

Test Booklet No. \_\_\_\_\_

**This booklet consists of 100 questions and 12 printed pages.**

RGUPET/\_\_\_\_/\_\_\_\_

**Series**

NIL
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**RGUPET 2023  
Ph.D. in COMPUTER SCIENCE AND ENGINEERING**

**Full Marks: 100**

**Time: 3 Hours**

Roll No. 

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Day and Date of Examination : \_\_\_\_\_

Signature of Invigilator(s) : \_\_\_\_\_

Signature of Candidate : \_\_\_\_\_

*General Instructions:*

***PLEASE READ ALL THE INSTRUCTIONS CAREFULLY BEFORE MAKING ANY ENTRY.***

1. DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE TOLD TO DO SO.
2. Candidate must write his/her Roll Number on the space provided.
3. This Test Booklet contains 100 Multiple Choice Questions (MCQs) from the concerned subject. Each question carries 1 mark.
4. Please check the Test Booklet to verify that the total pages and total number of questions contained in the test booklet are the same as those printed on the top of the first page. Also check whether the questions are in sequential order or not.
5. Candidates are not permitted to enter into the examination hall 15 minutes after the commencement of the entrance test or leave the examination hall before 30 minutes of end of examination.
6. Making any identification mark in the OMR Answer Sheet or writing Roll Number anywhere other than the specified places will lead to disqualification of the candidate.
7. Candidates shall maintain silence inside and outside the examination hall. If candidate(s) is/are found violating the instructions mentioned herein or announced in the examination hall, they will be summarily disqualified from the entrance test.
8. In case of any dispute, the decision of the Entrance Test Committee, RGU shall be final and binding.
9. The OMR Answer Sheet consists of two copies, the Original copy and the Student's copy.

1	Patent is a -----				a)	Transferable property
	a) Transferable property	b) T Negotiable property	c) Real property	d) Non-transferable property		
2	Patent application can be filed in India by				d)	All the above
	a) True and First Inventor	b) Assignee of the inventor	c) Legal representative of the inventor	d) All the above		
3	Hall Mark is				b)	Certification mark
	a) Trademark	b) Certification mark	c) Collective mark	d) None of the above		
4	In the case of original literary, dramatic, musical and artistic works, the duration of copyright is the lifetime of the author or artist, and ----- counted from the year following the death of the author.				b)	60 years
	a) 50 years	b) 60 years	c) 70 years	d) 100 years		
5	In India, the registration of copyright is ----- as the registration is treated as mere recordal of a fact. The registration does not create or confer any new right and is not a prerequisite for initiating action against infringement.				a)	Not mandatory
	a) Not mandatory	b) Not compulsory	c) Not exclusive	d) All of the above		
6	Intellectual Property Rights (IPR) protect the use of information and ideas that are of				c)	Commercial value
	a) Ethical Value	b) Moral Value	c) Commercial Value	d) All of the above		
7	The term 'Intellectual Property Rights' covers				d)	All of the above
	a) Copyright	b) Trademark	c) Patent	d) All of the above		
8	Patent right is				d)	Both (a) and

						(c)
	a) Exclusive right	b) Natural right	c) Property right	d) Both (a) and (c)		
9	Patentability criteria includes				d)	All of the above
	a) Novelty	b) Inventive steps	c) Capable of industrial application	d) All of the above		
10	If you infringe a patent: 2 and 3 are both possible					
	a) you go to jail if caught	b) Nothing may happen	c) the owner of the patent will sue you in a court	d) Both (b) and (c) are possible	d)	Both (b) and (c) are possible
	The format of thesis writing is the same as				c)	A research Dissertation
11	a) Writing of Seminar representation	b) Preparation of research paper/article	c) A research Dissertation	d) Presenting a workshop/conference		
	The special terms and phrases used in a research report is given as					
12	a) Foot note	b) Quotations	c) Glossary	d) Bibliography	c)	Glossary
	The report submitted when there is a time lag between the data collection and presentation of result is known as					Interim Report

