TEST SERIES NTA-UGC-NET/JRF JUNE 2019

BOOKLET SERIES E

Paper Code 87

Test Type: TEST SERIES

COMPUTER SCIENCE & APPLICATIONS

Duration: 03:00 Hours

Date: 14-06-2019

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.

PAPER – I

1. A shopkeeper sold goods for ` 2400 and made a profit of 25% in the process. Find his profit percent if he had sold his goods for ` 2040 ?
(a) 6.25 % (b) 7 % (b) 6.20 % (d) 6.5 %

2. Subhash can copy 50 pages in 10 hours; Subhash and Prakash together can copy 300 pages in 40 hours. In how much time can Prakash copy 30 pages ?
(a) 13 hours (b) 12 hours (c) 11 hours (d) 9 hours

3. Five boys are standing in a row facing east, Deepak is to the left of Sameer, Tushar and Shailendra. Sameer, Tushar and Shailendra to the left of Sushil. Shailendra is between Sameer and Tushar. If Tushar is fourth from the left, how far is Sameer from the right ?
(a) First (b) Second (c) Third (d) Fourth

4. In a certain code 'BELIEF' is written as 'AFKKDH'. How would 'SELDOM' be written in that code ?
(a) RDKCHL (b) RFKENM (c) RFKFNO (d) TFKENP

5. Pointing towards a girl, Mihir said, "She is the only daughter of only child of my grandfather". How is the girl related to Mihir ?
(a) Aunt (b) Sister (c) Niece (d) Mother

6. Raman asks Rahul "what is a cat" Rahul explains him that 'it is an animal, which is small, active eats rats etc. What kind of perception does it represent ?
(a) Extraordinary (b) Ordinary (c) Recognition (d) None of these

7. Fallacies in inferences is called
(a) Hetvabhasas (b) Vyapti (c) Arthapatti (d) Anumana

8. Choose the correct relationship depicting diagram for Smokers, Lawyers, Non-smokers ?
(a)  (b)  (c)  (d) 

9. ***Direction*:** In making decisions about important question. It is desirable to distinguish between a strong arguments and a 'weak' arguments. A 'strong' argument must be both important and directly related to the question. A 'weak' arguments may not be directly related to the question and may be of minor importance or may be related to the trivial aspect of the question. Each question below is followed by two arguments numbered I and II. You have to decide which of the arguments is 'strong' and which is 'weak'.
Given answer:
(A) If only arguments I is strong. (B) If only argument II is strong.
(C) If either I or II is strong. (D) If both I and II are strong.
***Statement*:** Is investment of money is insurance policies a wise step ?
***Arguments*:** (I) Yes, it ensures security and covers risks.
(II) No, by the time the policy matures the value of money falls down considerably.
(a) A (b) B (c) C (d) D

10. ***Direction*:** In each of the question below are given two statements followed by two conclusions numbered I and II. You have to take the two given statements to be true even if they seem to be at variance from commonly known facts and decide which of the given conclusion(s) logically follow(s) from the two given statements disregarding commonly known facts.
Given answer:
(A) If only conclusion I follows. (B) If only conclusion II follows.
(C) If either I or II follows. (D) If both I and II follows.
***Statement*:** (1) Some banks are colleges
(2) All collages are school.
***Arguments*:** (I) Atleast some bank are schools.
(II) All schools are colleges.
(a) A (b) B (c) C (d) D

Common Data Questions for Q. 11 to Q. 15:

Distribution of students at ABC University according to professional courses.

S. No.	Courses	FACULTY			
		Engineering		Non-engineering	
		Girls	Boys	Girls	Boys
1.	Business Management	25	45	25	65
2.	Computers	23	186	20	32
3.	Finance	25	120	12	58
4.	Others	12	100	3	5

11. If 60 % of the boys and 70 % of the girls are successful in the courses taken by them, then what is the combined pass percentage (approximately):
(a) 67.2 (b) 63.1 (c) 62 (d) 68.5

12. In which course is the percentage of girls (among the total number of students) higher than the percentage of girls in any other courses ?
(a) Business management (b) Computers
(c) Finance (d) Others

13. By what percentage is the number of students doing computers more than the numbers of students doing business management ?
(a) 67.2 (b) 63.1 (c) 62 (d) 68.5

14. The percentage of girl engineers doing business management are:
(a) 11.2 (b) 12.2 (c) 15 (d) None of these

15. Taking all the courses together. By what percentage do the numbers of boys exceed the numbers of girls ?
(a) 521.4 % (b) 421.4 % (c) 321.4 % (d) None of these

16. Which higher education institute is considered to mark the beginning of higher education in India ?
(a) Bethune school (b) Calcutta college
(c) Elphinstone institution (d) None of these

17. Which of the following is considered the first comprehensive plan for spreading of education in India ?
(a) Macaulay's minute (b) Elphinstone report
(c) Indian University Act (d) Wood's despatch.

18. The title of Yashpal committee reports (2008) is
(a) ICT is teacher burden (b) Learning without burden
(c) Learning through broadcasting (d) None of these

19. The National Institute of Technical Teacher's Training and Research (NITTTRs) is situated in
(a) Chandigarh (b) Chennai (c) Kolkata (d) All of these

20. Institute of National Importance is an Institution in higher education which serves as a pivotal players in developing highly skilled personal within the specified regions of the country or state this status can be conferred upon them by
(a) University Grants Commission (b) Association of Indian Universities
(c) Inter University centres (d) Central Advisory Board of Education

21. Which of the following is not correct in the context of formal operational stage of Piaget's theory of cognitive development?
(a) Children start using abstract symbols.
(b) Children start formulating hypotheses and testing them in their experience.
(c) They follow trial and error methods to solve problems.
(d) They develop the capacity to analyse, synthesize and generalize.

22. In List – I name of the psychologists and in List – II the concepts developed by them are given. Match List – I with List – II in correct order.

