
 (d) Range of signed 2's complement numbers is -2^{n-1} to $2^{n-1} - 1$
55. The output of the given 4 : 1 MUX will be



- (a) $\sum m(1,2,3,6)$ (b) $\sum m(2,4,5,7)$ (c) $\sum m(1,3,4,7)$ (d) $\sum m(1,2,6,7)$
56. Consider two sets A and B such that :
 $A \cup B \subseteq A \cap B$
 Then, which of the following is incorrect?
 (a) $A = \{ \}, B = \{ \}$ always (b) $|A| = |B|$
 (c) $A = B$ (d) None of these
57. If $A = \{1, 2\}$ then number of relations possible on A which are reflexive and symmetric but not transitive is
 (a) 0 (b) 1 (c) 2 (d) none
58. Consider the following arguments
 I. $\{p \rightarrow r, q \rightarrow r\} \Rightarrow ((p \vee q) \rightarrow r)$ II. $\{p \rightarrow q, p \rightarrow r\} \Rightarrow (p \rightarrow (q \wedge r))$
 Which of the following is True?
 (a) I is valid, and II is not valid (b) I is not valid, and II is valid
 (c) Both I and II are valid (d) Both I and II are not valid
59. $(D_{12}; *)$ where $a * b = \text{g.c.d of } (a, b) \forall a, b \in D_{12}$ then $(D_{12}, *)$ is
 (a) a semigroup but not a monoid (b) a momoid but not a group
 (c) a group (d) not a semi group
60. For a finite graph, which of the following statements is true?
 (a) The number of vertices of odd degree is odd
 (b) The number of vertices of odd degree is even
 (c) The number of vertices of even degree is odd
 (d) The number of vertices of even degree is even
61. Which of the following represents degree sequence of a simple graph?

1. 2,2,2,2,2,2 2. 3,3,3,3,6 3. 1,2,3,4,5
 (a) 1 only (b) 2 only (c) 3 only (d) All of the above
62. How many on-to functions are there from a set with 6 elements to a set with 2 elements?
 (a) 16 (b) 62 (c) 64 (d) none
63. Let $X = \{a, b, c, d\}$; $Y = \{m, n, p\}$ and $Z = \{1, 2, 3\}$
 $f: X \rightarrow Y \{(a, m), (b, n), (c, n), (d, p)\}$
 $g: Y \rightarrow Z \{(m, 1), (n, 2), (p, 1)\}$
 Find gof
 (a) $\{(a, 1), (b, 2), (d, 1)\}$ (b) $\{(a, 1), (b, 2), (c, n), (d, p)\}$
 (c) $\{(a, 1), (b, 2), (c, 2), (d, 1)\}$ (d) $\{(1, a), (2, b), (2, c), (1, p)\}$
64. Consider the following table :
- | Process | P_1 | P_2 | P_3 | P_4 |
|--------------|-------|-------|-------|-------|
| CPU Time | 5 | 7 | 3 | 6 |
| Arrival Time | 0 | 1 | 3 | 4 |
- Compute the average waiting time of process using round robin algorithm with the time slice of 5.
 (a) 7 (b) 6.5 (c) 7.5 (d) 8.0
65. A system has 100 resources and M processes. Each process needs 2 instances of the resources. Then maximum number of processes which can be present in a deadlock free system ?
 (a) 100 (b) 99 (c) 101 (d) 98
66. Working set model is used in memory management to implement the concept of
 (a) swapping (b) principal of locality (c) segmentation (d) memory fragmentation
67. A process executes the following segment of code
 for ($i = 1$; $i < 10$; $++i$)
 fork () ;
 The number of new process created is
 (a) 1024 (b) 1023 (c) 511 (d) 512
68. An 8085 microprocessor executes "STA 1234H" with starting address location 1FFEh (STA copies the contents of the Accumulator to the 16-bit address location). While the instruction is fetched and executed, the sequence of values written at the address pins A_{15} - A_8 is
 (a) 1FH, 1FH, 20H, 12H (b) 1FH, FEH, 1FH, FFH, 12H
 (c) 1FH, 1FH, 12H, 12H (d) 1FH, 1FH, 12H, 20H, 12H
69. Consider the following features in an 8085 microprocessor system with memory mapped I/O.
 1. I/O devices have 16-bit address.
 2. I/O devices accessed using IN and OUT instructions.
 3. There can be maximum of 256 input devices and 256 output devices.
 4. Arithmetic and logic operations can be directly performed with the I/O data.
 Select the correct answer using the codes given below :
 (a) 1, 2 and 4 (b) 1, 3 and 4 (c) 2 and 3 (d) 1 and 4
70. Consider the following logic families :
 1. MOS 2. DTL 3. RTL 4. ECL
 The sequence of these logic families in the order of their increasing noise margin is
 (a) 3, 4, 1, 2 (b) 3, 4, 2, 1 (c) 4, 3, 1, 2 (d) 4, 3, 2, 1

Space for rough work





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

UGC-NET COMPUTER SCIENCE & APPLICATIONS

Test Series- A

Date: 15-06-2018

ANSWER KEY

PAPER – I

1. (c)	2. (a)	3. (d)	4. (c)	5. (d)	6. (d)	7. (b)
8. (b)	9. (a)	10. (c)	11. (b)	12. (c)	13. (b)	14. (a)
15. (d)	16. (d)	17. (b)	18. (a)	19. (d)	20. (a)	

PAPER – II

21. (d)	22. (b)	23. (b)	24. (a)	25. (d)	26. (b)	27. (d)
28. (b)	29. (a)	30. (b)	31. (b)	32. (b)	33. (d)	34. (b)
35. (d)	36. (d)	37. (b)	38. (c)	39. (c)	40. (b)	41. (b)
42. (b)	43. (b)	44. (a)	45. (a)	46. (c)	47. (a)	48. (d)
49. (a)	50. (a)	51. (b)	52. (a)	53. (d)	54. (c)	55. (a)
56. (a)	57. (a)	58. (c)	59. (b)	60. (b)	61. (a)	62. (b)
63. (c)	64. (c)	65. (b)	66. (b)	67. (c)	68. (a)	69. (d)
70. (d)						



South Delhi : 28-A/11, Jia Sarai, Near-IIT Metro Station, New Delhi-16, Ph : 011-26851008, 26861009

North Delhi : 33-35, Mall Road, G.T.B. Nagar (Opp. Metro Gate No. 3), Delhi-09, Ph: 011-27653355, 27654455