TEST SERIES UGC-NET/JRF JULY 2018

BOOKLET SERIES C

Paper Code 87

Test Type: *TEST SERIES*

COMPUTER SCIENCE & APPLICATIONS

Duration: 02:00 Hours

Date: 25-06-2018
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.

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PAPER – I

1. The rules of presenting the contents to make them easy are called
   (a) Method of teaching
   (b) Maxims of teaching
   (c) Techniques of teaching
   (d) Teaching strategies

2. The essential characteristic of cooperative learning is
   (a) Effective learning
   (b) Positive interdependence
   (c) Cooperation
   (d) Division of labour

3. The idea that when selecting between two different theories with equal explanatory value, one should select the theory that is the most simple, concise, and succinct is known as _____.
   (a) criterion of falsifiability
   (b) critical theory
   (c) guide of simplicity
   (d) rule of parsimony

4. Qualitative research is often exploratory and has all of the following characteristics except:
   (a) it is typically used when a great deal is already known about the topic of interest
   (b) it relies on the collection of nonnumerical data such as words and pictures
   (c) it is used to generate hypotheses and develop theory about phenomena in the world
   (d) it uses the inductive scientific method

5. Which of the following is not related to sender?
   (a) prosody
   (b) Sensitivity
   (c) Appearance
   (d) Fillers

6. Media literacy means the ability to
   (a) read and write
   (b) create professional media
   (c) understand and use media
   (d) prepare for a career in media

7. Which of the following states is most affected by flood in india?
   (a) Assom
   (b) Bihar
   (c) UP
   (d) Gujarat

8. Which of the following is the negative impact of food chain?
   (a) Bio-magnification
   (b) Exchange of matter
   (c) Transfer of energy
   (d) maintenance of ecosystem balance

9. In which of the following case/s the six rights guaranteed by article 19 can be suspended?
   (1) External Aggression.
   (2) Internal Emergency.
   (3) When Martial Law is in force.
   (a) 1 only
   (b) 2 & 3 only
   (c) 1 & 3 only
   (d) 1, 2 & 3

10. The Representatives of states & UT in the Rajya Sabha are elected by:
    (1) The members of the State Legislative Assembly only.
    (2) The elected members of the State Legislative Assembly only.
    (3) The system of proportional representation by single transferrable vote.
    (4) The system of proportional representation by List.
    (a) 1 & 3
    (b) 1 & 4
    (c) 2 & 3
    (d) 2 & 4

11. At what time are the hands of a clock together between 6 and 27 ?
    (a) $32\dfrac{8}{11}$ min
    (b) $34\dfrac{8}{11}$ min
    (c) $30\dfrac{8}{11}$ min
    (d) $32\dfrac{5}{7}$ min

12. If January 1st, 2007 is Monday, what was the day on 1st January 1995 ?
    (a) Sunday
    (b) Monday
    (c) Friday
    (d) Saturday

13. Which of the following terms shows the relationship between two propositions having the same subject but differing in both equality and quantity ?
    (a) Contrary opposition
    (b) Contradictory opposition
    (c) Sub alternation
    (d) Sub contrary

14. Statments : All players are spectators.
    Some spectators are theatres.
    Some theatres are dramas.
    Conclusions : I. Some dramas are spectators.
    II. Some players are dramas.
    III. Some theatres are players.
    IV. All spectators are players.

    Code :
    (a) Only I and III follows
    (b) Only II follows
    (c) Only II and IV follows
    (d) None follows

15. Which of the following are non-variable memories ?
    (1) ROM   (2) Flash memory   (3) F-RAM
    (4) D-RAM   (5) EVM's (Electronic Voting Machines)
    Choose the correct options :
    (a) (1) only
    (b) (1), (2) and (5) only
    (c) (1), (2), (4) and (5) only
    (d) (1), (2), (3) and (5) only

16. Who among the following are the founder of social networking site : "Twitter" ?
    (a) Chris Hughes, Dustin Moskovitz, Eduardo saverin, Mark zuckerberg.
    (b) Larry page, Sergly brin.
    (c) Biz stone, Evan williams, Noah glass, Jack dorsey.
    (d) Jawed karim, Chad hurley, Steve chen.

    Directions (Q. 17 and Q. 18) ; Study the following table carefully to answer the questions that follow. Amount earned (in lacs) by five persons in six different years.