List – I	List – II
A. Thurston	1. Emotional Intelligence
B. Goleman	2. Social Intelligence
C. Guilford	3. Mutifactor theory of Intelligence
D. Gardner	4. Structure of Intellect
	5. Two factor theory of Intelligence

Codes:

	A	B	C	D
(a)	1	3	2	4
(b)	3	2	1	5
(c)	2	1	4	3
(d)	4	2	1	5

23. Multiple choice question is an example of which of the following method of studying the process of remembering and forgetting?
(a) Recall (b) Re-learning (c) Recognition (d) Reconstruction

24. What are the uses of System Analysis, when applied to classroom instruction as a sub system of the curriculum?
I. It helps to design classroom instruction differently.
II. It helps to assess the effectiveness of the existing instructional design.
III. It helps the teacher to verify results and get feedback.
IV. It helps as a novel method of reviewing classroom instruction.
Choose the correct answers from the code given below:
Codes:
(a) III, IV and I (b) I, II and III (c) IV, I and II (d) II, III and IV

25. The idea of Four Pillars of Education was suggested by
(a) UNICEF (b) UNESCO (c) NCTE (d) UGC

26. When the findings of an experimental research are generalized to target population, the research is said to possess
(a) Internal validity (b) Concurrent validity (c) External validity (d) Predictive validity

27. The status-quo of a situation in research can be studied through:
(a) Experimental research (b) Survey research
(c) Historical research (d) Phenomenological research

28. The control of extraneous variables in experimental research after the treatment is given can be done through a technique called
(a) Statistical Regression (b) Post-Test
(c) One-way ANOVA (d) Analysis of Co-variance

29. Research design strategy encompasses all of the components below except _____.
(a) data collection design (b) sampling design
(c) instrument development (d) All of these

30. What are the two types of node used in NVivo?
(a) Creative and non-creative (b) Blocked nodes and running nodes
(c) Formatted and unformatted (d) Hierarchical and non-hierarchical

31. How can multi-strategy research help us to study different aspects of a phenomenon?
(a) By reducing the standard deviation of scores around the mean.
(b) By allowing the researcher to interview first women, and then men.
(c) By revealing both the macro and the micro level.
(d) By making it unnecessary to have more than one stage in the research process.

32. Consider the following statements:
1. Three-fourth of the earth surface is covered by water but less than 3% is fresh water used for human consumption.
2. Of the total fresh water available, Ice-cap has highest share of 2% followed by ground water 0.68%.
Select the correct answer using the code given below.
(a) 1 only (b) 2 only (c) Both 1 and 2 (d) Neither 1 nor 2

33. Consider the following statements regarding the national legislation to protect the environment in India:
1. The forty second amendment Clause (g) to Article 51A of the Indian constitution made it a fundamental duty to protect and improve the natural environment.
2. There is a directive, given to the State as one of the Directive Principles of State Policy regarding the protection and improvement of the environment.
3. The Department of Environment was established in India in 1980 to ensure a healthy environment for the country.
Which of the above statements is/are correct?
(a) 1 only (b) 1 and 2 (c) 2 and 3 (d) 1, 2 and 3

34. Consider the following statements regarding Global Warming situation on earth:
I. The temperature surrounding the earth has been rising during the recent past, is due to the 'green house effect'.
II. A green house is a glass chamber in which plants are grown to provide them warmth by trapping sun light.
III. The phenomenon of heat build up inside a glass chamber from the absorption of solar radiation is called green house effect.
Which of the following statement(s) is/are correct?
(a) I only (b) I and II (c) II and III (d) All of these

35. Which of the following is/are effects of UV radiation?
1. It causes premature ageing
2. It leads to skin cancer
3. It is responsible for formation of surface ozone.
Select the correct answer from the following codes
(a) Only 1 (b) Only 1 and 2 (c) Only 2 and 3 (d) 1, 2 and 3

36. Which of the following carcinogens are released by using pesticides?
1. Benzidine and benzene
2. Nickel,
3. DDT
Select the correct answer from the following codes
(a) Only 1 (b) Only 1 and 2 (c) Only 2 and 3 (d) 1, 2 and 3

37. Critical thinking concerns…
(a) Determining the cause of our beliefs. (b) Pinpointing the psychological basis of our beliefs.
(c) Determining the quality of our beliefs. (d) Assessing the practical impact of our beliefs.

38. _____ is a campaign launched by the Government of India in order to ensure the Government's services are made available to citizens electronically by improved online infrastructure and by increasing Internet connectivity or by making the country digitally empowered in the field of technology. The initiative includes plans to connect rural areas with high-speed internet networks.
(a) e-governance (b) e-services (c) Digital India (d) Digital services

39. What is UMANG?
(a) Initiative for playing field game (b) A mobile APP for various govt services
(c) Educational portal (d) Sports portal

40. A person's nonverbal behavior is often used to gauge whether he or she is telling the truth. Which of the following facial clues often reveals lying?
(a) Failure to look you in the eye. (b) Facial shift
(c) Crooked smile (d) All of the above are indicators of lying.

41. Based on research findings about gender differences in communication pattern, all of the following are considered to be major differences in gender communication except:
(a) Women want empathy, not solution.
(b) Men are more interested than women in calling attention to their accomplishment or hogging recognition.
(c) Women are more likely to use a gentle expletive, while men tend to be harsher.
(d) All of the above are correct difference based on research findings.

42. Manuals and policy statements are referred to as:
(a) upward communication. (b) horizontal communication.
(c) downward communication. (d) none of the above.

43. The main objective of community radio stations is
(a) Social Inclusion (b) Information (c) Entertainment (d) Cultural dominance

44. Acceptance and non-acceptance of massage by receiver is most affected by
(a) knowledge of receiver (b) Psychological barrier
(c) Environmental stress (d) Affection

45. From following, which is not considered to be a computer peripherical device ?
(a) Disk drive (b) Keyboard (c) CPU (d) Monitor

46. $(10110011100011110000)_2$ in base 32 is
(a) 22 14 7 16 (b) 11 9 23 21 (c) 11 9 7 16 (d) 11 14 23 16

Read the following passage carefully and answer the questions 47 to 50:

After the oil industry, tourism is the second biggest business in the world. It also is one of the world's fastest growing businesses, and is the largest source of employment in the world. The number of tourists worldwide has triple over the past 20 years. Every year, nearly 600 million tourists check in at hotels, villas apartments and camps. According to the World Tourism Organisation (WTO), tourists spent US $ 3.2 trillion in 1994, providing work for 10 percent of the global work force.

However, tourism, travel and recreation are an increasing source of environmental stress on the Earth. Tourism can carry a heavy price tag for the environment because of the hotels, fast food restaurants, access roads and vehicles that come with it. Indeed, when the needs of tourists supersede the needs of the local community, the latter are sometimes compromised.

The 'sun- and – sand' tourists are usually responsible for the worst environmental damage, straining water, energy and sewage disposal resources in their tourist havens, from the islands of the South Pacific to East Africa. In one area of Tunisia, for example, tourists' needs for freshwater have lowered the ground water level and left many homes dry for several hours a day. Many beaches in the Caribbean are now unsuitable for bathing because of sewage pollution.

Hungry for foreign currency to pay for Imports and to finance debts, many developing countries are turning to tourism. This strategy could be smart economics: some 20 per cent of all international tourists now go to developing countries. By the year 2020, the WTO estimates that 937 million tourists will travel every year, an increasing percentage of whom will visit developing countries.

Though development of tourism is a choice for some countries, for others it is almost a necessity. Nepal, for example, is too poor to take care of its vast cultural treasures, and so must rely on the many travellers who have romanticised the Himalayan kingdom.

