

Total No. of Questions : 09

Total No. of Pages : 02

MCA (Sem.-3)

E-COMMERCE AND DIGITAL MARKETING

Subject Code : PGCA-1921

M.Code : 90807

Date of Examination : 22-12-2023

Time : 3 Hrs.

Max. Marks : 70

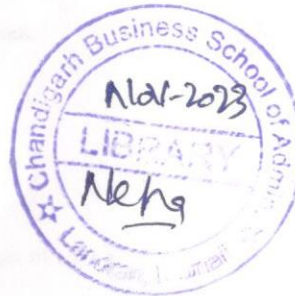
INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B & C. have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

1. Write short notes on :

- What is role of email marketing?
- Describe the M-marketing
- List the privacy issues in E-marketing.
- What is Hypertext publishing?
- Describe the role of smart cards for e-commerce.
- Elaborate the affiliate marketing.
- What is Off-page SEO?
- What is Viral marketing?
- Why keyword search is required?
- Highlight the importance of SMM.



SECTION-B

2. Describe the process of online payment system. What are the types of traditional methods of payment? Highlight the barriers for e-payment system.
3. Explain the concept and applications of EDI. Discuss the limitations of EDI. Describe the role of EDI for E-commerce.
4. Describe the framework of E-commerce. Highlight and discuss the technical aspects of E-commerce.
5. What is E-business and describe the application parts of E-commerce for the business organisations.

SECTION-C

6. What is search engine optimization and how it's different from SEM? Discuss the various strategies of SEO.
7. What is content marketing strategy? Elaborate the role of content marketing for website planning.
8. Describe the digital marketing and what are the different components of online marketing?
9. Discuss the role of online marketing. Describe the role of web analytics for digital marketing.

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Roll No.

Total No. of Pages : 03

Total No. of Questions : 09

Master of Computer Application (Sem.-3)

THEORY OF COMPUTATION

Subject Code : PGCA1927

M.Code : 90800

Date of Examination: 13-12-2023

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

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2. SECTION - B & C. have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
4. Select atleast TWO questions from SECTION - B & C.

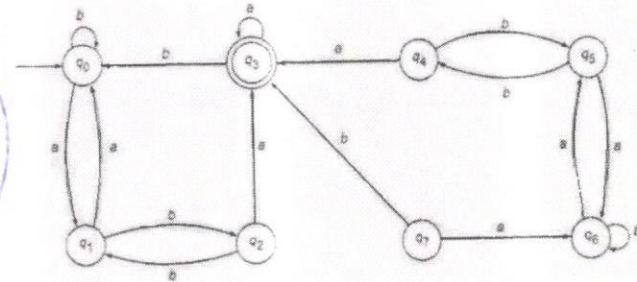
SECTION-A

I. Attempt the following :

- a) Briefly Discuss Russel's Paradox in the context of theory of computation.
- b) Draw a FA accepting the language L over {a, b} where L = "The language of all strings in which the number of a's is even."
- c) Give the mathematical definition of Mealy Machine.
- d) What are the closure properties of regular languages?
- e) How can we determine that a given grammar is ambiguous?
- f) Are Deterministic PDA (DPDA) and Non-deterministic PDA (NDPA) equivalent? Give an examples.
- g) Give an example of language which is accepted by Turing machine but not by linear bounded automata.
- h) Show that if L1 and L2 are recursive languages, then $L1 \cap L2$ is also recursive.
- i) Does the PCP with two lists $x = (b, bab^3, ba)$ and $y = (b^3, ba, a)$ have a solution?
- j) What are P and NP class of problems? Give examples of each type.

SECTION-B

2. Prove that Deterministic Finite Automata (DFA) and Non-deterministic Finite Automata (NFA) are equivalent.
3. Minimize the following Automata:



4. a) Using Pumping Lemma, show that $L = \{a^p | p \text{ is a prime}\}$ is not regular.
- b) Find a regular expression corresponding to each of the following subsets of {a, b}.
 - i) The set of all strings containing exactly 2a's.
 - ii) The set of all strings containing at least 2a's.
 - iii) The set of all strings containing at most 2a's.
 - iv) The set of all strings containing the substring aa.
5. Convert the grammar $S \rightarrow AB, A \rightarrow BS | b, B \rightarrow SA | a$ into GNF.