13	a) Article	b) Summary report	c) Thesis	d) Interim Report	d)	
14	When two or more successive foot notes refer to the same work which one of the following is used?				d)	ibid
	a) et.al	b) op.cit	c) loc.cit	d) ibid		
15	Quality of a research journal is indicated by its				a)	Impact factor
	a) Impact Factor	b) H-index	c) G-index	d) i10-score		
16	A short summary of Technical Report is called				a)	Research Abstract
	a) Research Abstract	b) Article	c) Research Publication	d) Thesis		
17	A Blue print of Research work is called				a)	Research Design
	a) Research Design	b) Research Problem	c) Research Tools	d) Research Methods		
18	Before starting to write a research report it is advisable to develop				d)	An outline
	a) A theme	b) A model	c) A chapter	d) An outline		
19	What abbreviation is used when there are more than four authors of a cited research work?				a)	et.al
	a) et. al	b) etc.	c) at.al	d) al.et		
20	1. What is the full form of MLA referencing style?				d)	Modern Language Association
	a) Machine Language Adaptation	b) Management Language Authority	c) Mainstream Language Association	d) Modern Language Association		

21	The first owner of the computer programme is _____				a
	a) Author	b) Creator	c) proprietor	d) designer of software	
22	The people who are entitled to apply for the registration of the copyright are _____				d
	a) Author & artist	b) assignee and licensee	c) Composer & producer	d) all the above	
23	A copyright is a kind of _____ property				d
	a) Movable property	b) personal property	c) Immovable property	d) personal and movable property	
24	Intellectual Property Right (IPR) protects the use of information and ideas that are of _____.				d
	a) Ethical value	b) Monetary value	c) Social value	d) Commercial value	
25	Intellectual Property Rights (I.P.R.) in India covers				d
	a) Patents	b) Copyrights	c) Trademarks	d) All of the above	
26	Under copyright agreement the amount of royalty is computed on the basis of				d
	a) Number of books published	b) Number of books sold	c) Total cost of books published	d) Total sale price of the books sold	
27	Choose the correct option in terms of Issues related to professional responsibility				c
	a) Confidentiality	b) Intellectual property rights	c) Both Confidentiality & Intellectual property rights	d) Managing Client Relationships	
	Efficiency in a software product does not include _____				b

28	a) responsiveness	b) licensing	c) memory utilization	d) processing time		
29	What protects the intellectual property created by artists?				d	
	a) copyright	b) registered designs	c) patents	d) trademarks		
30	How long do patents usually last for?				b	
	a) 10 years	b) 20 years	c) 40 years	d) 60 years		
31	"Intellectual Property Rights" terminology covers				d	Commercial Value
	a) Ethical Value	b) Moral Value	c) Social Value	d) Commercial Value		
32	Patent is a representation of				d	Both b and c
	a) Tangible Property	b) Intellectual Property	c) Industrial Property	d) Both b and c.		
33	Which form of inference refers to inferring about the whole population based on observations made on small part?				c	Inductive Inference
	a) Pseudo-inference	b) Objective inference	c) Inductive Inference	d) Deductive Inference		
34	Indian National IPR Policy came out in the year				a	2016
	a) 2016	b) 2000	c) 2001	d) 1970		
35	Which of the following is not a category of copyright work				b	Furniture
	a) Literary Works	b) Furniture	c) Sculpture	d) Musical Work		
36	What is the subject matter of a Patent?				b	Invention
	a) Art	b) Invention	c) Goods	d) Ideas		

37	Trade mark Act, came into force on-				d	1999
	a) 1957	b) 2000	c) 1970	d) 1999		
38	Validation length of a Patent in India is				a	20
	a) 20 years	b) 30 years	c) 40 years	d) 50 years		
39	How many types of compulsory licenses are provided for under the Indian Patent Act?				c	One
	a) Two	b) Four	c) One	d) Three		
40	Which Form can be used for requesting early publication of a patent?				b	Form 1 and 2
	a) Form 2	b) Form 1 and 2	c) Form 9	d) Form 5		
41	An abstract is also called				b	Synopsis
	a) Quotations	b) Synopsis	c) Glossary	d) Research plan		
42	In research methodology, Interpretation is a search of				c	Research finding
	a) Research gap	b) Research Problem	c) Research finding	d) statistical data		
43	A long essay on a single piece of research work is called				d	Monograph
	a) Report writing	b) Dissertation	c) Book	d) Monograph		
44	A thesis statement is a				c	An assertion
	a) A raw fact	b) an observation	c) an assertion	d) a discussion		
45	How to judges the depth of any research				c	By research objectives
	a) By title of research	b) By research duration	c) By research objectives	d) Total expenses on research		
46	Which of the following is not the method of research?				c	Observation
	a) Survey	b) Historical	c) Observation	d) Philosophical		
	Genuineness of a research finding is its					

