| PRN | |
|---|---|

(5)

QP Code DW-185

**D.K.T.E. Society's TEXTILE AND ENGINEERING INSTITUTE, ICHALKARANJI.**

*(An Autonomous Institute)*

**Semester End Examination - Winter 2019-20**

| Class - Program | Final Year B.Tech. (IT) |
|---|---|
| Course Code | ITLEL2 (ITL406) |
| Course Title | Data Science |

| Day & Date | THU , 14/11/19 |
|---|---|
| Time | 2:30 to 5:30 |
| Max.Marks | 100 |

***Instructions :***

1. *All Questions are compulsory; assume suitable data if necessary and mention it clearly.*
2. *Mobile phones and programmable calculators are strictly prohibited.*
3. *Writing anything on question paper(except PRN), exchange/sharing of stationery, calculator etc. are not allowed.*

| Que No | | Question | Marks | BL | CO |
|---|---|---|---|---|---|
| 1 | A | What is Data Science? What are applications of Data Science? | 8 | 1 | 1 |
| | B | Explain Bonferroni's Principle with suitable example. | 7 | 2 | 1 |
| 2 | A | What is an outlier? Why do we need to treat outliers carefully? Explain numerical methods to identify outliers in the dataset. | 8 | 2 | 2 |
| | | **Attempt any one of B & C** | | | |
| | B | For the stock price data given below identify the outlier using Z-score method<br>30 14 19 11 76 14 11 13 9 11 15 17 | 7 | 3 | 2 |
| | C | For the stock price data given below identify the outlier using Interquartile Range (IQR)<br>30 14 19 11 76 14 11 13 9 11 15 17 | 7 | 3 | 2 |
| 3 | A | With suitable examples describe how Exploratory Data Analysis (EDA) would help to uncover the anomaly in training data. | 8 | 1 | 2 |
| | B | What are advantages of deriving new variables from predictor variables? How to assess usefulness of new derived variables in predicting the target variable using Exploratory Data Analysis (EDA)? | 7 | 2 | 2 |
| 4 | A | Explain committees of classifiers. What are advantages of using classifier committees? | 8 | 2 | 3 |
| | | **Attempt any one of B & C** | | | |
| | B | Explain Text Categorization (TC) using Example-Based Classifiers and Support Vector Machines. | 7 | 2 | 3 |
| | C | Explain document clustering algorithms. | 7 | 2 | 3 |
| 5 | | **Attempt any one of A & B** | | | |
| | A | What is Betweenness? Explain Girvan-Newman Algorithm to calculate the Betweenness. | 8 | 2 | 4 |
| | B | How to discover Communities in Social-Network Graph directly? | 8 | 2 | 4 |
| | | **Attempt any two of C, D & E** | | | |
| | C | How to find overlapping communities in Social Network Graph? | 6 | 2 | 4 |
| | D | Explain Affiliation-Graph Model to find overlapping communities in Social-Network Graph. | 6 | 2 | 4 |
| | E | Why triangles in Social-Network Graph are counted? Explain algorithm for finding triangles in Social Network Graph. | 6 | 2 | 4 |

| PRN | |
|---|---|

QP Code DW-185

| Que No | | Question | Marks | BL | CO |
|---|---|---|---|---|---|
| 6 | | **Attempt any one of A & B** | | | |
| | A | Explain model evaluation techniques for the estimation and prediction tasks. | 8 | 2 | 5 |
| | B | Explain model evaluation measures for the classification task. | 8 | 2 | 5 |
| | | **Attempt any two of C, D & E** | | | |
| | C | What might be a drawback of evaluation measures based on squared error? How might we avoid this? | 6 | 2 | 5 |
| | D | With suitable example explain decision cost/benefit analysis. | 6 | 2 | 5 |
| | E | Explain use of lift charts and gains charts to compare model performance. | 6 | 2 | 5 |