SECTION-B

6. Construct a Pushdown automata which accepts all palindromes over {a, b}.
7. Design a Turing Machine that accepts $L = \{1^n 2^n 3^n | n \geq 1\}$
8. Show that the Halting Problem of Turing Machine is undecidable.

9. a) State the Church Turing Thesis. What is the importance of this Thesis in the context of Theory of Computation?
- b) Give at least five examples of problems which are intractable.



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Total No. of Questions : 09

MCA (Sem.-3)

Subject Code : PGCA1925

M.Code : 90798

Date of Examination : 14-12-2023

Time : 3 Hrs.

Max. Marks : 70

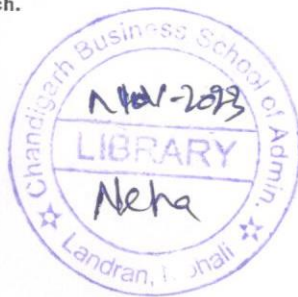
INSTRUCTIONS TO CANDIDATES :

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2. SECTION - B & C, have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

1. Answer the following :

- What is World Wide Web?
- Name the different layers of TCP/IP model.
- Discuss briefly about Fiber optics communication.
- Why is logical link layer required?
- Comment on "channel allocation".
- Describe the services offered by MAC layer.
- Enlist any two issues of Flooding algorithm.
- How is troubleshoot provided by netstat?
- Discuss two features of TCP.
- Name any two protocols at Application layer of TCP/IP model.



SECTION-B

2. Suppose two Hosts, A and B, are separated by 20,000 kilometers and are connected by a direct link of $R = 2$ Mbps. Suppose the propagation speed over the link is 2.5×10^8 meters/sec.
 - a) Calculate the bandwidth-delay product, $R \times d_{\text{prop}}$.
 - b) Consider sending a file of 800,000 bits from Host A to Host B. Suppose the file is sent continuously as one big message. What is the maximum number of bits that will be in the link at any given time?
 - c) Provide an interpretation of the bandwidth-delay product.
 - d) What is the width (in meters) of a bit in the link? Is it longer than a football field?
 - e) Derive a general expression for the width of a bit in terms of the propagation speed s , the transmission rate R , and the length of the link m .
3. What are the various transmission media used in computer networks? Discuss the wireless transmission media in detail.
4. What are the steps in the error control mechanism at the Data Link Layer? Discuss the three techniques for error control in the Data Link Layer.
5. What do you mean by Domain Name System (DNS)? Explain how DNS works? Discuss in detail about DNS records and DNS messages.

SECTION-C

6. Write a short note on the following :
 - a) MAC Protocols
 - b) IEEE 802.11 standards
7.
 - a) Describe the evolution of 2.5 G TDMA standards.
 - b) Write a note on Bluetooth technology.
8. What is the difference between proactive and reactive routing protocols? Explain in detail any two routing protocols used in Adhoc networks.
9.
 - a) Provide a simple overview of IPv6 and compare it with IPv4.
 - b) Write down a note on the evolution of wireless communication systems.

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Roll No.

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MCA (Sem.-3)
ARTIFICIAL INTELLIGENCE & SOFT COMPUTING

Subject Code : PGCA1926

M.Code : 90799

Date of Examination : 21-12-2023

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B & C have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

1. Write short notes on :

- a) What is Soft Computing?
- b) Define AI techniques.
- c) What is Artificial Intelligence?
- d) Differentiate between syntax and semantics of languages.
- e) Define Fuzzy logic.
- f) Briefly explain the Water Jug problem.
- g) Explain the purpose of A* algorithm.
- h) Describe various Knowledge Representation Issues.
- i) What is memory Bounded Heuristic Search?
- j) Differentiate between Supervised Learning and Unsupervised Learning networks.

SECTION-B

2. What do you mean by Natural Language Processing? What are the features of natural languages that create challenges for processing of natural language by computers?