47	a) Objectivity	b) Accuracy	c) Originality	d) Validity	a	Objectivity
48	Field study is related to				d	Real life situation
	a) To analyse data	b) Experimental situation	c) Laboratory situation	d) Real life situation		
49	Good research is always				b	Systematic
	a) Fast	b) Systematic	c) Narrow	d) slow		
50	Concepts are _____ of research				b	Tools
	a) Guide	b) Tools	c) Methods	d) Variables		

**DOMAIN**

51	Which of the following refers to internal software equality?				B	Reusability
	a) Scalability	b) Reusability	c) Reliability	d) Usability		
52	Identify the incorrect phase of STLC (Software Testing Life cycle).				B	Coding
	a) Test closure	b) Coding	c) Requirement analysis	d) Test planning		
53	By whom is unit testing done?				A	Developers
	a) Developers	b) Users	c) Customers	d) None		
54	Which of the following does not affect the software quality and organizational performance?				A	Market
	a) Market	b) product	c) Technology	d) People		
55	Which of the following is an indirect measure of product?				D	All of the Mentioned
	a) Quality	b) Complexity	c) Reliability	d) All of the Mentioned		
56	_____ is not a project manager's activity.				A	project design
	a) project design	b) project management	c) project planning	d) project control		
57	Which of the following symbols allowed in a variable name?				d)	)_(underscore)
	a) *(asterik)	b)  (pipeline)	c) -(hyphen)	d) _(underscore)		



58	Which of the following is not a logical operator?				a)	&
	a) &	b) &&	c)	d) !		
59	The operator << is used for				b)	Left shifting
	a) Right shifting	b) Left shifting	c) Bitwise shifting	d) Bitwise complement		
60	Recursion is sometimes called				a)	Circular definition
	a) Circular definition	b) Complex definition	c) Procedure	d) Union		
61	Keyword used to define a structure is				c)	struct
	a) stru	b) stt	c) struct	d) structure		
62	A function that is called automatically, each time an object is destroyed in a				c)	Destructor
	a) Constructor	b) Destroyer	c) Destructor	d) Terminator		
63	1. How many constructors can a class have				d)	Any Number
	a) zero	b) one	c) two	d) Any number		
64	Identify the system calls that on termination do not return control to the calling point.					a
	a)exec	b)fork	c)longjmp	d)cmp		
65	Saving the state of the old process and loading the saved state of the new process is called					a
	a) context switch	b) static	c) multiprogramming	d)mutation		
66	_____ is the concept in which a process is copied into main memory from the secondary memory according to the requirement.					b
	a) Paging	b) Demand paging	c) Segmentation	d) Swapping		
67	What is true about the fixed partition technique?					d

	a) External Fragmentation is high	b) Limitation on the size of the process	c) Degree of multiprogramming is less	d) All of the above		
68	If the resources are always preempted from the same process _____ can occur.				A	d
	a) deadlock	b) system crash	c) aging	d) starvation		
69	Which one of the following is the deadlock avoidance algorithm?				A	a
	a) banker's algorithm	b) aloha algorithm	c) elevator algorithm	d) karn's algorithm		
70	Relational Algebra is				A	Procedural query Language
	a) Procedural query Language	b) Meta Language	c) Data Definition Language	d) Data Manipulation Language		
71	2NF relations are those that are in 1NF with all the attribute types dependent on the ___ key.				C	Primary
	a) Foreign	b) Composite	c) Primary	d) Alternate		
72	SQL DDL does not specify which of the following information:				B	The operations on the tuples
	a) The schema for each relation	b) The operations on the tuples	c) The integrity constraints	d) The security and authorization information for each relation		
73	In the view definition, which of the following option is used to ensure that all UPDATE and INSERTs satisfy the condition(s)?				A	WithCheck
	a) With Check	b) Check	c) With	d) Uncheck		
74	When there is a multi-valued dependency in a table, two attributes are independently determined by each other, but both are dependent upon ___ attribute.				C	Third
	a) First	b) Second	c) Third	d) Fourth		
75	In which normal form, the non-prime attributes cannot be transitively				C	3NF