Tourism, if handled properly, can help to preserve both a country's natural and cultural heritage. To attract visitors, a country must preserve not only it natural resources, but its architectural and cultural monuments, which are often threatened by vandalism, theft pollution, wars and overdevelopment. Ironically, however, some of the damage can be caused by tourism itself.

One alternative to environmental abuse by tourism is the ecotourism movement. Some advocates of ecologically-responsible tourism see it as a solution to chronic underfunding of national parks and other protected areas, and as having the potential to become one of the central elements in sustainable economic development. As well, when communities learn that they can make more money by inviting visitors to experience, the natural beauty of their forests than they can by cutting them down, they cannot fail to be inspired to preserve the environment. The WTO stresses that extreme caution be exercised in developing ecotourism, because when large numbers of visitors descend upon biologically and culturally sensitive areas, the effects can be devastating. The Mount Everest area of Nepal, for example, supports a major trekking and climbing industry that consumes more fuelwood and produces more waste than the area can handle. The trails of K2 in Pakistan and the Camino Inca of Peru are littered with the refuse of hikers. Thus, though eco-tourism is an attractive alternative to mass tourism there is still a need to make mass tourism sustainable because it will always dominate the industry. Jacqueline Aloisi de Larderel, director of the Industry and Environment office of the UN Environment Programme, says that only careful planning and management will stop tourism's current negative environmental impacts. The tourism industry, all levels of government and community organisations should cooperate to ensure that tourism is sustainable. Otherwise, she adds, tourism could lead to destruction and pollution in some of the world's most ecologically fragile areas.

47. One of the following fact is not true
(a) Total revenues from tourism in 1994 were US $ 3.2 trillion
(b) The number of tourists has doubled over the last 20 years
(c) Tourism generates employment for 10% of world population
(d) Total tourists in an year are 600 million

48. One of the following is not associated with tourism industry
(a) Restaurants (b) Hotels (c) Hospitals (d) Transport

49. The phrase "Sun and Sand" means
(a) Tourists who are explorers
(b) Tourists who like beaches
(c) Tourists who like heritage sites
(d) All of these

50. Developing countries depend on tourism for
(a) Entertainment taxes
(b) Foreign currency
(c) Development of local community
(d) Protection of its rich heritage

PAPER – II

1. Match the following lists:

List-I	List-II
A. Shadow-mask method	1. Dot-matrix printer
B. The resolution of an image	2. Monitors that have no colour capability
C. Gray scale is used in	3. Raster-scan systems
D. The fastest type of printer	4. Number of pixels per unit area

Codes:

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

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

2. A point (4, 3) is rotated counterclockwise by an angle of 45°. Find the rotation matrix and the resultant point?

(a) $\left(\frac{1}{\sqrt{2}}, \frac{6}{\sqrt{2}}\right)$ (b) $\left(\frac{1}{\sqrt{2}}, \frac{7}{\sqrt{2}}\right)$ (c) $\left(\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}\right)$ (d) None of these

3. If (x, y) is a point inside the clipping window, then its code according to the cohen-sutherland algorithm is

(a) 0000 (b) 0001 (c) 1000 (d) 1111

4. Find the one point perspective projection of P(2, 4, 5) with respect to z = 0 plane where the eye is placed at (0, 0, –d)?

(a) $\left(\frac{2d}{5+d}, \frac{4d}{5+d}, 0\right)$ (b) $\left(\frac{4d}{5+d}, \frac{2d}{5+d}, 0\right)$

(c) $\left(\frac{d}{5+d}, \frac{2d}{5+d}, 0\right)$ (d) $\left(\frac{2d}{5+d}, \frac{3d}{5+d}, 0\right)$

5. What is the equation of cubic bezier curve ?

(a) $P(u) = \sum_{i=0}^{3} {}^3C_i (1-t)^{3-i} t^i P_i$ (b) $P(u) = \sum_{i=0}^{3} {}^3C_i (1-t)^{3+i} t^i P_i$

(c) $P(u) = \sum_{i=1}^{3} {}^3C_i (1-t)^{3-i} t^i P_i$ (d) None of these

6. Which of the following language is regular

(a) $\{a^n \mid n \text{ is prime}\}$ (b) $\{a^i b^j \mid \gcd(i, j) = 1\}$

(c) $\{a^i b^j c^k \mid i + j + k = 10^{10}\}$ (d) $\{a^i b^j c^k \mid i * j = k\}$

7. Which of the following is equivalent grammar to the following grammar

$S \to aSb$

$S \to ab$

(a) $S \to aSB$
$S \to aB$
$B \to b$

(b) $S \to AC$
$C \to SB$
$S \to AB$
$A \to a$
$B \to b$

(c) $S \to aS_1$
$S_1 \to Sb / b$

(d) All of the above

8. Let us consider the following grammar

$S_n \to S_{n-1}S_{n-1}$
$S_{n-1} \to S_{n-2}S_{n-2}$
$\vdots$
$S_2 \to S_1S_1$
$S_1 \to a / b$

The language generated by above grammar. If S_n is the start symbol

(a) $(a+b)^n$ (b) $(a+b)^{n-1}$ (c) $(a+b)^{2n}$ (d) None of the above

9. If there 15 terminal symbols and 10 productions which contains ATMOST 5 symbols on the R.H.S. of every production rule in a grammar. Then how many maximum number of production rules are their in the equivalent grammar in C.N.F. form

(a) 55 (b) 40 (c) 50 (d) none of the above

10. If the height of the derivation tree is 9 for the derivation of a string from a C.F.G. in C.F.G. What is the maximum length of string ω.

(a) 512 (b) 256 (c) 1024 (d) 128

11. Find the number of states in the DFA. For following regular language

$$L = \left\{ b^5 \omega a b^4 \mid \omega \in \{a,b\}^* \right\}$$

(a) 11 (b) 12 (c) 13 (d) 14

12. Let us consider the following SDD:

S → aSb {printf("1");}
S → bSa {printf("2");}
S → SS {printf("3");}
S → λ {printf("4");}

If above SDD is applied on the string w = aabbabba, then what is the output ?

(a) 112234124 (b) 123411213 (c) 411414233 (d) None of these

13. Match the following lists:

List-1	**List-2**
1. Code generation	A. LALR parser
2. Dynamic memory allocation	B. LL(1) parser
3. Top-down parser	C. Ullman algorithm
4. Bottom-up parser	D. Heap allocation

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

14. Total number of binary palindromes of length n is

(a) $2^{n/2}$ (b) $2^{n+1/2}$ (c) $2^{\lceil n/2 \rceil}$ (d) $2^{n-1/2}$

15. Total number of D.F.A. having 3 states and 3 symbols in alphabet with designated initial state is

(a) 3^9 (b) 2×3^9 (c) 3×3^9 (d) None of the above

16. For a given moore machine and input = '101010', the output would be of length?

(a) $|\text{input}|+1$ (b) $|\text{input}|$ (c) $|\text{input}-1|$ (d) cannot determine

17. Consider the following schedule due to three transactions (indicated by the subscript) using read and write on data item a, b, c and d.