3. You have three jugs measuring 12 litres, 8 litres & 3 litres and a water faucet. You need to measure out exactly one litre. Use state space approach to solve this problem.
4. Discuss the salient features of propositional logic. Consider the following axioms and prove by resolution that "Scrooge is not a child."
 - a) Every child loves Santa.
 - b) Everyone who loves Santa loves any reindeer.
 - c) Rudolph is a reindeer and Rudolph has a red nose.
 - d) Anything which has a red nose is weird or is a clown.
 - e) No reindeer is a clown.
 - f) Scrooge does not love anything which is weird.
5. Differentiate tree based breadth-first and depth-first search strategies based on completeness, time and space complexities.

SECTION-C

6. Write a short note on the applications of the following :

- a) Neuro-fuzzy modelling
- b) Neural networks to pattern recognition system such as character recognition
- c) Genetic algorithm.
7. Explain the working principle of genetic algorithm. Discuss the significance of fitness function. Also, write about multi-level optimization.
8. a) Draw the architecture of backpropagation algorithm.
b) Explain with Fuzzy logics the help of examples, how is it different from the crisp logic?
9. Write a detailed note on neural networks. What is the role of activation functions? Draw and explain a single layer perceptron in detail.

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Total No. of Pages : 02

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MCA (Sem.-3)
SOFTWARE PROJECT MANAGEMENT

Subject Code : PGCA1930

M.Code : 90801

Date of Examination : 30-12-2023

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B & C have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

1. Write short notes on :
- Discuss the use of COCOMO model.
 - Define Software Estimation.
 - Define Risk Management.
 - What is role of feasibility study in software engineering?
 - What is Software Configuration Management (SCM)?
 - What are the merits and demerits of PERT?
 - What is Organizational Behaviour?
 - What is Project Termination Review?
 - What is Staffing Pattern?
 - Define Monte Carlo Stimulation.

SECTION-B

2. Explain the following terms : Risk assessment, Hazard identification and Risk analysis. Also suggest one method for prioritizing different risks that may affect the software development process.
3. The following details are available regarding a project :

Activity	Predecessor Activity	Duration (weeks)
A	-	3
B	A	5
C	A	7
D	B	10
E	C	5
F	D,E	4

Determine the critical path, the critical activities and the project completion time by using critical path methods.

4. Elaborate all seven stages followed in procurement management to reduce the cost and to improvise the relationship with suppliers.
5. What is the Work Breakdown Structure? Explain its types.

SECTION-C

6. How an efficient leader can strongly improves the software development process? Explain any two modern approaches to leadership with their respective characteristics and application domain.
7.
 - a) What do you understand by EVA? Explain in detail.
 - b) Explain Quality assurance and Quality control.
8. What are Managing Contracts? What are the different types of Contracts and different stages in Contract Placement? Also define typical terms of Contract.
9.
 - a) What is process of selecting the right person for the job? How to motivate the workers in an organization?
 - b) What is the Oldman-Hackman Job Characteristics Model?

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Total No. of Questions : 09

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MCA (Sem.-3)

THEORY OF COMPUTATION

Subject Code : PGCA1927

M.Code : 90800

Date of Examination : 19-05-23

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

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2. SECTION - B & C have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

1. Write short notes on :

- Acceptability of a string
- Left Derivative
- Ambiguity
- CFL
- Type-0 grammar
- Transition Table
- Moore machines
- Right context
- Language
- Chain Rule Shell.



SECTION-B

2. Explain with example how NDFA is converted to DFA machine.
3. Describe pumping lemma for regular set with the help of an example.
4. Find a reduced grammar equivalent to the given grammar
$$S \rightarrow AC \mid B, A \rightarrow a, C \rightarrow c \mid BC, E \rightarrow aA \mid e$$
5. Explain the concept of ambiguity with the help of example.

$$S \rightarrow AC \mid B, A \rightarrow a, C \rightarrow c \mid BC, E \rightarrow aA \mid e$$

SECTION-C

6. Design PDA for $\{a^n b^m \mid n > m > 1\}$
7. Design Turing Machine of $\{0^n 1^n \mid n \geq 1\}$
8. Explain in detail the Chomsky classification of languages.
9. Write a note on unsolvable problem for context-free languages and classifying complexity.