Year	Person				
	A	B	C	D	E
2005	2.24	4.33	5.64	3.73	1.69
2006	1.44	3.34	6.93	5.52	5.52
2007	4.63	2.79	7.52	5.68	4.28
2008	6.65	6.63	5.83	6.74	6.83
2009	5.34	4.5	5.94	8.42	5.53
2010	7.38	5.36	7.84	9.45	9.94

17. What was the average of the earning of Person-B in the year 2006, that of person C in the year 2008 and that of E in the year 2005 together ?
    (a) 3.62 lac   (b) 2.64 lac   (c) 3.64 lac   (d) 10.86 lac

18. Total amount earned by Person-A in the year 2006 and Person-C in the year 2010 together was approximately, what per cent of the amount earned by Person-E in the year 2009 ?
    (a) 151   (b) 155   (c) 168   (d) 174

    Read the following passage carefully answer the questions from Q. 19 and Q. 20.
    There is no general agreement about how the planets were formed. The most widely accepted theory is that about 5000 million years ago swirling clouds of matter began to condense.

    Through the action of centrifugal force, the heavier molecules were concentrated near the centre of the eddies, and the lighter, gaseous material was thrown out towards the priphery. Such is the theory. What is known is that nine satellites began orbiting round the sun. These are the planets. The planet on which man lives is the third closest to the sun, with the third shortest orbit. It also has been something none of the others has - an atmosphere that can support life in all the manifold forms exist on our planet. There may be satellites circling other stars in other parts of the universe that have the right ingredients for some sort of life to evolve, but the earth is the only one in the solar system.

19. According to the passage, the planets are
    (a) nothing but condensed clouds
    (b) a collection of gaseous material
    (c) a collection of condensed swirling material
    (d) a collection of centrifugal forces

20. The writer claims that the life-supporting atmosphere
    (a) is there on other planets in the solar system.
    (b) may be there on other satellites in the universe.
    (c) may evolve on other satellites circling other stars in the universe.
   (d) cannot evolve anywhere outside the earth.

PAPER – II

21. Find the highest normal form and number of candidate key of the relation R(A, B, C, D) that holds the following functional dependencies $\{A \rightarrow D, B \rightarrow A, AC \rightarrow BE\}$
    (a) 1 NF, 2
    (b) 1 NF, 4
    (c) 2 NF, 2
    (d) 3 NF, 3

22. Consider the following schedule :

    $r_1(A), r_2(A), r_3(B), w_2(A), r_4(C), r_3(B), r_1(B), r_2(B), w_1(C), w_4(A)$.

    The above schedule is

    (a) serialized as T_1, T_2, T_3, T_4
    (b) serialized as T_1, T_3, T_2, T_4

    (c) serialized as T_2, T_1, T_3, T_4
    (d) Not serializable

23. Given a block can hold either 4 records or 12 key pointers. A database contains n records, then how many blocks do we need to hold the data file and the dense index.
    (a) n/3
    (b) 13n/30
    (c) n/12
    (d) n/48

24. Which of the following statement is TRUE ?
    (a) A weak entity set may exist without participation in any relationship.
    (b) A weak entity set should participate in relationship with another weak entity set.
    (c) A weak entity set should participate in relationship with atleast one strong entity set.
    (d) None of the above.

25. If every functional dependency in set E is also in closure of F then this is classified as :
    (a) F covered by E
    (b) E covered by F
    (c) F^+ covered by E
    (d) None of these

26. Consider a B^+ tree in which the maximum number of keys in a node is 13. What is the minimum number of keys in any non-root node ?
    (a) 3
    (b) 4
    (c) 6
    (d) 7

27. A view of a database that appear to an application program is known as
    (a) schema
    (b) subschema
    (c) virtual table
    (d) None of these

28. If $A_1, A_2, A_3, ... A_n$ are the domain of relational model, then the relation is a table which is subset of
    (a) $A_1 \times A_2 \times A_3 \times A_4 ..... A_n$
    (b) $A_1 \cup A_2 \cup A_3 \cup ..... A_n$
    (c) $A_1 \cap A_2 \cap A_3 \cap ..... A_n$
    (d) All of these

29. Consider the following functional dependencies of a relation R(A, B, C, D, E)
    $$AB \rightarrow CDE; \quad C \rightarrow B$$
    The functional dependenices are in which normal form ?
    (a) First normal form
    (b) Second normal form
    (c) Third normal form but not in BCNF
    (d) Third normal form and BCNF

30. When number of entities are bought together into one entity based on their similar characteristics, what is the process called
    (a) generalization   (b) specialization   (c) inheritance   (d) abstraction

31. This type of agent resides inside a data warehouse in an attempt to discover changes in business trends.
    (a) semiautonomous agent   (b) cooperative agent
    (c) data mining agent   (d) filtering agent

32. Which of the following best differentiates between a data mining approach to problem-solving and an expert systems approach?
    (a) The output of an expert system is a set of rules and the output of a data mining technique is a decision tree.
    (b) A data mining technique builds a model without the aid of a human expert whereas an expert system is built from the knowledge provided by one or more human experts.
    (c) A model built using a data mining technique can explain how decisions are made but an expert system cannot.
    (d) An expert system is built using inductive learning whereas a data mining model is built using one or several deductive techniques.