$r_1(a), r_2(c), r_1(c), r_3(c), r_3(b), w_1(a), r_2(a), c_1, w_3(b), c_3, r_2(b), w_2(b), w_2(c), c_2$

Which of the following is correct for above schedule?

(a) Schedule contain blind write and it is not recoverable.
(b) Schedule is conflict serializable and contain dirty read problem.
(c) Schedule contain blind write and it is recoverable.
(d) Schedule contain blind write and it is not recoverable.

18. Consider the following schedule with 3 transactions T1, T2 and T3 :

T1	T2	T3
		R(H)
	R(G)	
	W(G)	
R(A)		
W(A)		
	R(A)	
	W(A)	
	Commit	
Abort		
		W(A)
		Commit

The given schedule is a

(a) Recoverable Schedule (b) Irrecoverable Schedule
(c) Cascadeless Schedule (d) Strict Schedule

19. Consider two relations R and S with atleast one common attribute. If cardinalities of R and S are 5 and 6 respectively, then the minimum and maximum number of tuples in R*S respectively are (* denotes natural join operation)

(a) 0 and 11 (b) 0 and 30 (c) 11 and 30 (d) 1 and 11

20. Consider the given table R and S the number of elements retrieved by the query is

Table R	
A	**B**
1	Dog
1	Cat
1	Cow
2	Cat
4	Cat
3	Dog
4	Dog
2	Dog
4	Cow

Table S
B
Cat
Dog

Query is :- $\pi_{A,B}(R) \div \pi_B(S)$

(a) 2 (b) 3 (c) 4 (d) Other

21. In SQL, which commands is/are used to change a table storage characteristics ?

(i) MODIFY TABLE (ii) ALTER TABLE (iii) CHANGE TABLE

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

22. Find what dependency may not hold on the above relation?

A	B	C	D
a_1	b_1	c_1	d_1
a_1	b_1	c_2	d_2
a_2	b_1	c_1	d_3
a_2	b_1	c_3	d_4

(a) $A \rightarrow B$ (b) $D \rightarrow ABC$ (c) $C \rightarrow D$ (d) None of these

23. Consider the relation R(ABCD) with the FD set $F = \{A \rightarrow B, C \rightarrow D\}$. Find the highest normal form of R.
(a) 1NF (b) 2NF (c) 3NF (d) BCNF

24. Consider a relation with 3 attributes. The maximum number of candidate keys could it have atmost at the same time are _____.
(a) 1 (b) 2 (c) 3 (d) 4

25. Match the following

I. Primary Index	A. Non – Key and Ordering
II. Clustering Index	B. Non – Key and Non – Ordering
III. Secondary Index (Key)	C. Key and Ordering
IV. Secondary Index (non Key)	D. Key and Non – Ordering

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

26. Assuming in synchronous TDM system, there are 8 input lines each send data at 100 kbps. If one time slot of each input line contains 4 bits. Then identify the correct option among the following?
(a) Frame rate = 25 K frame/sec, Input slot = 10 μsec
(b) Frame rate = 50 K frame/sec, Input slot = 1 μsec
(c) Frame rate = 100 K frame/sec, Input slot = 1 μsec
(d) Frame rate = 800 K frame/sec, Input slot = 10 μsec

27. What are the common set of technologies used to create a manageable cloud environment ?
i. A hypervisor, a hypervisor manager, automated provisioning, and monitoring.
ii. A hypervisor, a hypervisor manager, a self-service portal, automated provisioning, and monitoring.
iii. A hypervisor and a hypervisor manager like Virtual Center or VM Control
iv. A hypervisor, a hypervisor manager, self-service portal, and an automated provisioning tool like IBM Tivoli Provisioning Manager .
v. The handoff rate will upsurge after borrowing.
(a) i, ii, iii (b) i, iii, iv (c) ii, iii, v (d) None of these

28. Roulette wheel selection scheme is/are preferable when
(I) Fitness values are uniformly distributed.
(II) Fitness values are non uniformly distributed.
(III)Needs low selection pressure.
(IV) Needs high population diversity.
(V) Fitness value is linear.
(a) I, II, III (b) II, III, IV (c) I, III, V (d) None of these

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

GROUP I	GROUP II
(P) K-Mean Clustering	(1) It employs a NameNode and DataNode architecture to implement a distributed file system that provides high-performance access to data across highly scalable Hadoop clusters.
(Q) Hidden Markov Model	(2) It allows users to analyze information from multiple database systems.
(R) Map Reduce	(3) It is a non-parametric method used for classification and regression.
(S) OLTP	(4) It provides low latency and consolidates data to reduce costs.
(T) HDFS	(5) It is a finite set of states, each of which is associated with a probability.

(a) P-2, Q-1, R-5, S-5, T-4 (b) P-3, Q-5, R-2, S-4, T-1
(c) P-2, Q-5, R-4, S-3, T-1 (d) None of these

30. When Batch processing is/are preferred over OLTP?
(i) processing efficiency is important
(ii) the volume of data to be processed is large
(iii) only periodic processing is needed
(iv) a large number of queries are to be processed
(v) Processing throughput is useful.
(a) i , ii, iii (b) i, iii, iv (c) ii , iii, v (d) All of these

31. If a program will experience 6000 failures in the infinite time. It has now experienced 3000 failures. The initial failure intensity was 300 failured CPU per hour. Then what is current failure intensity CPU per hour?
(a) 100 (b) 150 (c) 200 (d) 250

32. Using the following table for function point weights:

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)
The function point count for and technical feasibility of
(a) 120, 0.7 (b) 140, 0.7 (c) 140, 0.9 (d) None of these

33. Which form of software development model is most suited to a system where all the requirements are known at the start of a project and remain stable throughout the project.
(I) Waterfall model (II) Incremental model
(III) Evolutionary model (IV) Spiral model
(V) Prototype model
(a) I, II, III (b) II, III, IV (c) I, III, IV (d) None of these

34. Station A and B that are 2 km apart using a PURE ALOHA system. Let the signal speed is 4×10^6 meter 1 sec. Then identify the possible values of Backoff time if the station A uses (K = 1), i.e., second attempt of retransmission of frame.
(a) 1 msec, 2 msec, 3 msec, 4 msec
(b) 0.5 msec, 1 msec, 1.5 msec, 2 msec
(c) 1 msec, 2 msec, 3 msec, 4 msec, 5 msec, 6 msec, 7 msec
(d) 2 msec, 4 msec, 6 msec, 8 msec

