

2025

MCA 3rd Semester Examination

MCA

Paper : MCA - 305B/D

Full Marks : 100

Time : Three Hours

*The figures in the margin indicate full marks.
Candidates are required to give their answers
in their own words as far as practicable.*

MCA - 305B

(Mobile Computing)

Group - A

Answer any five questions : 2×5=10

1. What is Mobile Computing?
2. List the limitation of mobile computing.
3. What is Ad-Hoc networks?
4. What is the role of MAC Protocol?
5. State the function of SMTP and SMNP Protocol.
6. What do you understand by event?
7. Write the use of UI tool kit.
8. Describe Bound Service.

P.T.O.

(2)

Group - B

Answer any *four* questions : $15 \times 4 = 60$

9. Briefly describe aspect of mobility. How to create a mobile application? What is Pulse Shaping? Write down the importance of radio channel. $5+5+2+3$
10. (a) What is Hardware process? Write the different type of hardware process. $3+2$
- (b) Explain code division multiplexing technique briefly with diagram. 3
- (c) Define Bluetooth. 2
- (d) What is mobile IP? How it works? $3+2$
11. (a) What do you mean by Wireless LAN? 2
- (b) Explain B Channel and D Channel. 3
- (c) Explain decibel in detail. Define HEO. $3+2$
- (d) Explain DHCP in detail. What is LOS? $4+1$
12. (a) How CDMA process Works? 5
- (b) What is LF and MF? What is frequency shift key describing it? $2+3$
- (c) Describe logical channel used in GSM. Explain Function of a SIM. $3+2$
13. (a) Explain Different types of spread spectrum communication technique. $3+2$

(3)

- (b) What is near terminal and far terminal? Define BTS. 3+2
- (c) What is multipath propagation? 5
14. Write short notes on any *three* : 5×3=15
- (a) Packet Framing Process
 - (b) Wireless network
 - (c) HIPERLAN
 - (d) Synchronous Transmission
 - (e) Transcoder
15. (a) Describe in details about TDMA, FDMA and compare them.
- (b) Explain the limitation of IPv4 and how are they overcome by IPv6. 7+8
16. (a) Describe GSM architecture and its service in details.
- (b) Explain GSM Authentication and security. 8+7

Internal Assessment : 30 marks

P.T.O.

(4)

MCA - 305D

(Natural Language Processing)

Group - A

Answer any *five* questions : $2 \times 5 = 10$

1. What is word vector?
2. Define tokenization.
3. Write the significance of CFG in parsing.
4. What is cognitive science?
5. Define NLP.
6. What is epoch?
7. How AI related to NLP?
8. What is TF-IDF?

Group - B

Answer any *four* questions : $15 \times 4 = 60$

9. Write down the difference between NLG and NLU.
Why tokenization is important for text preprocessing?
Define significance of regular expressions (regex) in
Natural Language Processing (NLP). $5+5+5$
10. Explain different steps of text Normalization in brief.
Define Sentiment Analysis and its role in E-commerce.
What is a Chabot? $7+6+2$

11. What is Morphology analysis in NLP? Write down the difference between inflectional and derivational morphology. Briefly describe Hidden Markov Model (HMM). 2+6+7
12. Write short notes on the following topics (any *three*) : 5×3=15
- (i) Text Classification
 - (ii) WSD
 - (iii) POS tagger
 - (iv) Unsupervised Learning
 - (v) Cosine similarity
13. Explain the different levels of NLP. What is name entity recognition? Why name entity recognition important for NLP? 7+2+6
14. Compute minimum edit by hand, figure out whether the word **intention** is closer to the word **execution** and calculate a minimum edit distance. Differentiate between Stemming and Lemmatization. What are the demerits of Stemming? 7+5+3
15. List and explain the challenges of NLP. Explain the role of transformational rules in transformational grammar with an example. 6+9

P.T.O.

(6)

16. Explain use of top down parsing and bottom-up parsing with respect to NLP with an example. List out the advantages and disadvantages of probabilistic CFG 9+6

Internal Assessment : 30 marks