	dependent?					
	a) 1NF	b) 2NF	c) 3NF	d) 4NF		
76	Which of the following is not a DDL command?				D	UPDATE
	a) TRUNCATE	b) ALTER	c) CREATE	d) UPDATE		
77	What is the size of IPv6 addresses?					
	a) 64 Bits	b) 128 Bits	c) 256 Bits	d) 512 Bits	b)	128 Bits
78	A _____ is a device that forwards packets between networks by processing the routing information included in the packet.					
	a) Switch	b) Bridge	c) Router	d) Hub	c)	Router
79	Which modulation techniques is used to send Bits over guided and unguided media as Analog signal ?					
	a) Amplitude modulation	b) Analog modulation	c) Frequency modulation	d) Digital modulation	d)	Digital modulation
80	A single channel is shared by multiple signals ?					
	a) Digital modulation	b) Analog modulation	c) Multiplexing	d) Frequency Modulation	c)	Multiplexing
81	Datagrams are routed to their destinations with the help of _____?					
	a) Routing Table	b) Datagram Table	c) Switch Table	d) Segment Table	a)	Routing Table
82	A network device which are used to connect multiple networks is known as _____?					
	a) Router	b) Hub	c) Gateways	d) Switch	c)	Gateways
83	Instructions performing actions in assembly language are called					Imperative statements

	a) Imperative statements	b) Declarative Statements	c) Directive Statements	d) None of the Above	a	
84	Assembly languages were developed to provide ?				c	Both A and B
	a) mnemonics	b) symbols	c) Both A and B	d) None of the Above		
85	The _____ address of a memory is a 20 bit address for the 8086 microprocessor				a	Physical
	a) Physical	b) Logical	c) Both a and b	d) None of these		
86	In which does the compiler translate the source code?				d	Both a and b
	a) Binary code	b) Machine code	c) Executable code	d) Both a and b		
87	Substitution of values for names whose values are constant, is done in				c	Constant folding
	a) local optimization	b) loop optimization	c) constant folding	d) None of the above		
88	Which of the following is not a common type of error detected during lexical analysis?				b	Undefined variable
	a) Missing semicolon	b) Undefined variable	c) Illegal character	d) Unexpected end of file		
89	Which of the following is not a common optimization technique used by compilers?				d	Runtime profiling
	a) Loop fusion	b) Dead code elimination	c) Register allocation	d) Runtime profiling		
90	What is the search complexity in direct addressing?				C	
	a) $O(\log n)$	b) $O(n)$	c) $O(1)$	d) $O(n \log n)$		
91	A full binary tree with n leaf nodes contains total _____ nodes.				A	
	a) $2n-1$	b) $\log_2 n$	c) $n+1$	d) $n^2$		
92	The minimum number of nodes that can form in a binary search tree with h number of levels is _____ .				D	

	a) $2h+1$	b) $\log_2 h$	c) $2^h-1$	d) $h$		
93	Consider a B+ tree that can contain a maximum of 10 pointers in a node. What is the minimum number of keys in leaves?				B	
	a) 4	b) 5	c) 10	d) 7		
94	Time Complexity of Depth First Search is _____, where V is number of vertices and E is number of edges.				D	
	a) $O(V)$	b) $O(E)$	c) $O(V \cdot E)$	d) $O(V + E)$		
95	Finding the chromatic number of a graph is a _____.				A	
	a) NP complete problem	b) NP hard problem	c) P problem	d) None of these		
96	Which of the following problems is solved using greedy algorithm?				C	
	a) Edit distance problem	b) Matrix chain multiplication problem	c) Fractional knapsack problem	d) 0/1 knapsack problem		
97	In dynamic programming, the technique of storing the previously calculated values is called _____				C	
	a) Hashing	b) Cache	c) Memorization	d) Mapping		
98	Time complexity of building a binary heap is _____.				B	
	a) $O(\log N)$	b) $O(N)$	c) $O(N \log N)$	d) $O(N^2)$		
99	Which Hashing technique does allocate fixed number of buckets?				A	
	a) external hashing	b) dynamic hashing	c) static hashing	d) internal hashing		
100	_____ data structure is suitable for simple chaining.				D	
	a) Circular linked list	b) Singly linked list	c) Binary trees	d) Doubly linked list		

**SPACE FOR ROUGH WORK**