35. How many characters per sec (7 bits + 1 parity) can be transmitted over a 62500 bps line if the transfer is synchronous (2 start and 2 stop bit)?
(a) 6000 (b) 6250 (c) 6500 (d) None of these

36. What is/are bit stuffing refers to
(I) Inserting a 'O' in user data stream to differentiate it with a flag
(II) Inserting a 'O' in a flag stream to avoid ambiguity
(III)appending a nibble to the flag sequence
(IV) appending a nibble to the user data stream.
(V) appednding abit to flag sequence.
(a) I only (b) II only (c) III, IV (d) All of these

37. The number of cross point needed for 20 lines in a cross point switch which is full duplex in nature and there are no self-connection is
(a) 180 (b) 190 (c) 200 (d) None of these

38. If in a complex software total number of components are 5000. If company has added 400 components, deleted 100 components and changed 100 components. Then what is software maturity index.
(a) 0.088 (b) 0.88 (c) 8.8 (d) 0.80

39. Let an IPv4 frame has been arrived at the receiver with following fields.
HLEN = 8, total length = 300, fragment offset = 100 and MF = 0.
The identify the correct option corresponds to this frame.
(a) 80 (initial byte), 1068 (last byte), Last fragment.
(b) 80 (initial byte), 1067 (last byte), Middle fragment.
(c) 80 (initial byte), 1067 (last byte), Last fragment.
(d) 100 (initial byte), 1068 (last byte), Last fragment.

40. If a class B network is divided into 8 subnetwork. Then the subnet mask of created subnetworks will be
(a) 255.255.248.0 (b) 255.255.240.0 (c) 255.255.255.0 (d) None of these

41. Which of the following Boolean function is not a self dual?
(a) $F(A, B, C) = \sum m(3,5,6,7)$ (b) $F(A, B, C) = \sum m(1,2,4,7)$
(c) $F(A, B, C) = \sum m(0,2,4,6)$ (d) $F(A, B, C) = \sum m(0,1,4,6)$

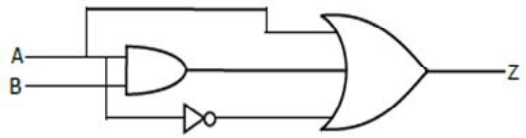
42. The message 11001001 is to be transmitted using the CRC polynomial $x^3 + x^2 + x + 1$ to protect it from errors. The message that should be transmitted is
(a) 11001001000 (b) 11001001011
(c) 11001010 (d) None of these

43. Obtain the initial solution to using least cost method :

	A	B	C	D	Supply
I	6	3	5	4	22
II	5	5	2	7	15
III	5	7	8	6	8
Demand	7	12	17	9	

(a) 150 (b) 100 (c) 200 (d) None of these

44. Output Z of a given logic circuit is



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

45. Match the problem domains in GROUP-I with the solution technologies in GROUP-II ?

Group-I	**Group-II**
P. Dual Simplex Method	**1.** In this type of problems all the design variables are deterministic.
Q. Sensitive Analysis	**2.** In which no constraints exist.
R. Integer Programming	**3.** Which are subject to one or more constraints.
S. Assignment Models	**4.** Sometimes, the set of constraints does not form a feasible region.
T. Infeasible Models	**5.** If the feasible region is not bounded.

(a) P-1, Q-2, R-3, S-4, T-5 (b) P-3, Q-5, R-2, S-4, T-1
(c) P-2, Q-5, R-4, S-3, T-1 (d) None of these

46. Compute the simple difference of the sets:
A = {(x, 0.5), (y, 0.4), (z, 0.9), (w, 0.1)}
B = {(x, 0.4), (y, 0.8), (z, 0.1), (w, 1)}?
(a) {(x, 0.4), (y, 0.6), (z, 0.8), (w, 0.9)} (b) {(x, 0.1), (y, 0.4), (z, 0.8), (w, 0.9)}
(c) {(x, 0.5), (y, 0.2), (z, 0.9), (w, 0)} (d) {(x, 0.1), (y, 0), (z, 0.8), (w, 0)}

47. Compute the bounded difference of the sets:
A = {(x, 0.5), (y, 0.4), (z, 0.9), (w, 0.1)}
B = {(x, 0.4), (y, 0.8), (z, 0.1), (w, 1)}?
(a) {(x, 0.4), (y, 0.6), (z, 0.8), (w, 0.9)} (b) {(x, 0.1), (y, 0.4), (z, 0.8), (w, 0.9)}
(c) {(x, 0.5), (y, 0.2), (z, 0.9), (w, 0)} (d) {(x, 0.1), (y, 0), (z, 0.8), (w, 0)}

48. If $F(A,B,C) = \sum m(0,1,2,3,5,6)$, then the minimized expression for the function F is

(a) $A + (B \oplus C)$ (b) $(A \oplus B) + C$ (c) $\overline{A} + (B \oplus C)$ (d) $\overline{ABC}$

49. If crossover between chromosomes in search space does not produce significantly different offspring, what does it imply?
(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 GAs to operate.
(v) Crossover operator is sucessful.
(a) (ii), (iii) and (iv) only (b) (ii) and (iii) only
(c) (i), (iii) and (iv) only (d) All of the above

50. In OSI model, at each layer sender adds header information. Name the layer at which tailer part is also added.
(a) Transport layer (b) Network layer (c) Data link layer (d) None of these

51. If LOC in a software project is 10000 and months to required for development is 100. Then compute the productivity, effort and team size.
(a) 100, 50, 2 (b) 50, 100, 20 (c) 100, 100, 1 (d) None of these

52. What is optimal value of objective function?
Max $Z = x + 4y$

Subject to $2x + 2y \leq 80$
$3x + 4y \leq 120$
$x, y \geq 0$

(a) 130 (b) 120 (c) 110 (d) 100

53. Match the following in Lists:

List - I	List - II
A. HDLC	1. which uses 64-bit keys
B. SCTP	2. which uses CRC-32
C. TELNET	3. Terminal Network
D. URL	4. software delivery and licensing
E. GPRS	5. Uniform Resource Locator

(a) A-2, B-3, C-4, D-1, E-5 (b) A-5, B-3, C-1, D-4, E-2
(c) A-4, B-1, C-5, D-2, E-3 (d) None of these

54. If a new requirement emerges once an Agile project is running, it should be:
(1) Automatically included in the work of the project.
(2) Automatically excluded and left until a later project or increment.
(3) Assessed for importance and, if sufficiently important to the business, included in the project, displacing less important requirements.
(4) Put on the backlog for consideration by the wider group of stakeholders after the project has been completed
(5) On time delivery and happy end users are the only quality measures in Agile development.
(a) (1), (3) (b) (3), (4) (c) (2), (5) (d) None of these

55. A program has four sub-programs having reliability 0.9 each. Then what is reliability of the program?
(a) 0.6862 (b) 0.6582 (c) 0.6561 (d) None of these

56. Match the problem domains in GROUP-I with the solution technologies in GROUP-II ?

Group-I	Group-II
P. VM	**1.** This is software version of physical machine.
Q. Tunneling	**2.** It is software as service.
R. SAAS	**3.** It is used in email service.
S. KERBEROS	**4.** It uses secret key.
T. SMTP	**5.** It is used to connect different version of addresses.

