

TEST SERIES UGC-NET/JRF DEC. 2018

BOOKLET SERIES **C**

Paper Code **87**

Test Type: **TEST SERIES**

COMPUTER SCIENCE & APPLICATIONS

Duration: 01:30 Hours

Date: 26-11-2018

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.
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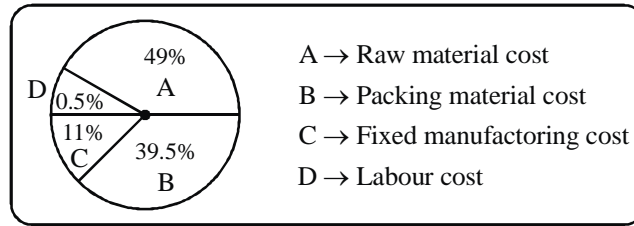


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PAPER – I

1. Direction for [Q.1 to Q.3] Study the diagram given below and answer these questions :



- If the total value in Rupees of all the sectors is ₹ 128.3 lakh, then calculate the value of D in Rupees ?
(a) 0.06 lakh (b) 0.6 lakh (c) 0.006 lakh (d) 6.0 lakh
- If the total cost production doubles in a period of one year, then what will be value of D ?
(a) 10.3 lakh (b) 1.3 lakh (c) 570 lakh (d) 50.7 lakh
- If the packing cost increased by 2%. How much amount will be involved in packing cost ?
(a) 25.6 lakh (b) 52.5 lakh (c) 52 lakh (d) 50 lakh
- At what time in minutes between 3 O'clock and 4 O'clock, both the needles will coincide each other ?
(a) $5\frac{1}{11}$ min (b) $12\frac{4}{11}$ min (c) $13\frac{4}{11}$ min (d) $16\frac{4}{11}$ min
- Find out missing number :
2 1 1 1.5 3 ? 22.5
(a) 6 (b) 7.5 (c) 8 (d) 6.5
- Find out wrong number :
16 24 36 54 91 121.5 182.25
(a) 91 (b) 36 (c) 24 (d) 54
- PULP : PAPER : HEMP : ?
(a) BASKET (b) YARN (c) ROPE (d) COTTON
- Which of the following is related to MELODY in the same way as DELICIOUS is related to TASTE ?
(a) VOICE (b) SPEAK (c) TONGUE (d) HIGHNESS
- Pointing to a man on the stage, Rashi said, "He is the brother of the daughter of the wife of my husband". How is the man on the stage related to Rashi ?
(a) Son (b) Husband (c) Cousin (d) Nephew
- | | |
|----|----|
| 26 | 29 |
| 37 | 55 |

52	58
74	?

(a) 88 (b) 110 (c) 135 (d) None of these
- Which of the following are true about SAFAR?
 - It can forecast air quality for 1-3 days.
 - It is developed by MoEF
 - Through SAFAR know the City Air Quality- Over all city pollution and Location specific Air Quality-A relative contribution of different environments in a city
 - It measures 8 pollutants.
(a) 1, 3, 4 (b) 1, 2, 3 (c) 2, 3, 4 (d) 1, 2, 4

12. Which of the following is/are true about plastic pollution?
1. The theme for 2018 World Environment Day is beating plastic pollution.
 2. Every year the world uses 500 billion plastic bags
 3. 50 per cent of the plastic we use is single-use or disposable and Plastic makes up 10% of all of the waste we generate.
 4. Ethylene oxide, xylene, and benzene are some of the chemical toxins present in plastic, which can have hazardous effects on the environment.
- (a) 1, 2, 3 (b) 1 and 4 only (c) 1, 3, and 4 (d) 1, 2, 3, and 4
13. The national co-ordinator of IMPRINT is
- (a) IIT Delhi (b) IISc Bangalore (c) IIT Kanpur (d) IIT Roorkee
14. When in a bicameral legislature, an ordinary bill, which has originated in the assembly is rejected by the council:
- (a) Will be considered in a joint sitting to resolve the disagreement.
 - (b) The assembly can override the council by passing the bill for the second time with or without any amendments.
 - (c) The council does not have power to reject any bill that has originated in the assembly and hence the bill is deemed to have passed.
 - (d) The bill ends and becomes dead.
15. Display Boards in classrooms can be used for
1. Motivational Display
 2. Developmental Displays
 3. Summery Display
 4. Value Display
- (a) 1, 2, 4 (b) 2, 3, 4 (c) 1, 3, 4 (d) 1, 2, 3
16. If a study is “reliable”, this means that:
- (a) The measures devised for concepts are stable on different occasions
 - (b) It was conducted by a reputable researcher who can be trusted
 - (c) The findings can be generalized to other social settings
 - (d) The methods are stated clearly enough for the research to be replicated
17. Cross cultural studies are an example of:
- (a) Case study design (b) Comparative design
- (c) Experimental design (d) Longitudinal design