---------- X ---------- X ----------

| PRN | |
|---|---|

QP Code DW-137

**D.K.T.E. Society's TEXTILE AND ENGINEERING INSTITUTE, ICHALKARANJI.**

*(An Autonomous Institute)*

**Semester End Examination - Winter 2019-20**

| Class - Program | Final Year B.Tech. (IT) |
|---|---|
| Course Code | ITL402 |
| Course Title | Real Time Systems |

| Day & Date | 10 N , 11 /11/19 |
|---|---|
| Time | 2.30 to 5.30 |
| Max.Marks | 100 |

***Instructions :***

1. *All Questions are compulsory; assume suitable data if necessary and mention it clearly.*
2. *Mobile phones and programmable calculators are strictly prohibited.*
3. *Writing anything on question paper(except PRN), exchange/sharing of stationery, calculator etc. are not allowed.*

| Que No | | Question | Marks | BL | CO |
|---|---|---|---|---|---|
| 1 | A | What is real time system? Discuss hard, soft and firm real time system with example. | 8 | 2 | 1 |
| | B | Explain different memory technologies. | 7 | 2 | 1 |
| 2 | A | Explain statecharts in detail. | 8 | 2 | 2 |
| | | **Attempt any one of B & C** | | | |
| | B | What are petrinets? Construct Petrinet for following algebra $(a+bi)(a+bi)=a^2-b^2+2abi$ | 7 | 3 | 2 |
| | C | What is a finite state automata? Construct finite state automata for automated teller machine. | 7 | 3 | 2 |
| 3 | A | What is semaphore? Explain its different types. Enlist uses of semaphore. | 8 | 2 | 3 |
| | B | Verify the Schedulability and Construct Schedule of following task set under EDF approach. | 7 | 3 | 3 |

| Processes | Execution time(ei) | Period(pi) | Deadline |
|---|---|---|---|
| T1 | 3 | 20 | 7 |
| T2 | 2 | 5 | 4 |
| T3 | 2 | 10 | 8 |

| | | | | | |
|---|---|---|---|---|---|
| 4 | A | Explain Process Stack Management. | 8 | 2 | 3 |
| | | **Attempt any one of B & C** | | | |
| | B | Explain Block or Page Management. | 7 | 2 | 3 |
| | C | Explain thirteen selection criteria for real time kernels. | 7 | 2 | 3 |
| 5 | | **Attempt any one of A & B** | | | |
| | A | What is Memory Loading? Draw and explain typical Memory Map. State the formula for Total Memory Loading. | 8 | 2 | 4 |
| | B | Explain different approaches to reduce Response Time and Time Loading. | 8 | 2 | 4 |
| | | **Attempt any two of C, D & E** | | | |
| | C | Explain Response Time Calculation. | 6 | 2 | 4 |
| | D | What is Interrupt Latency? Explain different latency sources. | 6 | 2 | 4 |
| | E | Explain Time Loading and its Measurement. | 6 | 2 | 4 |
| 6 | | **Attempt any one of A & B** | | | |
| | A | Define Reliability? Explain Process Block model technique to calculate System Reliability. | 8 | 2 | 5 |
| | B | Explain Real Time Databases. | 8 | 2 | 5 |
| | | **Attempt any two of C, D & E** | | | |
| | C | Explain Halstead 's Metrics to calculate System Reliability. | 6 | 2 | 5 |

PRN

QP Code 24-137

| Que No | | Question | Marks | BL | CO |
|---|---|---|---|---|---|
| | D | Explain Unit Level Testing. | 6 | 2 | 5 |
| | E | List Real Time System applications? Explain any one. | 6 | 2 | 5 |

---------- X ---------- X ----------

PRN | QP Code

| Que No | Question | Marks | BL | CO |
|---|---|---|---|---|

For 'v' belts

Series of preferred values for pitch diameters (in mm) are as follows:

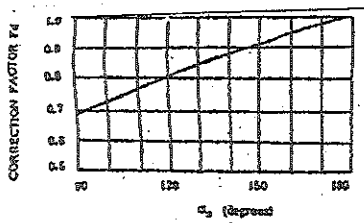
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Pitch diameter (mm) : | 125 | 132 | 140 | 150 | 160 | 170 | 180 | 190 | |
| 200 | 212 | 224 | 236 | 250 | 265 | 280 | 300 | 315 | 355 | 375 |
| 400 | 425 | 450 | 475 | 500 | 530 | 560 | 600 | 630 | 670 | 710 |
| 750 | 800 | 900 | 1000 | | | | | | | |