(a) P-1, Q-2, R-3, S-4, T-5 (b) P-1, Q-5, R-2, S-4, T-3
(c) P-2, Q-5, R-4, S-3, T-1 (d) None of these

57. In a system we have counting semaphore, it is initialized to 15. Then $20P^{(wait)}$ operations and $(x^2 + 1)\ V^{(signal)}$ operations occurs. If the final value of semaphore is 21, then the value of x is
(a) 6 (b) 21 (c) 22 (d) 5

58. S1: A distributed system is a collection of loosely coupled processors interconnected by a communication network.
S2: Major reasons for building distributed systems are resource sharing, computation speed-up, reliability and communication.
S3: The goal of spyware is to download ads to display on the users system, create pop-up browser windows, when certain sites are visited.
Which statement is/are TRUE ?
(a) S1, S2 (b) S2, S3 (c) S1, S3 (d) All of these

59. Assume a disk sequence with 100 cylinders the head is currently at 50th cylinder. What is the time taken to satisfy all request if it takes 5 ms to move from one cylinder to adjacent. Shortest Seek Time First (SSTF) policy is used. The request access sequence is:
4, 34, 10, 7, 19, 73, 2, 15, 6, 20
(a) 595 (b) 500 (c) 615 (d) 625

60. There are 4 statements are given about threads and I/O (syn. and asyn.)
S1: Context switch time is longer for kernel level threads than for user level threads.
S2: Blocking are kernel level thread blocks all related thread.
S3: In both synchronous and asynchronous I/O and ISR(Interupt Service Routine) is invoked after completion of the I/O.
S4: In the case of synchronous I/O, the process waiting for the completion of I/O is woken up by the ISR that is invoked after the completion of I/O.
Which statements is/are TRUE ?
(a) S1 only (b) S2 and S3 only (c) S1 and S4 only (d) S2 and S4 only

61. A paging scheme uses a translation book-aside buffer (TLB). A TLB access takes 10 ns. What is the effective access time (in ns), if the TLB hit ratio is 80% and there is no page fault ?
Assume memory access time is 50 ns ?
(a) 69 (b) 68 (c) 70 (d) 72

62. What will be the time complexity of the given recurrence relation:

$$T(n) = 3T\left(\frac{n}{5}\right) + 8T\left(\frac{n}{5}\right) + 4T\left(\frac{n}{5}\right) + 10T\left(\frac{n}{5}\right) + n^2$$

(a) $\theta(n^3)$ (b) $\theta(n^2)$ (c) $\theta(n^4)$ (d) $(n^2 \log n)$

63. Assume we have two functions:
S_1: int do(int x, int y)
{
if (x = = 0) return y;
return do(x – 1, x + y);
}
This do( ) function returns the value
$y + x + (x-1) + (x-2) + (x-3) + \cdots + 2 + 1$
S_2: int do(int a, int b)
{
if (y = = 0) return 0;
return (x + fun(a, b – 1));
}
By analyzing the function, we observe it returns = a * b.
Which statements is/are TRUE ?
(a) S_1 only (b) S_2 only (c) Both S_1 and S_2 (d) None of these

64. S_1: The result of evaluating the postfix: 58 + 909 / * 7 – is 123.
S_2: The code for insertion at last in a doubly link list will be:
list * ptr = (list *) malloc (size of (list))
ptr → data = info;
ptr → next = NULL;
ptr → Pre = tail;
tail → next = ptr;
tail = ptr,
where tail initially pointing to last element in list.
Which statement is/are INCORRECT ?
(a) S_1 only (b) S_2 only (c) Both S_1 and S_2 (d) None of these

65. We have an array [80, 90, 50, 60, 40, 20]. What is the difference between number of max-heap and BST is
(a) 112 (b) 111 (c) 110 (d) 109

66. Match the following lists:

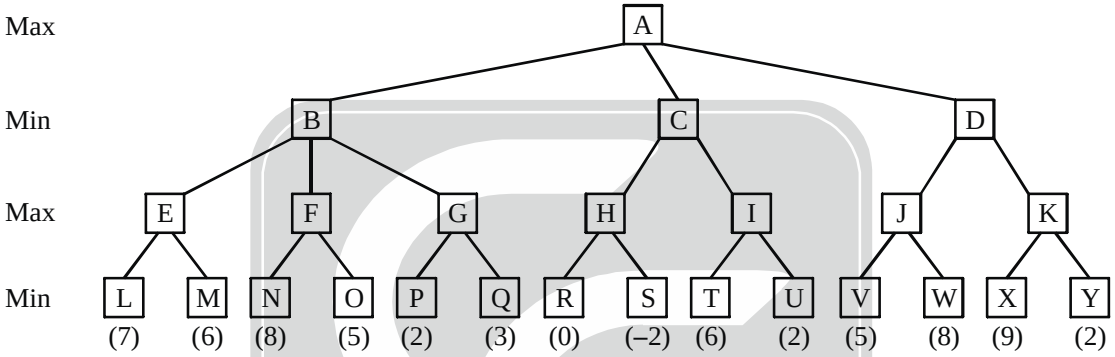
List-1	List-2
P. Bubble-sort	1. O(n log n)
Q. Merge-sort	2. $O(n^2)$
R. Radix-sort	3. O(n)
S. Count-sort	4. O(k + n)

where k is number of digits require to represent largest element.

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

67. Assume the hash function h(k) = k mod 9. Here, table has 9 slots. We insert the keys 14, 37, 28, 33, 29, 51, 12, 19, 10
The maximum, minimum and average chain lengths in the hash table respectively are:
(a) 4, 0, 1 (b) 3, 1, 1 (c) 3, 0, 2 (d) None of these

68. Consider the following game tree in which static scores are all from the first player's point of view.



Suppse the first player is the maximizing player. What nodes would not need to be examined using the alpha-beta pruning procedure when scanning from left to right?
(a) O, Y (b) Q, O, Y (c) Y, U (d) None of these

69. If G is an abelian group, then
1. It is a cyclic group guaranteely.
2. Its order can't be greater than 115.
3. If the order of G is 15, then its subgroup can be of size 10.