Direction : Q.18-20: Read the following passage carefully and answer the questions :

The contemporary industrial robot, in the eyes of politicians and others, may wear the halo of high technology, but it came into being to meet a rather mundane need. In the booming labour market the early 1960s, it became increasingly difficult to find people willing to do boring, repetitive and unpleasant jobs. What was needed was not a machine which could master elaborate human skills, but one which could provide the mindless lumpen proletariat demanded by mass production. What had to be learnt, and proved well within the robot's capacity, were sequences of precise movement of the arm and hand. Such sequences were relatively easily programmed into a computer memory, especially after the advent of the microprocessor freed robots from their dependence on the mainframe computers of the 1960s. But however impressive, even uncanny, a robot may appear to the layman as it repeats a series of movements with flawless precision, it is, in fact, operating blindly and by rote. Repetitive manipulation is, of course, a skill common to many machines: what differentiates the robot is that it makes use of an articulated arm analogous to the human limb and that it can be reprogrammed to perform a whole variety of tasks without the need to redesign, or adjust its mechanical components. There are however, a limited range of applications, in which manipulator arm, operating blindly and without intelligence, is useful. Looking through manufacturers' catalogues one is struck not by the machine's versatility but by the monotonous repetition of a sort of litany of robot functions: machine tool loading and unloading, spot welding, paint spraying and parts transfer being the commonest.

Whatever its task, a robot is dependent for its effectiveness upon a whole supporting cast of automated machines. Everything must be presented to it in consistent positions and orientations; it can only operate in a world of guaranteed predictability. Indeed, to consider robots in isolation from automation, in general, is rather like studying an ant which has been removed from an anthill – an ingenious but purposeless curiosity. The need to provide an automated environment has so far restricted robot use to large scale industry businesses such as specialist machine shops, producing small batches of many different items have little incentive to set up the paraphernalia of conveyors, jigs and electronic communication, which a robot requires.

18. The passage makes it clear that, contrary to popular opinion, robots:
- were designed to replace human labour.
 - work with flawless perfection and creativity.
 - can only operate in a system where everything is inconsistent and unpredictable.
 - cannot be classified as high technology.
19. The robots have been restricted to a large scale industry businesses only because:
- they can operate only in a world of guaranteed predictability and automated environment.
 - they can provide the mindless lumpen proletariat demanded by mass production.
 - they are expensive and high technology machines.
 - they can replace human beings in any type of work.
20. Robots differ from other machines in that:
- they react like human beings
 - they need little maintenance
 - they have a limited number of applications
 - they are easy to switch from task to task

PAPER – II

21. What is the maximum theoretical data rate if a transponder is used for binary transmission and has a bandwidth of 36MHz?
- 32 Mbps
 - 72 Mbps
 - 36 Mbps
 - 12 Mbps
22. Point out the wrong statement:
- k-means clustering is a method of vector quantization
 - k-means clustering aims to partition n observations into k clusters
 - k-nearest neighbor is same as k-means
 - None of the Mentioned
23. Which of the following is best Practice and Caveat for Management Data Warehouse ?
- Use a centralized server for the MDW database
 - The XML parameters for a single T-SQL collection item can have multiple <Query> elements
 - Use a distributed server for the MDW database
 - All of the mentioned
24. If a total of 33 MHz of bandwidth is allocated to a particular FDD cellular telephone system which uses two 25 kHz simplex channels to provide full duplex voice and control channels, compute the number of channels available per cell if a system uses (a) four-cell reuse, (b) seven-cell reuse, and (c) 12-cell reuse. If 1 MHz of the allocated spectrum is dedicated to control channels, determine an equitable distribution of control channels and voice channels in each cell for each of the three systems.
- 160,100,50
 - 165,95,55
 - 160,100,55
 - None of these
25. We are considering an enhancement to the processor of a web server. The new CPU is 20 times faster on search queries than the old processor. The old processor is busy with search queries 70% of the time, what is the speedup gained by integrating the enhanced CPU?
- 2.9
 - 4
 - 5
 - None of these



