TEST SERIES UGC-NET/JRF JULY 2018

BOOKLET SERIES B

Paper Code 87

Test Type: TEST SERIES

COMPUTER SCIENCE & APPLICATIONS

Duration: 02:00 Hours

Date: 20-06-2018

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.

PAPER – I

1. Which set of statements best describes the process of adjustment in the context of education ? Select the code for giving your answer :
   (i) Adjustment is the outcome of the individual's efforts to deal with stress.
   (ii) Adjustment is directed at changing others.
   (iii) For defining adjustment the reciprocal influence between a person and his/her social group has to be emphasized.
   (iv) Adjustment is a continuous process of satisfying one's needs.
   (v) Adjustment is a kind of mentoring.
   (vi) In adjustment both individual and his/her environment undergo a change.
   Codes :
   (a) (i), (iii), (iv) and (vi)   (b) (i), (ii), (iii) and (iv)
   (c) (ii), (iii), (iv) and (v)   (d) (iii), (iv), (v) and (vi)

2. Which of the following is true for intelligence and creativity?
   (a) All intelligent children are creative.
   (b) All creative children have high IQ.
   (c) Some creative children have high IQ.
   (d) Some creative children have low IQ.

3. Use of a non-parametric test like the chi-square, which of the following assumptions has to be satisfied ?
   (a) The data should arise from interval measures.
   (b) The distribution has to be normal.
   (c) No assumption about the nature of distribution is required.
   (d) The variables under reference must be dichotomous.

4. Which one of the following themes may be appropriate for areas of Action Research in the field of teacher education ? Select the correct code to indicate your answer :
   (i) Improving teaching skills of student teacher.
   (ii) Identifying suitable criteria for admissions.
   (iii) Modification of teaching behaviour of trainees.
   (iv) Revisiting teacher education curriculum.
   (v) Enhancing professional competencies of both trainees and teacher educators.
   (vi) Preparing teachers for special schools
   Codes :
   (a) (i), (iii) and (v)   (b) (ii), (iv) and (vi)   (c) (i), (ii) and (iii)   (d) (ii), (iii) and (iv)

5. The process of focussing on some details is called
   (a) abstracting   (b) inferring   (c) choosing   (d) deciphering

6. Noise is not a problem at which stage of the communication process?
   (a) source.   (b) receiver.   (c) decoding.   (d) none of the above

7. Consider the following statements about National Green Tribunal (NGT):
   (1) It is a specialized body equipped with the necessary expertise to handle environmental disputes involving multi-disciplinary issues
   (2) It shall be guided by principles of natural justice and not by Code of Civil Procedure 1908
   (3) The Tribunal is mandated to make an endeavour for disposal of applications or appeals finally within 6 months of filing the same
   Select the correct answer using the code given below:
   (a) 1 only   (b) 1 and 2   (c) 2 and 3   (d) 1, 2 and 3

8. Which of the following policy initiatives/schemes started by the government is/are aimed at doubling farmers income by 2022:
   1. SAMPADA
   2. National agriculture market
   3. Annapurna Scheme
   4. Soil health card scheme
   Choose the correct answer from the following code:
   (a) 1, 2 and 3 only   (b) 1 and 3 Only   (c) 2,3 and4 Only   (d) 1,2 and 4 Only

9. Consider the following statements regarding the features of Cabinet Committees mentioned in the Indian Constitution:
   (I) The Cabinet Committees are not mentioned in the Indian Constitution but such committees are extra-constitutional in emergence.
   (II) The ad hoc committees are constituted from time to time to deal with special problems. They are disbanded after their task is completed.
   (III) Such Committees are set up by the Lok Sabha speaker according to the exigencies of the time aid requirements of the situation.
   Which of the following statement(s) is/are correct?
   (a) Only I   (b) Only II and III   (c) Only I and II   (d) All of the above

10. Which of the following statements is true with respect to 42nd Constitutional Amendment Act?
    (1) Fundamental Duties were incorporated into the Constitution of India by the 42nd Constitutional Amendment Act, 1976
    (2) Ten Fundamental Duties were included by this Amendment
    (3) The 11th Fundamental Duty was incorporated by the 86th Constitutional Amendment Act, 2002
    Select the correct answer using the code given below.
    (a) 1 and 2 only   (b) 1 and 3 only   (c) 2 and 3 only   (d) 1, 2 and 3

Data Intrepretation :

Study the following table carefully and answer the questions below it :

During the year 1994-1999 the number of presented and passed candidate from six states.