Which statements is/are TRUE ?
(a) 1 only (b) 2 and 3 (c) 1 and 3 (d) None of these

70. Let S = {1, 2, 3, 4, 5} a relation R is defined in S, then number of reflexive relations, number of symmetric relations. Which are reflexive, are:
(a) $2^{20}, 2^{15}$ (b) $2^{20}, 2^{16}$ (c) $2^{20}, 2^{10}$ (d) $2^{20}, 2^{17}$

71. In the following which statement is/are TRUE ?
1. HTML supports time whereas XML supports DOM tree.
2. Hierarchical database uses tree whereas network database uses graph.
3. Multimedia transmission uses as well as TCP and UDP both.
4. Spyware is one type of malwares whereas dropbox is Saas.

(a) 1, 2, 3 (b) 2, 3, 4 (c) 3, 4, 5 (d) None of these

72. What is the number of multiplication in matrix chain multiplication form $M_1M_2M_3M_4$ with dimensions P = <20, 30, 40, 50, 70>.
(a) 134000 (b) 160000 (c) 207000 (d) 220,000

73. S_1: Let X be problem that belongs to the class NP if X is NP hard, the it is NP complete.
S_2: Let A be an NP complete problem and B, and C be two other problems not known to be in NP. It is known that, is polynomial time reducible to A, and A is polynomial time reducible to C then C is NP hard
S_3: Satisfiability (SAT) of boolean formulae is NP-complete which statement is/are true
(a) S_1, S_2 (b) S_2, S_3 (c) S_1, S_3 (d) All of these

74. If G = {(1, 3, 5, 7, 9, 11, 13),$*_{12}$}
Where $*_{12}$ is multiplication under modulo 12 is a
(a) Abelian group (b) Group (c) Monoid (d) Not a semigroup

75. How many elements in the power set of {{1, 2}, {1, 2, 1}, {1, 2, 1, 1}, {2, 1, 2, 1}} ?
(a) 2 (b) 4 (c) 8 (d) 16

76. What will be the output of the following programme?

```
int *x, *y, z;
z = 5;
x = & z;
y = x;
*x = 15;
z = z*5;
Cont <<*x <<*y <<z;
```

(a) 15, 15, 25 (b) 5, 5, 25 (c) 75,75,75 (d) None of these

77.

```
Int swap (int &x, int, &y, int z = 1)
{
    z = x;
    y = x;
    x = z;
}
Main ( )
{
    int a = 10, b = 15;
    swap (a, b, b);
}
```

Is this code snippet swaps the values and what will be the content of a, b after function call in main function?
(a) Yes, 10, 10 (b) Yes, 15, 10 (c) No, 15, 10 (d) No, 10, 15

78. S_1: Java support multiple inheritance for interface implementation.
S_2: C++, does not support finalize keyword as Java support.
S_3: C ++, has introduce new type of data i.e., reference type, which is not present in C.
Which statement is/are TRUE ?
(a) S_1,S_2 (b) S_2,S_3 (c) S_1,S_3 (d) All of these.

79. Match the following lists:

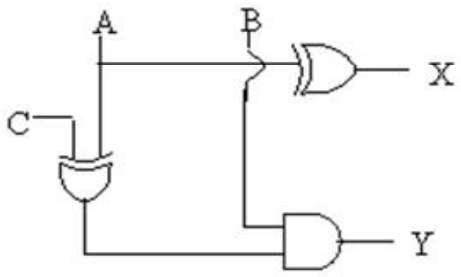
List - I	**List-II**
(p) Continue	(i) Terminates the current iteration
(q) Break	(ii) Terminate the loop
(r) Final	(iii) The variable value can't be modified
(s) Const	(iv) Variable value can be modified using pointer concept

(a) p-i, q-ii, r-iii, s-iv (b) p-ii, q-i, r-iii, s-iv
(c) p-ii, q-i, r-iv, s-iv (d) p-i, q-ii, r-iv, s-iii

80. Using comparison based algo. Find out minimum number of comparison required to sort 8 numbers is
(a) 15 (b) 20 (c) 28 (d) 14

81. What will declaration for the statement A is pointer to a function which takes 2 argument of int * type and returns pointer to int ?
(a) int * (A*) (int, int)* ;
(b) int * (*A) (int*, int*)( ) ;
(c) int * (*A)(int*, int *);
(d) int (*A)(int*, int*)( ) *;

82. Consider the following circuit where 'C' is the control line, A, B are inputs and X, Y are output.



If C = 1 then above circuit act as
(a) Half subtractor (b) Full subtractor (c) Both (a) & (b) (d) None

83. We have reference string:
7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1
Use any page replacement algo like FIFO, LIFO, LRU, optimal page replacement algos.
Now, we have 3 frames initially empty. Then minimum number of faults will be :
(a) 8 (b) 9 (c) 10 (d) 11

84. Consider the following snapshot of a system:

	Allocation	Max	Availabe
	A B C D	A B C D	A B C D
P_0	0 0 1 2	0 0 1 2	1 5 2 0
P_1	1 0 0 0	1 7 5 0	
P_2	1 3 5 4	2 3 5 6	
P_3	0 6 3 2	0 6 5 2	
P_4	0 0 1 4	0 6 5 6	

Is the system in a safe state, and if a request from process P_1 arrives for (0, 4, 2, 0), can the request be granted immediately?
(a) Yes, yes (b) Yes, no (c) No, no (d) No, yes

85. S_1: Every action is intended to reduce its distance from large, this phenomena happens in goal based agent.
S_2: Utility based agent works only on current percept, not on historical data.
Which statement is/are wrong?
(a) S_1 (b) S_2 (c) Both (d) None of these

86. S_1 : To find out the optional solution by AO* algo, its time complexity increases as number of and node increase, in compare to OR Node.
S_2: Conceptual dependency action, InGest is to take in, including words like eat, drink, smoke etc.
S_3: An expert system is a rule based system and has components (i) A set of rules, (ii) A working memory (WM), (iii) The inference engine.
Which statements is/are TRUE ?
(a) S_1, S_2 (b) S_2, S_3 (c) S_1,S_3 (d) All of these

87. In an undirected graph of 12 edges having 8 nodes of same weights. How many number of M.S.T will be possible and the difference of number of (M.S.T.) – number of (S.T.) respectively are ?
(a) 792, 0 (b) 12, 0 (c) 7, 0 (d) 8, 1

88. S_1: Group is a collection of set and a binary operation. (–) is a binary operation under natural number set.
S_2: If we have 256 characters in string of 1. Terabyte by using Huffman encoding we can save at least 1 GB of space.
Which statement is/are TRUE ?
(a) S_1 (b) S_2 (c) Both (d) None of these