26. An instruction set of a processor has 125 signals which can be divided into 5 groups of mutually exclusive signals as follows:
Group 1 : 20 signals, Group 2 : 60 signals, Group 3 : 2 signals, Group 4 : 10 signals, Group 5 : 23 signals.
How many bits of the control words can be saved by using vertical microprogramming over horizontal microprogramming?
(a) 0 (b) 103 (c) 22 (d) 94
27. A machine has a 32-bit architecture, with 1-word long instructions. It has 64 registers, each of which is 32 bits long. It needs to support 45 instructions, which have an immediate operand in addition to two register operands. Assuming that the immediate operand is an unsigned integer, the maximum value of the immediate operand is
(a) 16383 (b) 8191 (c) 4096 (d) None of these
28. Comparing the time T_1 taken for a single instruction on a pipelined CPU with time T_2 taken on a non-pipelined but identical CPU, we can say that
(a) $T_1 \leq T_2$
(b) $T_1 \geq T_2$
(c) $T_1 < T_2$
(d) T_1 and T_2 plus the time taken for one instruction fetch cycle
29. Which of the following instruction is following immediate mode addressing mode?
(a) LD 100 (b) Move R1,R2 (c) LD(R1) (d) LD @ADR
30. Consider a four segment pipeline with the following stage delays, $T_1=60\text{ns}$, $T_2=10\text{ns}$, $T_3=80\text{ns}$, $T_4=40\text{ns}$, the interface requests used between the stage has delays of 5ns, what is the approx speed up, when large number of instruction are executed.
(a) 2.28 (b) 2.42 (c) 2.12 (d) 2.13
31. Match the following
- | | |
|------------------------------|-------------------|
| List 1 | List 2 |
| X. indirect addressing | 1. loops |
| Y. Immediate Addressing | 2. Pointers |
| Z. Auto Decrement addressing | 3. Constants |
| (a) X-2, Y-3, Z-1 | (b) X-1, Y-3, Z-2 |
| (c) X-3, Y-2, Z-1 | (d) None of these |
32. A 4-way set-associative cache memory unit with a capacity of 16 KB is built using a block size of 8 words. The word length is 32 bits. The size of the physical address space is 4 GB. The number of bits for the TAG field is
(a) 5 (b) 15 (c) 20 (d) 25
33. Consider a small 2-way set-associative cache memory, consisting of four blocks. For choosing the block to be replaced, use the least recently (LRU) scheme. The number of cache misses for the following sequence of block addresses is 8, 12, 0, 12, 8
(a) 2 (b) 3 (c) 4 (d) 5
34. The performance of a pipelined processor suffers if
(a) the pipeline stages have different delays
(b) consecutive instructions are dependent on each other
(c) the pipeline stages share hardware resources
(d) All of the above

35. If $(12x)_3 = (123)_x$, then the value of x is
 (a) 3 (b) 3 or 4 (c) 2 (d) none of these
36. In unix programming test $\$x - eq \y is equivalent to
 (a) $[\$x - eq \$y]$ (b) $(\$x - eq \$y)$ (c) $(\$x \$y - eq)$ (d) None of these
37. Match the following :
- | | |
|-----------|---|
| 1. $\$*$ | A. Exit status of last command. |
| 2. $\$?$ | B. Complete set of positional parameter as a single string. |
| 3. $\$\$$ | C. PID of the last background job. |
| 4. $\$!$ | D. PID of the current shell. |
- (a) 1-B, 2-A, 3-D, 4-C (b) 1-A, 2-B, 3-C, 4-D
 (c) 1-B, 2-A, 3-C, 4-D (d) None of these
38. Match the following :
- | Expression | Significance |
|------------------------|---|
| 1. $ch+$ | A. Matches one or more occurrences of ch |
| 2. $ch?$ | B. Matches zero or more occurrences of ch |
| 3. $(lock ver) wood$ | C. Matches lockwood only |
| | D. Matches lockwood or verwood |
- (a) 1-B, 2-A, 3-C (b) 1-A, 2-B, 3-D (c) 1-B, 2-A, 3-C (d) None of these
39. A 32 KB cache and is 16 way set associative. How many bits are used for tag, assuming that the CPU provides 32 bit physical addresses and size of the cache block is 32 bytes ?
 (a) 12 (b) 19 (c) 21 (d) 22
40. Global positioning system is a _____ based tracking system that enables the determination of persons position.
 (a) Bluetooth (b) WAP (c) Satellite (d) Wi-fi
41. Analysis of large database to retrieve information is called ?
 (a) OLTP (b) OLAP (c) OLDP (d) OLPP
42. Given the lists :
- | List-I | List-II |
|-------------------------------------|---|
| 1. In TDMA, interference happens if | I. Senders transmit data at the same time. |
| 2. In FDMA, interference happens if | II. Senders transmit data using non orthogonal codes. |
| 3. In CDMA, interference happens if | III. Senders transmit data at the same frequency. |
- Codes :
 (a) 1-I, 2-III, 3-II (b) 1-II, 2-I, 3-III (c) 1-III, 2-II, 3-I (d) None of these
43. Main reasons for a handover in GSM are weak signal in cell and heavy cell load. GPRS needs the following part of typical GSM.
 (a) Does not need any part of GSM.
 (b) The packet switched core for data transmission.
 (c) The circuit switched core for localization and authentication.
 (d) None of the above.
44. For reproducing sound, a CD player uses a
 (a) quartz crystal (b) titanium needle (c) laser beam (d) barium titanate ceramics
45. Which control provides an interface to the TCP/IP suit protocols in windows 95 and windows NT ?
 (a) FTP active-X control (b) TCP/IP active-X control
 (c) Calinsock active-X control (d) HTML active-X control