Correction factor ($F_2$) for industrial service

| Type of service | Operational hours per day | | |
|---|---|---|---|
| | 0 -10 | 10-16 | 16-24 |
| 1) Light duty; agitators-blowers-centrifugal pumps fans (up to 7.5 kW) and compressors | 1.1 | 1.2 | 1.3 |
| 2) Medium duty: conveyors-fans (above 7.5 kW) line shafts machine tools-presses and positive displacement pumps. | 1.2 | 1.3 | 1.4 |
| 3) Heavy duty; conveyors-bucket elevators and hammers | 1.3 | 1.4 | 1.5 |

Conversion of inside length to pitch length of the belt

| Belt Section | A | B | C | D | E |
|---|---|---|---|---|---|
| Difference between pitch length and inside length (mm) | 36 | 43 | 56 | 79 | 92 |




Correction factor for arc of contact (V-grooves on both pulleys)

PRN | QP Code

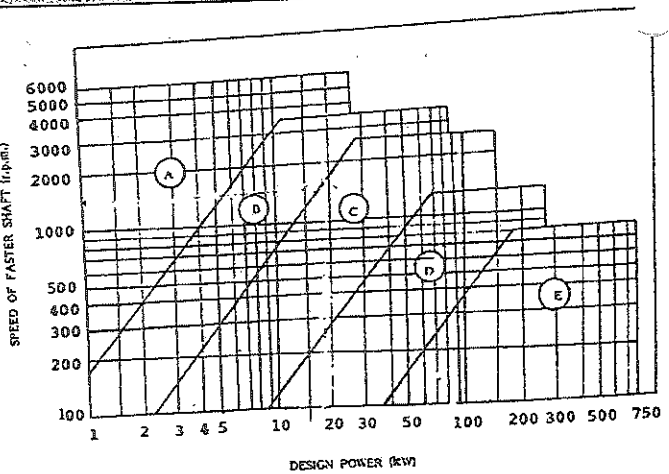
| Que No | Question | Marks | BL | CO |
|---|---|---|---|---|

Correction factor $F_1$ for belt length

($L_i$ = nominal inside length of the belt in mm)

| $L_i$ | Belt section | | | | |
|---|---|---|---|---|---|
| | A | B | C | D | E |
| 1905 | 1.02 | 0.97 | 0.87 | – | – |
| 1981 | 1.03 | 0.98 | – | – | – |
| 2032 | 1.04 | – | – | – | – |
| 2057 | 1.04 | 0.98 | 0.89 | – | – |
| 2159 | 1.05 | 0.99 | 0.90 | – | – |
| 2286 | 1.06 | 1.00 | 0.91 | – | – |
| 2438 | 1.08 | – | 0.92 | – | – |
| 2464 | – | 1.02 | – | – | – |
| 2540 | – | 1.03 | – | – | – |
| 2667 | 1.10 | 1.04 | 0.94 | – | – |
| 2845 | 1.11 | 1.05 | 0.95 | – | – |
| 3048 | 1.13 | 1.07 | 0.97 | 0.86 | – |
| 3150 | – | – | 0.97 | – | – |
| 3251 | 1.14 | 1.08 | 0.98 | 0.87 | – |
| 3404 | – | – | 0.99 | – | – |
| 3658 | – | 1.11 | 1.00 | 0.90 | – |
| 4013 | – | 1.13 | 1.02 | 0.92 | – |
| 4115 | – | 1.14 | 1.03 | 0.92 | – |
| 4394 | – | 1.15 | 1.04 | 0.93 | – |
| 4572 | – | 1.16 | 1.05 | 0.94 | – |
| 4953 | – | 1.18 | 1.07 | 0.96 | – |
| 5334 | – | 1.19 | 1.08 | 0.96 | 0.94 |
| 6045 | – | – | 1.11 | 1.00 | 0.96 |
| 6807 | – | – | 1.14 | 1.03 | 0.99 |
| 7569 | – | – | 1.16 | 1.05 | 1.01 |

——— X ——— X ———




**Power rating of V-belts**

($\alpha_s$ = 180° ; speed of the faster pulley - 1440 r.p.m.)

