AR16

CODE: 16CE4029 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Regular Examinations, November,2019

TRAFFIC ENGINEERING

(Civil Engineering)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Explain microscopic and macroscopic parameters of Traffic? Differentiate between them?	8M
	b)	Explain the concept of PCU? How is it established? Give four examples?	6M
		(OR)	
2.	a)	What are different types of speed studies that can be carried out?	7M
	b)	Differentiate condition and collision diagram? Where can these diagrams be used?	7M

UNIT-II

3.	a)	Define LOS? What are different LOS proposed in HCM manual?	7M
	b)	How do you determine capacity of Highway?	7M
		(OR)	
4.	a)	Explain concept of service volume? How do you find for a given Highway?	6M
	b)	What are various measures to improve LOS of (i) Intersection (ii) Highway	8M

UNIT-III

5.	a)	Explain step by step procedure of Webster method of signal design?	8M
	b)	What are general traffic regulative measures?	6M
		(OR)	
6.	a)	What are regulations concerning driver?	7M
	b)	How do you enforce traffic regulations?	7M

UNIT-IV

7.	a)	What are measures to reduce air pollution?	7M
	b)	Brief various guidelines used to keep land use minimal in planning new or existing facilities?	7M
		(OR)	
8.	a)	Explain various effects of traffic on environment?	7M
	b)	What are major air pollutants released?	7M

UNIT-V

9.	a)	What are various traffic signs?	7M
	b)	Mention standards and specifications followed for road markings?	7M
		(OR)	
10.	a)	What are various types of Pavement markings?	8M
	b)	Differentiate cautionary and regulatory signs?	6M

AR16

CODE: 16CE4032 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Regular Examinations, November-2019

ENVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT

(Civil Engineering)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Explain about methods of evaluation step in EIA process.	5M
	b)	Enumerate the role of legal and institutional frame work of regulation in EIA	9M
		(OR)	
2.	a)	Describe possible changes in the environment by various project activities.	8M
	b)	Describe the preparation of Environmental Base map.	6M

UNIT-II

3.	a)	How the Matrix method help the project planner?	7M
	b)	What is interaction - Matrix methodology? Explain.	7M
		(OR)	
4.	a)	Explain the criteria followed in selecting EIA methodology?	7M
	b)	Describe briefly about Environmental Media Quality Index method.	7M

UNIT-III

5.	a)	Determine the evaluation process and steps to evaluate the ecosystem with examples.	7M
	b)	Describe various impacts on environment and justify the same during the development of a road project.	7M
		(OR)	
6.	a)	Write the steps involved in the EIA assessment of air environment.	7M
	b)	Explain the development activities on vegetation with example?	7M

UNIT-IV

7.	a)	Explain the different types of environmental audits.	5M
	b)	Describe various issues to be considered in environmental audit during on-site activities.	9M
		(OR)	
8.	a)	Describe the process of Audit protocol.	4M
	b)	Describe the important points taken into consider to examine in the environmental audit during operational phase of a project.	10M

UNIT-V

9.	a)	Discuss the need for awareness on environmental impact assessment.	7M
	b)	Enumerate the major functions of CPCB.	7M
		(OR)	
10.	a)	Discuss about Environmental Protection Act,1986.	7M
	b)	Prepare an Environmental Impact Assessment and Appraisal report to a thermal power plant	7M

AR16

CODE: 16EE4028 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Regular Examinations, November-2019

SPECIAL ELECTRICAL MACHINES

(Electrical and Electronics Engineering)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Draw and explain the construction and operation of SRM	7M
	b)	Describe the control mechanism of switched reluctance motor.	7M
		(OR)	
2.	a)	List out the advantages , disadvantages and application of SRM	7M
	b)	Give the distinguished points between Switched reluctance motor , conventional reluctance motor	7M

UNIT-II

3.	a)	Describe the construction and operation of variable reluctance motor	7M
	b)	Explain operation of stepper motor.	7M
		(OR)	
4.	a)	List out the advantages and disadvantages also mention types of VRSM and find out two differences between them	7M
	b)	State the application , advantages and disadvantages stepper motor and draw the speed torque characteristics of stepper motor	7M

UNIT-III

5.	a)	Give the types of brushless dc machine and explain the operation of BLDC motor	7M
	b)	Write a short notes on base drive circuit and power converter circuit	7M
		(OR)	
6		Draw and explain the construction of brushless DC motor and explain its operation and application of this motor	14 M

UNIT-IV

7.	a)	Briefly explain the construction of LIM and mention the types of LIM	7M
	b)	Explain the construction of permanent magnet motor	7M
		(OR)	
8.	a)	Explain about transverse effect and end effect of a LIM	7M
	b)	Draw the permanent magnet motor and explain its operation	7M