State	A		B		C		D		E		F	
Year	Presented	Passed	Presented	Passed	Presented	Passed	Presented	Passed	Presented	Passed	Presented	Passed
1994	1200	105	1400	125	1650	140	1450	180	1700	185	1800	165
1995	1450	110	1250	130	1500	125	1600	145	1850	170	1650	170
1996	1100	120	1300	115	1400	150	1250	120	1400	160	1550	140
1997	1350	125	1100	120	1550	145	1300	140	1550	155	1700	155
1998	1400	135	1550	105	1750	155	1400	155	1650	175	1750	160
1999	1500	140	1450	110	1700	130	1500	165	1500	165	1600	175

11. What is the approximate percentage of the passed candidates jointly from all six states to the presented candidates in the year 1994 ?
    (a) 15   (b) 10   (c) 12   (d) 14

12. Which one of the following states has maximum percentage of the passed candidates to the presented candidates in 1996 ?
    (a) B   (b) D   (c) C   (d) E

13. What is the percentage of passed candidates jointly from the states 'C' in the year 1995 and 1998 to the presented candidates jointly from the state 'B' in the year 1994 and 1997 ?
    (a) 12.5   (b) 10.8   (c) 12.4   (d) None of these

14. What is the approximate average number of passed candidates from state D in the given years ?
    (a) 148   (b) 158   (c) 142   (d) 154

15. Which one of the following years has least percentage of passed candidates of passed candidates to the presented candidates to F from the state F ?
    (a) 1998   (b) 1997   (c) 1996   (d) 1994

16. Complete the series : 0, 6, 24, 60, 120, 210, ... ?
    (a) 336   (b) 340   (c) 342   (d) 335

17. Maria walked 30 m towards North. She turned right and walked 40 m. She then turned right and walked 45m. She turned left and walked 25 m. She again turned left and walked 15 m. How far she is from starting point ?
    (a) 55 m   (b) 65 m   (c) 30 m   (d) 45 m

18. Pointing to a photograph Lata says "He is the son of the only son of my grandmother". How is man in the photograph related to Lata ?
    (a) Brother   (b) Uncle   (c) Cousin   (d) Data inadequate

19. In a certain code, MONKEY is written as XDJMNL. How is TIGER written in that code ?
    (a) QDFHS   (b) SDFHS   (c) SHFDQ   (d) UJHFS

20. Complete the series : SCD, TEF, UGH, _____, WKL
    (a) CMN   (b) UJI   (c) VIJ   (d) IJT

PAPER – II

21. The count-to-infinity problem is associated with
    (a) Flooding algorithm   (b) Hierarchical routing algorithm
    (c) Distance vector routing algorithm   (d) Link state routing algorithm

22. If a host X has IP address 11.110.2.112 and host Y has IP address 11.110.2.92 and both hosts use the same netmask Z. Which of the network mask Z given below can used if both hots are in the same network
    (a) 255.255.255.224   (b) 255.255.255.252   (c) 255.255.255.192   (d) 255.255.255.128

23. Identify the true statements
    (a) Service provided by TCP is reliable
    (b) Service provided by IP is unreliable
    (c) Pocket processing delay is different at different routers.
    (d) All of the above

24. How many subnets and hosts per subnet can you get from the network 130.20.0.0 and 255.255.254.0?
    (a) 128 subnets and 510 hosts   (b) 126 subnets and 512 hosts
    (c) 128 subnets and 512 hosts   (d) None of the above

25. Which of the following are not true?
    (I) Only gatway can be used to connect different protocol network
    (II) Gateway occurs at all layers
    (III) Bridge and switch sometimes occurs in network layer also
    (IV) Repeater occur at both physical layer and data link layer
    (a) Only I and IV   (b) Only II, III and IV   (c) Only III and IV   (d) Only I, II and III