($D$ = pulley diameter (mm) ; $PR$ = Power rating in kW)

| Section | D | 75 | 80 | 85 | 90 | 100 | 106 | 112 | 118 | 125 |
|---|---|---|---|---|---|---|---|---|---|---|
| A | PR | 0.73 | 0.86 | 0.99 | 1.12 | 1.38 | 1.50 | 1.63 | 1.81 | 2.00 |
| Section | D | 125 | 132 | 140 | 150 | 160 | 170 | 180 | 190 | 200 |
| B | PR | 2.24 | 2.46 | 2.77 | 3.30 | 3.60 | 4.00 | 4.39 | 4.77 | 5.23 |
| Section | D | 200 | 212 | 224 | 236 | 250 | 265 | 280 | 300 | 315 |
| C | PR | 6.14 | 6.81 | 7.68 | 8.28 | 9.40 | 10.10 | 11.10 | 12.10 | 12.50 |
| Section | D | 350 | 375 | 400 | 425 | | | | | |
| D | PR | 15.7 | 17.5 | 19.3 | 20.60 | | | | | |

Dimensions of standard cross-sections

| Belt Section | Width $W$ (mm) | Thickness $T$ (mm) | Minimum pitch diameter of pulley (mm) |
|---|---|---|---|
| A | 13 | 8 | 125 |
| B | 17 | 11 | 200 |
| C | 22 | 14 | 300 |
| D | 32 | 19 | 500 |
| E | 38 | 23 | 630 |

| PRN | | QP Code | BW-035 |
|---|---|---|---|

**D.K.T.E. Society's TEXTILE AND ENGINEERING INSTITUTE, ICHALKARANJI.**

*(An Autonomous Institute)*

**Semester End Examination - Winter 2019-20**

| Class - Program | Final Year B.Tech. (IT) |
|---|---|
| Course Code | ITL401 |
| Course Title | Cloud Computing |

| Day & Date | 6/11/19 Wed |
|---|---|
| Time | 2-30 to 5.30 PM |
| Max.Marks | 100 |

***Instructions :***

1. *All Questions are compulsory; assume suitable data if necessary and mention it clearly.*
2. *Mobile phones and programmable calculators are strictly prohibited.*
3. *Writing anything on question paper(except PRN), exchange/sharing of stationery, calculator etc. are not allowed.*

| Que No | | Question | Marks | BL | CO |
|---|---|---|---|---|---|
| 1 | A | Explain different types of Cloud/ Explain different cloud deployment models | 8 | 2 | 1 |
| | B | Explain characteristics of cloud. | 7 | 2 | 1 |
| 2 | A | Explain the role of cloud computing in geoscience satellite image processing | 8 | 2 | 4 |
| | | **Attempt any one of B & C** | | | |
| | B | Explain the role of cloud computing in CRM and ERP. | 7 | 2 | 4 |
| | C | Explain the Cancer Diagnosis using cloud | 7 | 2 | 4 |
| 3 | A | With the help of diagram explain Implementation Levels of Virtualization | 8 | 2 | 2 |
| | B | Draw and explain Bare-metal virtualization structure. How I/O access takes place in it? | 7 | 2 | 2 |
| 4 | A | Explain Open Source Eucalyptus Cloud Architecture | 8 | 2 | 5 |
| | | **Attempt any one of B & C** | | | |
| | B | Explain Open Stack Cloud Architecture | 7 | 2 | 5 |
| | C | Explain automation and self Service feature in Cloud deployment | 7 | 2 | 5 |
| 5 | | **Attempt any one of A & B** | | | |
| | A | Explain in detail how energy efficiency is achieved in cloud computing. | 8 | 2 | 3 |
| | B | Explain in detail Market Oriented Cloud Computing (MOCC). | 8 | 2 | 3 |
| | | **Attempt any two of C, D & E** | | | |
| | C | Explain data center architecture for MOCC | 6 | 2 | 3 |
| | D | Explain federated cloud in detail. | 6 | 2 | 3 |
| | E | Explain Aneka Middleware | 6 | 2 | 3 |
| 6 | | **Attempt any one of A & B** | | | |
| | A | Explain in detail Infrastructure as a Service(IAAS) | 8 | 2 | 3 |
| | B | Explain in detail Software as a Service(SAAS) | 8 | 2 | 3 |
| | | **Attempt any two of C, D & E** | | | |
| | C | Explain in detail drawbacks of Platform as a service(PAAS) | 6 | 2 | 3 |
| | D | Explain DBAAS in detail | 6 | 2 | 3 |
| | E | How data confidentiality and encryption play important role in cloud? Explain in detail. | 6 | 2 | 3 |