33. Data mining techniques and intelligent agents are similar in that they
    (a) are both used for hypotheses testing.   (b) both have the ability to learn.
    (c) are goal directed.   (d) both build models from data.

34. What is the frequency band allocated for the downlink in GSM?
    (a) 960 - 985 MHz   (b) 935 - 960 MHz
    (c) 920 - 945 MHz   (d) None

35. What is an INT file in Windows 95?
    (a) a program file   (b) a message file
    (c) a text file   (d) None

36. Which technique used by Link analysis operation in data mining uses?
    (a) Classification   (b) Association discovery
    (c) Visualisation   (d) None

37. What is maximum size of SMS in IS-95 in octets?
    (a) 120   (b) 95   (c) 128   (d) None

38. What is the condition of strong α-cut function
    (I) $A^{\alpha+} = \{x_i : \mu_A(x_i) > \alpha\}$ (II) $A^{\alpha+} = \{x_i : \mu_A(x_i) < \alpha\}$
    (a) I only   (b) II only   (c) both (I) and (II)   (d) none of these

39. Let us assume we implement an AND function to a single neuron. Below is a tabular representation of an AND function:

X_1	X_2	X_1 AND X_2
0	0	0
0	1	0
1	0	0
1	1	1

The activation function of our neuron is denoted as:

$$f(x) = \begin{cases} 0, & \text{for } x < 0 \\ 1, & \text{for } x \geq 0 \end{cases}$$
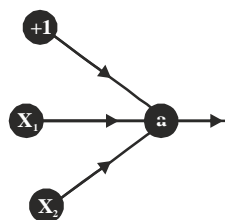
What would be the weights and bias?
(a) Bias = -1.5, $w_1 = 1$, $w_2 = 1$
(b) Bias = 1.5, $w_1 = 2$, $w_2 = 2$
(c) Bias = 1, $w_1 = 1.5$, $w_2 = 1.5$
(d) None of these

40. In a neural network, knowing the weight and bias of each neuron is the most important step. If you can somehow get the correct value of weight and bias for each neuron, you can approximate any function. What would be the best way to approach this?
(a) Assign random values and pray to God they are correct
(b) Search every possible combination of weights and biases till you get the best value
(c) Iteratively check that after assigning a value how far you are from the best values, and slightly change the assigned values values to make them better
(d) None of these

41. What are the steps for using a gradient descent algorithm?
(1) Calculate error between the actual value and the predicted value
(2) Reiterate until you find the best weights of network
(3) Pass an input through the network and get values from output layer
(4) Initialize random weight and bias
(5) Go to each neurons which contributes to the error and change its respective values to reduce the error
(a) 1, 2, 3, 4, 5　　(b) 5, 4, 3, 2, 1　　(c) 3, 2, 1, 5, 4　　(d) 4, 3, 1, 5, 2

42. A neural network model is said to be inspired from the human brain. The neural network consists of many neurons, each neuron takes an input, processes it and gives an output. Here's a diagrammatic representation of a real neuron.
Which of the following statement(s) correctly represents a real neuron?
(a) A neuron has a single input and a single output only
(b) A neuron has multiple inputs but a single output only
(c) A neuron has a single input but multiple outputs
(d) All of the above statements are valid

43. How is Fuzzy Logic different from conventional control methods?
(a) IF and THEN Approach　　(b) FOR Approach
(c) WHILE Approach　　(d) DO Approach

44. Membership function defines the fuzziness in a fuzzy set irrespective of the elements in the set, which are discrete or continuous.
(a) True　　(b) False　　(c) Can not Say　　(d) None of these

45. The membership functions are generally represented in
(a) Tabular Form　　(b) Graphical Form
(c) Mathematical Form　　(d) Logical Form

46. Number of frames used in a 5 minute animation film?
(a) 7200　　(b) 7500　　(c) 300　　(d) 120

47. Which of the following statement is/are true?
(1) RGB color model is additive while CMY color model is subtractive color model.
(2) In HSV color model if value of V is 0 then Hue is black and if the value of V is 1 then hue is white.
(3) Dithering is a way of approximating the halftoning by using dither matrix
(4) In HLS color model the complementary colors are 180 degree apart
(a) 1, 2 only　　(b) 1, 3, 4 only　　(c) 2, 4 only　　(d) 1, 2, 3, 4