26. The service like flow control error detection and error correction is given by which of the following
    (a) Data link layer   (b) Medium Access control
    (c) Data link control   (d) All of the above

27. In an IPV4 datagram, the value of HLEN is 10. The value of total length is 400 and the fragment offset value is 200. What is the sequence number of the first byte and the last byte of the payload?
    (a) 200 and 489   (b) 2400 and 2689   (c) 1600 and 1659   (d) 1600 and 1689

28. Scrambling or encoding data for transmission into a network is called as
   (a) Protection   (b) Encryption   (c) Detection   (d) Decryption

29. Which of the following commands is used to identify the type of file by context?
   (a) ls   (b) cat   (c) file   (d) more

30. The .(dot) shell command
   (a) Can take command line argument
   (b) Will fork a child shell to execute the named shell script
   (c) Can be used to change the environment of the current shell
   (d) All of the above

31. Which command is used to change protection mode of files starting with the string xyz and ending with an alphabet?
   (a) chmod u + x   xyz*   (b) chmod ugo + x   xyz?
   (c) chmod 222   xyz [a–z]   (d) chmod 777 xyz 12 a-z

32. Which among the following operator can not be overloaded in C++?
   (a) +   (b) =   (c) ::   (d) All of the above

33. Which of the following is true about pure virtual function?
   (1) Their implementation is not provided in a class where they are declared
   (2) If a class has a pure virtual function, then the class becomes abstract class and an instance of this class can not be created.
   (a) Both 1 and 2   (b) Only 1   (c) Only 2   (d) Neither 1 nor 2

34. What is the output of following program
```
#include < isostream>
using name_space std;
int main ( )
{
        try
                { try { throw 20;
                } catch (int, n)
                        { cout <<"inner catch";
                                throw;
                        }
                } catch (int x)
                        {cout <<"outer catch";
                        }
        } return 0;
```

   (a) outer catch   (b) inner catch   (c) inner catch, outer catch   (d) compiler error

35. Which among the following is incorrect
   (a) In unix, there is no end of the file character
   (b) In unix, there is no concept of file extension
   (c) The resultant of command mv abc xyz, assigns different inode number to xyz file other than inode number of abc file.
   (d) The resultant of cp abc xyz, assigns different inode number to xyz file other than inode number of abc file.

36. The third set of the three permissions (r– –) indicator that
    (a) group has read permission only   (b) Owner has read permission only
    (c) Other has read permission only   (d) Other has write permission only

37. Which of there have highest precedence in form?
    (a) ( )   (b) + +   (c) *   (d) > >

38. What involves immediately after the start method and also any time the applet needs to repaint itself in the brouser?
    (a) stop( )   (b) init( )   (c) paint( )   (d) destroy()

39. The web standard allows programmers on many different computers platform to dispersed format and display the information server. There programms are called
    (a) HTML   (b) Internet explorer   (c) Web browsers   (d) None of the above

40. What is the default return type if it is not specified in function definition
    (a) void   (b) int   (c) double   (d) short int

41. Which of the following file name can not be displayed of ls*command is run?
    (a) .abc   (b) ?abc   (c) *aaa   (d) all of the above

42. The number of errors in the following shell script:
    echo what is your name?
    read answer
    (a) 0   (b) 1   (c) 2   (d) 3

43. File a.cpp has 10 lines of code. The command date | tee abc | sort a.cpp | wc–*l*, displays
    (a) 10   (b) 11   (c) 0   (d) an error message

44. What is the output of following program
```
#include <iostream>
using namespace std;
Class Base1 {
Public : Base1 ( )
        { cout <<"Base 1's constructor";
        }
};
Class Base2 {
Public : Base2 ( )
        { cout <<"Base 2s constructor";
        }
};
Class Derived : Public Base1, Public Base2
{
        Public : Derived ( )
                { cout <<"Derived constructor";}
};
int main()
{
        Derived d;
        return 0;
}
```

(a) Compiler dependent

(b) Base 1's constructer, Base 2's constructer, Derived constructer

(c) Base 2's constructer, Base 1's constructer, Derived constructor

(d) Compilation error

45. Which of the following are not considered as part of I/O interface which connects bus and I/O device?

(I) Address decoder   (II) Control circuitry   (III) Data and status register

(a) Only I and III   (b) Only II and III   (c) I, II and III   (d) none of these

46. Computer uses addressing mode technique for

(a) giving program versatility to user by providing facilities as a pointer to memory counters for loop control