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MCA (Sem-3)

Subject Code : PGCA-1925

M.Code : 90798

Date of Examination : 01-06-2023

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

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2. SECTION - B & C. have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

1. Write briefly :
- List the applications of Computer Networks.
 - What is Domain Name System?
 - We have a channel with a 3 MHz bandwidth. SNR value for the channel is 15. Find appropriate bit rate for the channel.
 - What are the design issues of Data Link Layer?
 - Define congestion and list the methods used to prevent congestion.
 - Give any four examples of wireless communication systems.
 - What are handoff-strategies?
 - Differentiate adhoc and cellular networks.
 - Write down the advantages of 2G over 1G.
 - What do you mean by frequency reuse in computer networks?

SECTION-B

2. Write a detailed note on OSI reference model.
3. What is transmission media? List the cables used in wired media. Also write down the types and applications of twisted pair cables.
4. What is a common concept used in error detection methods? Using a suitable example explain the working of Checksum error detection method.
5. What is the application of TCP protocol? Draw the format of a TCP segment and explain various fields contained in TCP header.

SECTION-C

6. Write a note on wireless local area networks. Also write down its advantages and disadvantages.
7. What is a Adhoc network? Write and explain the types of Adhoc networks. Also write down their applications.
8. What are channel assignment strategies? Differentiate fixed and dynamic channel assignment strategies.
9. Write a detailed note on evolution of wireless communication systems.



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Total No. of Pages : 02

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MCA (Sem.-3)
E-COMMERCE AND DIGITAL MARKETING

Subject Code : PGCA-1921

M.Code : 90807

Date of Examination : 24-05-2023

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B & C. have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

1. Write short notes on :

- a) Internet Service Provider.
- b) What is Influencer Marketing?
- c) What are EDI softwares?
- d) Define SMM.
- e) What are EDI service centers?
- f) What are keyword analysis tools?
- g) What is the importance of E-mail Marketing?
- h) What is the role of Mobile marketing?
- i) What is E-Governance?
- j) Give importance of Web Analysis.



SECTION-B

2. Write in detail how WWW is used as architecture and hypertext publishing.
3. Define following :
 - a) Electronic Fund Transfer.
 - b) Risk in Electronic Payment System.
4. Write the various Electronic Data Interchange methods explaining their uses.
5. Explain the Legal security and privacy issues in E-Commerce.

SECTION-C

6. Discuss the major components of Online Marketing. What is the impact of Marketing?
7. What is need for Search Engine Optimization? Explain on-page and off-page optimization.
8. What is the use of content marketing strategies? Explain how strategies are developed.
9. Explain how to increase online web presence and drive more traffic for a web site?

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MCA (Sem-3)
SOFTWARE TESTING & QUALITY ASSURANCE

Subject Code : PGCA-1931

M.Code : 90808

Date of Examination : 19-06-2023

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B & C have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

1. Write short notes on :

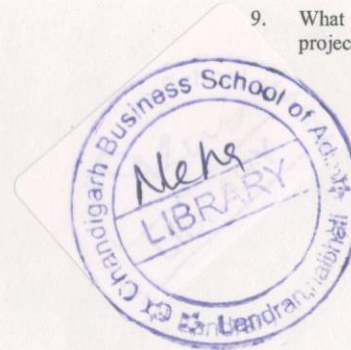
- a) Differentiate between verification and validation.
- b) What is the need for the diverse testing techniques?
- c) State the conditions under which software bug occurs?.
- d) Distinguish between testing and debugging.
- e) What is a test case?
- f) How does ISO define a Quality Management System?
- g) What does Software Quality mean?
- h) What does Software Quality Management mean?
- i) What are formal technical reviews?
- j) What is version control?

SECTION-B

2. What is software testing? Explain unit, integration and regression testing .
3. Explain the steps involved in the test lifecycle.
4. What is Logic coverage testing and Boundary value analysis in White-Box testing? Explain.
5. a) What are the differences in the alpha and beta testing?
b) What are the parameters for the evaluation of the testing techniques?