89. In Planning, there is a robot arm that can manipulate the blocks. The actions it can perform include:
(i) UNSTACK(A, B)–Pick up block A from its current position on block B. The arm must be empty and block A must have no blocks on top of it.
(ii) STACK (A, B)–Place block A on block B. The arm already be holding and the surface of B must be clear.
(iii) PICKUP(A)–Pick up block A from the table and hold it. The arm must be empty and there must be nothing on top of block A.
(iv) PUTDOWN(A)– Put block A down on the table.The arm must have been holding block A.
Which actions is/are true regarding the goal stack planning for the block world problem.
(a) i, ii (b) i, iii, iv (c) ii, iii, iv (d) All of these

90. S_1: Steepest-ascent hill climbing is a useful variation on simple hill climbing considers all the moves from the current state and select the best one as the next state. It is also called gradient search.
S_2: In simulated annealing the idea is to do enough exploration of the whole space early on so that the final solution is relatively insensitive to the starting state.
S_3: Means-end-analysis process centers around to detection of differences between the current state and the goal state.
Which statements is/are true regarding to heuristic search technique ?
(a) S_1, S_2 (b) S_3, S_1 (c) S_2 (d) All of these

91. Match the following lists :

List- I	**List-II**
(p) Semantic Net	(i) Information is respresented as a set of nodes connected to each other by a set of labelled arcs, which represents relationship among the nodes.
(q) Frame	(ii) Its goal is to represent the knowledge in a way that facilitates drawing inferences, from the sentences and it is independent of the language in which the sentences were originally stated.
(r) Conceptual dependency	(iii) It is a collection of attributes and associated values (and possibly constraints on values)
(r) Every dog has bitten a mail_carrier	(iv) $\forall x : Dog(x) \rightarrow \exists y : mail\_carrier(y) \wedge Bite(x, y)$
	(v) $\forall x \forall y : Dog(x) \rightarrow mail\_carrier(y) \wedge Bite(x, y)$

(a) p-i, q-ii, r-iii, s-iv (b) p-i, q-iii, r-ii, s-v
(c) p-i, q-iii, r-ii, s-iv (d) p-ii, q-i, r-iii, s-iv

92. We have two dice one is biased another one is unbiased, the probability of getting odd number on an unbiased dice is 1/3 and for even it is 2/3.The probability of getting odd number on a exactly one dice when rolling together is :
(a) 1/2 (b) 1/3 (c) 1/6 (d) 2/3

93. We have graph in which do nodes are given. Find out how many bipartites graph can be formed, if each part have at least 3 nodes and also find out the maximum number of edges in this bipartite graph.
(a) 582, 25 (b) 582, 45 (c) 590, 36 (d) None of these

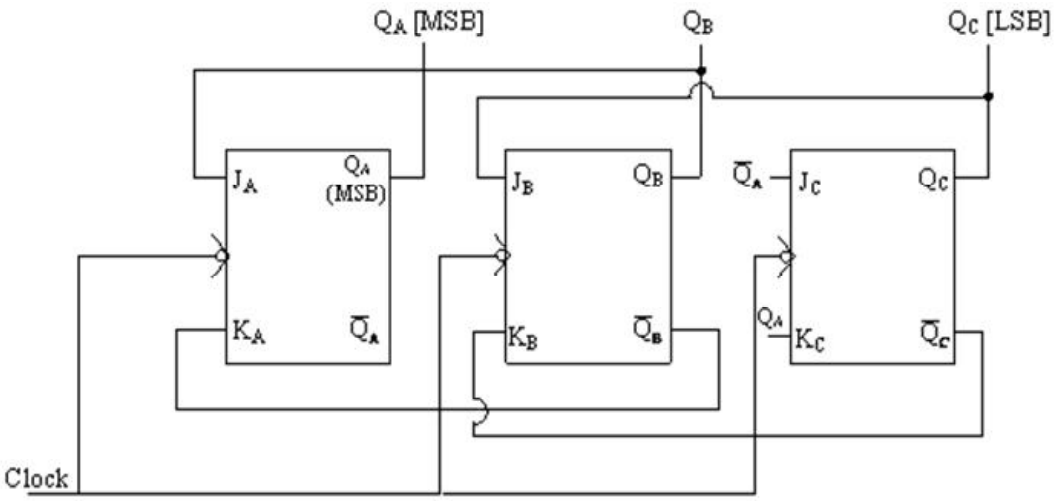
94. Which one is ***not*** major activities of an operating system in regard to file management?
(i) The creation and deletion of files.
(ii) The creation and deletion of directories.
(iii) The support of primitives for manipulating files and directories.
(iv) The mapping of files onto secondary storage.
(v) The backup of files on stable (nonvolatile) storage media.
(a) (i) only (b) (ii), (iii) (c) (iv), (v) (d) None of these

95. Which is/are of the following components of program state are shared across threads in a multithreaded process?

(i) Register values (ii) Heap memory (iii) Global variables (iv) Stack memory

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

96. The counting sequence of the following counter.
(Assume $Q_A\ Q_B\ Q_C = 000$ initially)



(a) 0, 1, 3, 4, 6, 7, 0 (b) 0, 1, 3, 6, 7, 4, 0 (c) 0, 1, 3, 7, 6, 4, 0 (d) 0, 1, 3, 6, 4, 7, 0

97. When $(-89)_{10}$ is converted in binary, the sum of bits in binary will be

(a) 5 (b) 7 (c) 9 (d) 12

98. Consider a CPU that executes at a clock rate of 200 MHz (5 ns per cycle) with a single level of cache. $CPI_{execution}$ i.e. CPI with ideal memory is 1.1. Instruction mix are 50% arithmetic / logical, 30% load / store, 20% control instruction. Assume the cache miss rate is 15% and a miss penalty of 50 cycles. The number of times cpu with ideal memory is faster when no miss-occurs

(a) 1.44 (b) 1.88 (c) 1.99 (d) None of these

99. Cache Memory and Main Memory are divided into equal size Blocks with 16 words. Cache Memory has 512 blocks and Main Memory has 4096 blocks; Cache is designed with Direct Mapped, the number of tag bits is

(a) 1 (b) 3 (c) 5 (d) None of these

100. For the ANN, find net input ,J(W) for
$w_{10} = 0.2$, $w_{20} = 0.5$, $w_{11} = 0.1$, $w_{21} = 0.5$, $w_{12} = 0.5$, $w_{22} = 0.1$, $w_{13} = 0.3$, $w_{23} = 0.3$, $X = [1\ 2\ 3]^T$ and $Y = [1\ 0\ 1]^T$

(a) 0 (b) 0.78 (c) 0.61 (d) None of these

Space for rough work

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

NTA-UGC-NET-COMPUTER SCIENCE & APPLICATIONS

Date: 14-06-2019

Test Series-E

ANSWER KEY

PAPER – I

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

PAPER – II

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