(b) reducing number of bits in the field of instruction

(c) specifying rules for modifying or interpreting address field of the instruction

(d) All of above

47. Consider the following statements

S_1 : The RISC processor has CPI always 1

S_2 : In vertical instruction control signal are always in Encoded form

S_3 : In horizontal instruction control signal are always in decoded form

S_4 : In terms of speed vertical instruction is slower than horizontal instruction

Which of the above statement are true

(a) Only S_1 and S_2 (b) Only S_1, S_2, S_3 (c) Only S_2, S_3, S_4 (d) S_1, S_2, S_3, S_4

48. A 2 way set associative cache is 256 k bytes in size. What is the number of sets if block size in 16 bytes?

(a) 4096   (b) 8192   (c) 1024   (d) 16, 384

49. A CPU has 30 bit memory address and 512 kbyte cache organised into 8-way set associative cache and block size is 32 bytes. What is the number of sits required in TAG for comparator matching?

(a) 16   (b) 11   (c) 17   (d) 14

50. How many cycles are required for a 100 MHz processor to execute a program which requires 5 seconds of CPU time?

(a) 10^9 cycles   (b) 50×10^7 cycles   (c) 10^8 cycles   (d) 50 cycles

51. Find the initial solution to the transportation problem using North-West corner method.

Distribution Centre

		1	2	3	4	Supply
	1	2	3	11	7	6
Plants	2	1	0	6	1	1
	3	5	8	15	9	10
Requirement		7	5	3	2	

(a) 11500   (b) 11600   (c) 11700   (d) 11800

52. Degeneracy in transportation problem arises due to :

(i) Number of positive allocations = m + n − 1.

(ii) Number of positive allocations is less than m + n − 1.

(iii) The allocations are at independent positions.

(iv) The allocations form a cycle with first cell choosen to be highest positive allocation.

Codes :

(a) (i) and (ii)   (b) (ii) and (iii)   (c) (i) and (iv)   (d) (ii) and (iv)

53. The solution to the following LP problem :

Max $\quad z = 3x_1 + 9x_2$

subject to

(i) $\quad x_1 + 4x_2 \leq 8$ $\qquad$ (ii) $\quad x_1 + 2x_2 \leq 4$

$\quad x_1\, x_2 \geq 0$

Using simplex method is :

(a) $x_1 = 0,\ x_2 = 2,\ z = 18$ $\qquad\qquad$ (b) $x_1 = 1,\ x_2 = 3,\ z = 20$

(c) $x_1 = 0,\ x_2 = 4,\ z = 16$ $\qquad\qquad$ (d) $x_1 = 2,\ x_2 = 3,\ z = 15$

54. For the following assignment problem, find the minimum hours required by workers to complete the job.

Job	A	B	C	D
1	10	20	18	14
2	15	25	9	25
3	30	19	17	12
4	19	24	20	10

(a) 46 $\qquad$ (b) 48 $\qquad$ (c) 50 $\qquad$ (d) 52

55. The initial basic solution using vogel approximation method (VAM) for the following transportation problem is

	B_1	B_2	B_3	B_4	Stock
A_1	2	3	5	1	8
A_2	7	3	4	6	10
A_3	4	1	7	2	20
Requirement	6	8	9	15	

(a) 88 $\qquad$ (b) 90 $\qquad$ (c) 91 $\qquad$ (d) 92

56. Max $\qquad\qquad 4x_1 + 3x_2$

$\qquad x_1 + 4x_2 \leq 3$

$\qquad 3x_1 + x_2 \geq 12$

$\qquad x_1\, x_2 \geq 0$

The above solution is :

(a) Optimal $\qquad$ (b) Degenerate $\qquad$ (c) Unbounded $\qquad$ (d) Infeasible

57. If in a simple algorithm the entering variable is found, but there is no leaving variable. It indicates

(a) Unbounded $\qquad$ (b) Optimum $\qquad$ (c) Infeasible $\qquad$ (d) Alternate optimum