48. Which of the following is true regarding Bezier curve?
   (a) Bezier curve is invariant to the translation and rotation
   (b) Bezier curve lies completely inside the characteristic polygon
   (c) If we reverse the order of the control points in bezier curve the bezier curve remain same
   (d) All of the above

49. Find the one point perspective projection of a point P(2, 5, 3) on plane Z = –1 if the centre of projection is at (0, 0, –8)

   (a) $\left(\dfrac{14}{13}, \dfrac{35}{13}, -1\right)$ (b) $\left(\dfrac{14}{15}, \dfrac{35}{17}, -1\right)$ (c) $\left(\dfrac{4}{11}, \dfrac{3}{11}, -1\right)$ (d) $\left(\dfrac{14}{11}, \dfrac{35}{11}, -1\right)$

50. Which of the following statement is false?
   (a) Isometric projection is parallel axenometric projection in which projector line makes equal angles with the principle axis and the foreshortening factor in all the directions are equal
   (b) In cavalier projection the line perpendicular the POP is projected with the same length
   (c) In perspective projection the COP is at finite distance from POP
   (d) None of the above

51. Which of the following is not a Polygon filling method?
   (a) Scan line method   (b) Fence fill algorithm
   (c) Winding number method   (d) Boundry fill algorithm

52. Which of the following statement is not true regarding hidden surface removal algorithm?
   (a) Z buffer uses depth buffer to store the depth values and frame buffer to store the intensity information of an object
   (b) Ray tracing method is used for hidden surface removal in flat and curved surfaces
   (c) Area subdivision method draw the surfaces in back to front manner
   (d) For every Y-scan and for every X-scan, the surfaces are checked in scan line hidden surface removal algorithm

53. In Liyang Barsky algorithm if $p_i = 0$ and corresponding q_i is negative then the line under consideration is
   (a) Outside the window
   (b) Inside the window
   (c) Partially inside and partially outside the window
   (d) None of the above

54. What is the equation of the straight line in 3D passing through the ponit P(2, 5, 8) having the direction vector (1, 3, 2)?
   (a) x = 2 + t; y = 3 + 5t ; z = 2 + 8t   (b) x = 2 + t; y = 5 +3t; z = 8 + 2t
   (c) x = 2 + t; y = 3 + 5t; z = 8 + 2t   (d) x = 2–t; y = 5–2t; z = 8–6t

55. An instruction on an average takes 33.33 μsec for its execution. If the refresh rate is 30 fps. What is the maximum number of instruction in the display program?
   (a) 100   (b) 1000   (c) 10000   (d) 500

56. Which of the following is not a part of expert system?
   (a) Inference engine   (b) Working memory   (c) Knowledge base   (d) Mechanism engine

57. Which of the following primitive action is not used in conceptual dependency?
   (a) PTRANS   (b) SPEAK   (c) INSPECT   (d) PROPEL

58. A* is a combination of which of the following two search methodology?
   (a) Best first search and depth first search   (b) Best first search and uniform cost search
   (c) Uniform cost search and AO* search   (d) Depth first search and uniform cost search

59. Which of the following statement is true regarding Hill Climbing?
    (a) Local maxima problem can be minimized by backtracking and starting from another point or using simulated annearling
    (b) Long jump helps to quickly cross the plateau flat region
    (c) Unidirectional jump can solve the problem of ridge
    (d) Steepest ascent hill climbing apply all the available operators to generate all the successors and chooses the best one to move ahead

60. What is a Goal horn clause?
    (a) A horn clause containing one positive literal and at least one negative literals
    (b) A horn clause containing 0 positive and at least one negative literal
    (c) A horn clause containing 1 positive and at 0 negative literal
    (d) A horn clause containing 0 positive and at 0 negative literal

61. What is the condition to perform the pruning in Minimax search with alpha beta pruning?
    (a) $\alpha \le \beta$ (b) $\alpha \ge \beta$ (c) $\alpha \ne \beta$ (d) None of the above

62. Consider the following Knowledge base in prolog
    a(1).
    a(2).
    a(3).
    b(1).
    b(3).
    c(x,y):-!.b(x),a(y).
    How many solutions will be produced if we launch a query
    ?-c(p,q).
    (a) 0   (b) 6   (c) 3   (d) 2

63. Consider the following statements
    (1) DFS is better than BFS if the space is the parameter for comparison
    (2) Forward chaining is goal driven and Backward chaining is data driven
    (3) Slot fillers and facets are used in scripts
    (4) Constraint satisfaction search problem has three components Variables(V), the domain of variables (D) and constraints(C).
    Which of the above statements is/are false?
    (a) 2, 3 only   (b) 2, 3, 4 only   (c) 1, 2, 4 only   (d) 1, 2, 3, 4