46. Which one of the following statement is CORRECT ?
 (a) Primary keys \subset Super key \subset Candidate key
 (b) Candidate key \subset Super key \subset Primary key
 (c) Super key \subset Primary key \subset Candidate key
 (d) Primary key \subset Candidate key \subset Super key
47. Consider the given relation and functional dependencies R(ABC)
 FD = (AB \rightarrow C, C \rightarrow A)
 The relation is in which normal form ?
 (a) 1 NF (b) 2 NF (c) 3 NF (d) None of these
48. The following table is an instance of relation R(STUV) :

S	T	U	V
S ₁	T ₁	U ₁	V ₁
S ₂	T ₂	U ₂	V ₂
S ₁	T ₃	U ₃	V ₁
S ₃	T ₃	U ₄	V ₃
S ₄	T ₄	U ₅	V ₃

The set of functional dependencies which satisfy the above relation R is

- (a) {S \rightarrow TUV, TU \rightarrow V} (b) {U \rightarrow STV, ST \rightarrow UV, S \rightarrow V}
 (c) {V \rightarrow STV, SV \rightarrow T, T \rightarrow V} (d) {SV \rightarrow T, T \rightarrow V, ST \rightarrow U}
49. Construct a B⁺-tree for the following set of key values :
 (2, 3, 5, 7, 11, 17, 19, 23, 29, 31)
 Assume that the tree is initially empty and values are added in ascending order. Construct B⁺-tree for the cases where the number of pointers is 4 and tell which elements is root node of the tree ?
 (a) 19 (b) 29 (c) 11 (d) None of these
50. How many of the below statements is/are TRUE ?
 (S1) Checking conflict serializability is polynomial time problem.
 (S2) Every view serializable schedule is conflict serializable.
 (S3) View serializability is necessary but not sufficient condition for serializability.
 (S4) Conflict serializability is necessary and sufficient condition for serializability.
 (a) 1 (b) 2 (c) 3 (d) None of these
51. Which of the following schedules is conflict serializable ?
 (a) r₁(x), r₃(x), w₃(x), w₁(x), r₂(x) (b) r₃(x), r₂(x), r₁(x), w₃(x), w₁(x)
 (c) r₁(x), r₃(x), w₁(x), r₂(x), w₂(x) (d) None of these
52. Consider the relation R = ABCDEG and F = {AB \rightarrow C, AC \rightarrow B, AD \rightarrow E, B \rightarrow D, BC \rightarrow A, E \rightarrow G}, then the decomposition {ABC, ACDE, ADG} ?
 (a) is lossless and not dependency preserving. (b) is not lossless and dependency preserving.
 (c) is lossless and dependency preserving. (d) none of these.
53. The SQL expression :
 Select distinct T.branch_name from branch T, branch S where T.assets > S.assets and S.branch_city = "PONDICHERY" find the name of
 (a) all branches that have greater assets than any branch located in PONDICHERY.
 (b) all branches that have greater assets than all branch located in PONDICHERY.
 (c) The branch that has the greatest assets in PONDICHERY.
 (d) None of the above.