---------- X ---------- X ----------

| PRN | | QP Code | DW-081 |
|---|---|---|---|

**D.K.T.E. Society's TEXTILE AND ENGINEERING INSTITUTE, ICHALKARANJI.**

*(An Autonomous Institute)*

**Semester End Examination - Winter 2019-20**

| Class - Program | Final Year B.Tech. (IT) |
|---|---|
| Course Code | ITL405 |
| Course Title | Mobile Computing |

| Day & Date | FRI, 8/11/19 |
|---|---|
| Time | 2:30 to 5:30 |
| Max.Marks | 100 |

***Instructions :***

1. *All Questions are compulsory; assume suitable data if necessary and mention it clearly.*
2. *Mobile phones and programmable calculators are strictly prohibited.*
3. *Writing anything on question paper(except PRN), exchange/sharing of stationery, calculator etc. are not allowed.*

| Que No | | Question | Marks | BL | CO |
|---|---|---|---|---|---|
| 1 | A | Apply minimum shift keying rules on the data 01010 and generate MSK signal. | 8 | 2 | 1 |
| | B | Explain different application of Wireless systems. | 7 | 3 | 1 |
| 2 | A | Compare SDMA, TDMA, FDMA, CDMA, with respect to idea, terminals, single separation, advantages and disadvantages | 8 | 4 | 2 |
| | | **Attempt any one of B & C** | | | |
| | B | With diagram explain Direct Sequence Spread Spectrum. | 7 | 2 | 2 |
| | C | Describe Advantages and disadvantages of cellular systems. | 7 | 2 | 2 |
| 3 | A | Explain frequency allocation in GSM. | 8 | 2 | 3 |
| | B | With diagram explain the basic steps needed to connect the calling station with the mobile user | 7 | 2 | 3 |
| 4 | A | Compare Infrastructure based network and Ad-hod Network. | 8 | 4 | 3 |
| | | **Attempt any one of B & C** | | | |
| | B | Explain the architecture of Bluetooth. | 7 | 2 | 3 |
| | C | With Diagram explain Protocol Architecture of WLAN | 7 | 2 | 3 |
| 5 | | **Attempt any one of A & B** | | | |
| | A | What is the basic purpose of DHCP? With diagram describe initialization of a DHCP client. | 8 | 2 | 4 |
| | B | Explain the concept of congesting control, slow start and fast retransmit/fast recover related to traditional TCP. | 8 | 2 | 4 |
| | | **Attempt any two of C, D & E** | | | |
| | C | Which are the advantages and disadvantages of Snooping-TCP? | 6 | 2 | 4 |
| | D | With diagram explain Mobile TCP. | 6 | 2 | 4 |
| | E | Discuss Agent advertisement packet format. | 6 | 2 | 4 |
| 6 | | **Attempt any one of A & B** | | | |
| | A | Explain Wireless datagram protocol | 8 | 2 | 4 |
| | B | With diagram explain Wireless application protocol Architecture | 8 | 2 | 4 |
| | | **Attempt any two of C, D & E** | | | |
| | C | Explain general features offered by Wireless Session Protocol. | 6 | 2 | 4 |
| | D | With diagram describe Wireless application environment logical model. | 6 | 2 | 4 |
| | E | Explain basic features of Wireless markup language. | 6 | 2 | 4 |

---------- X ---------- X ----------