SECTION-C

6. Describe ISO 9000 and Software Engineering Institutes Capability Maturity Model of software quality assurance.
7. What do you understand by software quality? Describe various software Quality factors and software quality metrics.
8. What is software configuration management? What is the significance of baseline?
9. What are software risks? What is risk identification? Explain the concepts of risk projection and management.



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Total No. of Questions : 09

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MCA (Sem.-3)
SOFTWARE PROJECT MANAGEMENT

Subject Code : PGCA-1930

M.Code : 90801

Date of Examination : 04-01-2023

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

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2. SECTION - B & C have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

1. Write short notes on :

- a) Explain the project management tools.
- b) Write about safety and security in people management.
- c) Explain Project team and how does it help in managing a project?
- d) Discuss about project sequencing.
- e) What is ERP?
- f) Explain organization and team structure.
- g) What are the types of contract?
- h) Explain SQA activities in short.
- i) How to perform risk planning?
- j) Define critical path analysis.

MCA - Dec - 2022

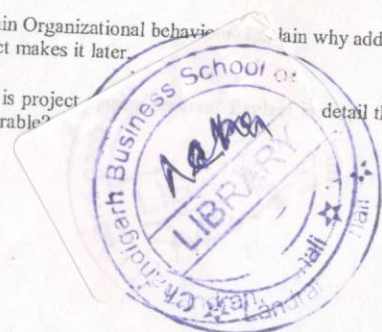
SECTION-B

2. Describe software size estimation techniques. Using a Schematic diagram and Suitable example show the order in which the following are estimated in the COCOMO estimation Techniques: Cost, Duration, Size?
3. Explain Conventional and Evolutionary work break down structures.
4. What do you understand by Sliding Window Planning? Explain using a few examples the types of projects for which this form of planning is especially suitable. What are its advantages over conventional planning?
5. Explain Feedback and Reporting mechanism in project evaluation.

SECTION-C

6. Explain how software quality assurance process differs from software development process? Also explain each phases of software quality development. Discuss the assessment of software quality according to the quality attributes. You should consider each attribute and explain how it might be assessed?
7. What is the role of a TEAM in decision making? Discuss. Explain the concept of technical leadership, immediate checkpoints and risk reduction in detail.
8. Explain Organizational behavior. Explain why adding more manpower to an already late project makes it later.
9. What is project deliverable? detail that how it is related to milestone and

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MCA (Sem.-3)
E-COMMERCE AND DIGITAL MARKETING

Subject Code : PGCA-1921

M.Code : 90807

Date of Examination : 05-01-2023

Time : 3 Hrs.

Max. Marks : 70

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SECTION-A

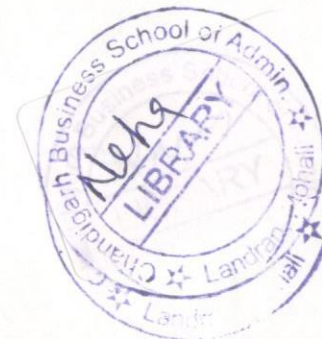
1. Write short notes on :
 - a) What do you understand by the term E-Commerce?
 - b) What do you understand by Internet service provider and World Wide Web?
 - c) What is electronic fund transfer?
 - d) What is EDI?
 - e) How EDI software implementation is done?
 - f) What is affiliate marketing, give examples?
 - g) Explain affiliate and influencer marketing with the help of examples.
 - h) What is search engine optimization?
 - i) What do you understand by web analytics? How e- mail marketing is done?
 - j) What is social media marketing?

SECTION-B

2. What are the technical components of the E-commerce? How E-commerce has helped Indian business to expand?
3. How smart cards have helped in digitalization of Indian economy? What are the risks involved in the electronic payment system?
4. What is the application of EDI in business? What are the legal issues involved in it?
5. How successful is e-governance in India? What is the security, issues involved?

SECTION-C

6. What are the various components of the online marketing and the impact of online marketing on business?
7. What is the role and importance of internet and search engine optimization? What is SEM?
8. How social media marketing is becoming a major tool of marketing in digital marketing? What in on page optimization and off page optimization?
9. How a successful content marketing strategy can be made and implemented?



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