54. E-R modelling technique is a
 (a) top-down approach (b) bottom-up approach
 (c) left-right approach (d) None of these
55. If P and Q are predicates and P is the relational algebra expression, then which of the following equivalence are valid ?
 (a) $\sigma_P(\sigma_Q(e)) = \sigma_Q(\sigma_P(e))$ (b) $\sigma_P(\sigma_Q(e)) = \sigma_{P \cap Q}(e)$
 (c) $\sigma_Q(\sigma_P(e)) = \sigma_{\Sigma_{P \cap Q}}(e)$ (d) All of these
56. Which of the following statements is false?
 (a) Beam penetration methods uses only one gun while shadow mask approach uses 3 guns
 (b) Random scan display draws smooth and continuous lines
 (c) In DVST primary gun deposit the positive charge distribution on collector as the information of the image to be displayed on the screen.
 (d) Plasma panel devices are excellent as far as color reproduction, life expectancy and viewing angle is concern but they are fragile and uses lots of power
57. In bresenham's line drawing algorithm which the statement is false?
 (a) The initial decision parameter is $2\Delta Y - \Delta X$ if $m < 1$ otherwise it is $2\Delta X - Y$
 (b) If decision parameter is negative then next pixel to be illuminated is East pixel
 (c) If decision parameter is positive or zero then next pixel to be illuminated is North-East pixel
 (d) None of the above.
58. What is the equation of the straight line PQ where Q(3, 5, 8) and P(2, 4, 5)?
 (a) $x = 3-t, y = 5-t, z = 8-3t$ (b) $x = 3+t, y = 5+t, z = 8+3t$
 (c) $x = 2+t, y = 4+t, z = 5+3t$ (d) $z = 2-t, y = 4-t, z = 5-3t$
59. Which of the following is true for bezier curve?
 (a) m order bezier curve uses m + 1 control points
 (b) Bezier curve is invariant to affine transformations
 (c) Bezier curve completely lies inside the characteristics polygon
 (d) All of the above
60. Which of the following set of pixels to be illuminated if DDA algorithm is used to draw a line from (0, 0) to (6, 6)
 (a) (0, 0), (1, 1), (2, 2), (4, 4), (5, 5), (6, 6)
 (b) (0, 0), (1, 2), (3, 3), (4, 4), (5, 5), (6, 6)
 (c) (0, 0), (1, 1), (3, 2), (4, 4), (5, 5), (5, 6)
 (d) None of these
61. Find the information transfer when a binary symbol 0 and 1 are generated with the probability 1/4 and 3/4 respectively
 (a) 2.415 bits (b) 1.451 bits (c) 1.398 bits (d) 3.123 bits
62. A zero memory source generate 4 symbols $X = \{x_0, x_1, x_2, x_3\}$ with probability 1/2, 1/4, 1/8, 1/8 respectively. Then $H(X^2) = ?$
 (a) 10 bits per 2 symbol (b) 7 bit per 2 symbol
 (c) 9 bit per 2 symbol (d) None of the above

63. Which of the following sets of codewords could be the Huffman code for some 4 symbol for source alphabet?
 (a) 01, 10, 00, 111 (b) 0, 10, 110, 111 (c) 1, 01, 10, 001 (d) None of these
64. Which of the following statements is always true?
 (a) If $H(X - Y) = H(X) - H(Y)$ then X and Y is independent
 (b) If $H(X - Y) = 0$ then X and Y is independent
 (c) If the mutual information $I(X; Y)$ is zero then X and Y are independent
 (d) If $H(X, Y) = 0$ then X and Y are independent
65. Consider a systematic (8, 4) LBC with parity bits

$$p_1 = m_1 + m_2 + m_3$$

$$p_2 = m_0 + m_1 + m_2$$

$$p_3 = m_0 + m_1 + m_3$$

$$p_4 = m_0 + m_2 + m_3$$
 What is the codeword for 1011?
 (a) 10110001 (b) 10110011 (c) 10110111 (d) None of these
66. Consider the following Assembly language program
 MVI A, 30 H
 ACI, 30 H
 XRA A
 POP H
 After the execution of the above program, the contents of the accumulator will be
 (a) 30 H (b) 60 H (c) 00 H (d) contents of stack
67. Which of the following need not necessarily be saved on a context switch between processes ?
 (a) General purpose registers (b) Translation lookaside buffer
 (c) Program counter (d) All of these
68. Which of the following Flag conditions are not available in 8085 processor?
 (a) zero flag (b) parity flag (c) overflow flag (d) auxiliary carry flag
69. The number of output pins of a 8085 microprocessor are
 (a) 40 (b) 27 (c) 21 (d) 19
70. Which signal of 8085 microprocessor is used to insert wait states?
 (a) READDY (b) ALE (c) HOLD (d) INTR

Space for rough work





UGC-NET COMPUTER SCIENCE & APPLICATIONS

Test Series- C

Date: 26-11-2018

ANSWER KEY

PAPER – I

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

PAPER – II

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