64. If the Fourier transform of function f(x, y) is F(i, j) then what is the Fourier transform of f(3x, 5y)?

    (a) $\dfrac{1}{15} F\left(\dfrac{i}{3}, \dfrac{j}{5}\right)$ (b) $\dfrac{1}{15} F\left(\dfrac{i}{5}, \dfrac{j}{3}\right)$ (c) $\dfrac{1}{15} F\left(\dfrac{j}{3}, \dfrac{i}{5}\right)$ (d) $\dfrac{1}{15} F\left(\dfrac{j}{5}, \dfrac{i}{3}\right)$

65. Consider a source S generate 4 symbols s_0, s_1, s_2 and s_3. What is the sequence of probability of the generation of symbols which ensures that the source S has maximum entropy

    (a) $p(s_0) = .1, p(s_1) = .2, p(s_2) = .3, p(s_3) = .4$

    (b) $p(s_0) = .1, p(s_1) = .3, p(s_2) = .25, p(s_3) = .35$

    (c) $p(s_0) = .15, p(s_1) = .25, p(s_2) = .20, p(s_3) = .40$

    (d) $p(s_0) = .25, p(s_1) = .25, p(s_2) = .25, p(s_3) = .25$

66. Which of the following statement is False?

    (a) $H(x, y) = H\left(\dfrac{x}{y}\right) + H(y)$

    (b) $I(x, y) = H(x) + H(y) - H(x, y)$

    (c) $H(x, y) = H\left(\dfrac{x}{y}\right) + H\left(\dfrac{y}{x}\right) - I(x.y)$

    (d) $I(x, y) = H(x) - H\left(\dfrac{x}{y}\right)$

67. If the minimum distance is d of a code. It can detect up to D errors and it can correct upto C errors then

    (a) $D = d - 1$ and $C = \left\lfloor \dfrac{d-1}{2} \right\rfloor$

    (b) $D = d - 1$ and $D = \left\lfloor \dfrac{d-1}{2} \right\rfloor$

    (c) $D = \left\lfloor \dfrac{d-1}{2} \right\rfloor$ and $C = \left\lfloor \dfrac{d-1}{2} \right\rfloor$

    (d) $D = d - 1$ and $C = \left\lfloor \dfrac{d-1}{3} \right\rfloor$

68. In one line of an image, three pixel values are 22, 24 and 36. The next pixel is to be predicted by a linear prediction that is based on the last two pitels with a coefficient of 0.6 for the last and 0.2 for the second last. The predicted pixel with integer approximation is
    (a) 22   (b) 24   (c) 26   (d) 30

69. For a(7, 4) Cyclic code with $1 + x + x^3$ as generator polynomial. What is the parity check polynomial for such cyclic code?

    (a) $1 + x + x^2 + x^4$ (b) $1 + x + x^2 + x^3$ (c) $1 + x^2 + x^3 + x^4$ (d) $1 + x^2 + x^3$
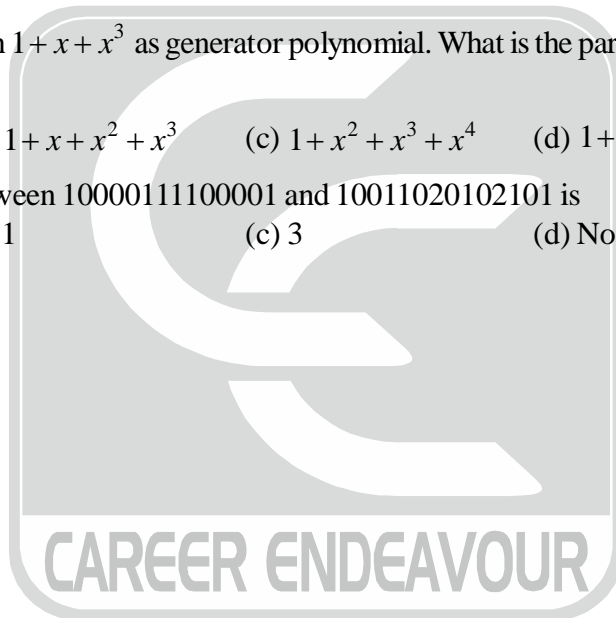
70. The hamming distance between 10000111100001 and 10011020102101 is
    (a) 2   (b) 1   (c) 3   (d) None of the above

Space for rough work

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UGC-NET COMPUTER SCIENCE & APPLICATIONS

Test Series- C

Date: 25-06-2018

ANSWER KEY

PAPER – I

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

PAPER – II

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