58. If the primal is optimal, then its dual problem will be

(a) Optimal $\qquad$ (b) Infeasible $\qquad$ (c) Unbounded $\qquad$ (d) Degenerate

59. Which of the following statement is false

(a) Deterministic context free languages are not closed with respect to union operation

(b) Halting problem is undecidable

(c) Recursive enumberable languages are closed under complement operations

(d) None of the above

60. Number of 8 length binary string which either starts with 1 OR ends with 101

(a) 160 $\qquad$ (b) 144 $\qquad$ (c) 256 $\qquad$ (d) none of the above

61. Minimum number of state in DFA accepting the following language?

$$L = \left\{ \omega 101101 \mid \omega \in \{0,1\}^* \right\}$$

(a) 6   (b) 7   (c) 128   (d) None of the above

62. Which of the following language is/are regular

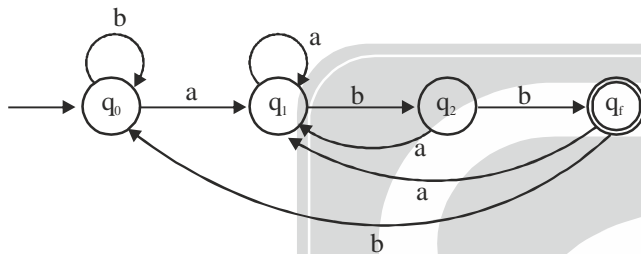$$L_1 = \left\{ \omega x \omega^R \mid \omega \in \{0,1\}^*, x \in \{0,1\}^* \right\}$$

$$L_2 = \left\{ uwv \mid \omega \in \{0,1\}^*, u,v \in \{0,1\}^*, |u| = |v| = 3 \right\}$$

$$L_3 = \left\{ a^n b^n c^n \mid n \leq 100 \right\}$$

$$L_4 = \left\{ \omega \omega^R \mid \omega \in \{0,1\}^* \right\}$$

(a) L_1, L_2, L_3 only   (b) L_2, L_3, L_4 only   (c) L_1, L_2, L_3, L_4 (d) None of the above

63. Consider the following finite automata

Number of equivalence classes for the language accepted by aboe DFD
(a) 2   (b) 3   (c) 4   (d) 5

64. Which of the following language is C.S.L. but not C.F.L.?

(a) $L_1 = \left\{ a^n b^n c^n \mid n \geq 0 \right\}$ (b) $L_2 = \left\{ \omega \in \{a,b,c\}^* \mid N_a(\omega) = N_b(\omega) = N_c(\omega) \right\}$

(c) $L_3 = \left\{ \omega \omega \mid \omega \in \{a,b\}^* \right\}$ (d) All of the above

65. Which of the following is undecidable?
(a) Membership problem for C.F.L.   (b) Post corresponce problem
(c) State entry problem   (d) Both (b) and (c)

66. Which of the following grammar is ambiguous

(a) $S \rightarrow SS \mid a$ (b) $S \rightarrow S + S \mid a$ (c) $S \rightarrow S * S \mid S + S \mid a$ (d) all of the above

67. Top down parsing suffers from which of the problems?
(a) Backtracking   (b) Left recursion
(c) Ambiguity and non-determinism   (a) All of the above

68. Number of tokens in the following program:
```
void foo(int n)
        { if (n%2 = = 0)
            printf("Even Number");
            else
             printf("Odd Number");
}
```
(a) 26   (b) 27   (c) 28   (d) None of the above

69. Which of the following grammar is LL(1)

(a) $S \to SS \mid a$

(b) $S \to A \mid ab$

$A \to ab$

(c) $S \to CC$

$C \to aC$

$C \to d$

(d) $S \to aSb \mid bSa \mid SS \mid \lambda$

70. Which of the following statement is TRUE.
(a) Every regular grammar is LL(1)
(b) If the grammar is right recursive then it is LL(1)
(c) If the grammar is LL(1) then it is LR(1)
(d) No ambiguous grammar can be parsed by bottom up parser

Space for rough work

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UGC-NET COMPUTER SCIENCE & APPLICATIONS

Test Series- B

Date: 20-06-2018

ANSWER KEY

PAPER – I

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

PAPER – II

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