UNIT-V

9.	a)	Discuss about types of motor used for traction also support for each motor	7M
	b)	Differences between Single sided LIM with Double sided LIM	7M
		(OR)	
10.	a)	Explain the operation of Single sided linear induction motor	7M
	b)	Mention the comparison of AC traction and DC traction	7M

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AR16

CODE: 16ME4030 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Regular Examinations, November-2019

INDUSTRIAL AUTOMATION

(Mechanical Engineering)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Discuss in brief various types of hydraulic components used in automation with sketches	7M
	b)	Now a day's most of the industries are automated. justify the statement with suitable reasons.	7M
		(OR)	
2.	a)	Summarize the concept of USA principle.	6M
	b)	If automation seems a feasible solution to improving productivity, quality, or other measure of performance, then what are the different automation strategies to make these improvements.	8M

UNIT-II

3.	a)	Discuss in brief various possible configurations of automated production lines	7M
	b)	A rotary worktable is driven by a Geneva mechanism with six slots. The driver rotates at 30 rev/min. Determine the cycle time, available process time, and the lost time each cycle indexing the table.	7M
		(OR)	
4.	a)	Enumerate Walking beam transfer mechanisms with neat sketches	6M
	b)	A 20-station transfer line has an ideal cycle lime $T_{,}$. = 1.2 min. The probability of station breakdowns per cycle is equal for all stations, and p = 0.005 breakdowns/cycle. For each of the upper-bound and lower-bound approaches, determine (i) frequency of line stops per cycle. (ii) average actual production rate, and (iii) line efficiency	8M

UNIT-III

5.	a)	Discuss the various categories of work transport system in production industries .	7M
	b)	A product whose work content time=5.0min is to be assembled on manual production line. the required production rate is 30 units/hr. from previous experience with similar products it is estimated that the manning level will be 1.25. assume that the proportion up time E=1.0 and that the reposing time T_r=0.2 min. determine cycle time and ideal no of workers required on the line.	7M
		(OR)	
6.	a)	Illustrate the various types of automated assembly system configurations with a neat sketches.	7M
	b)	Mention several reasons why manual assembly lines are so productive compared to alternative methods.	7M

UNIT-IV

7.	a)	Discuss various categories of material handling equipments used in industries.	7M
	b)	A closed loop over head conveyor must be design to delivers parts from one load station to unload station. The specified flow rate of parts that must be delivered between the two stations is 300 parts/hour. the conveyor has carries each holding one part forward & return loop will each be 90m long. Conveyor speed = 0.5m/sec. time to load and unload the parts at respective stations are 12 sec each. Is the system feasible if so find the appropriate number of carriers and center to center spacing between carriers	7M

(OR)

8.	a)	Discuss in brief various types of conveyors.	7M
	b)	Describe AGV guidance methods.	7M

UNIT-V

9.	a)	Enumerate the various operational functions involved in machine vision.	7M
	b)	Describe any two types of CMM with neat sketches	7M

(OR)

10.	a)	List out the various characteristics required to develop products in the design engineering department of any lean manufacturing industry.	7M
	b)	Discuss the four principles of agile manufacturing.	7M

AR16

CODE: 16EC4031 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Regular Examinations, November, 2019

GLOBAL POSITIONING SYSTEM

(Electronics and Communication Engineering)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	With the help of neat diagram, describe about satellite transmitted signal generation.	7 M
	b)	Compute the receiver position finding in GPS.	7 M
		(OR)	
2.	a)	Illustrate the principle of GPS operation.	7 M
	b)	Explain in detail the space and control segments of GPS.	7 M

UNIT-II

3.	a)	Discuss in detail about Pseudo Random Noise (PRN) code.	7 M
	b)	Describe the significance of navigation message in the GPS signal.	7 M
		(OR)	
4.	a)	Illustrate with neat diagram, how C/A code is generated.	10 M
	b)	Explain the concept of selective availability in detail.	4 M

UNIT-III

5.	a)	Discuss the importance of WGS-84 for navigation systems.	6 M
	b)	Develop the satellite position coordinate frames.	8 M
		(OR)	
6.	a)	Describe in detail about the ECEF coordinate system.	7 M
	b)	Compare the features of geoid and ellipsoid coordinate systems.	7 M

UNIT-IV

7	a)	Explain Kepler's laws of planetary motion with a neat diagram.	6 M
	b)	Illustrate the significance of Receiver Independent Exchange format.	8 M
		(OR)	
8.	a)	A satellite is moving in an orbit above the surface of the earth. The semi major and minor axes are given by 7500 Km and 3500 Km correspondingly. Find out its eccentricity.	6 M
	b)	Calculate the expression for radial distance of satellite orbit.	8 M

UNIT-V

9.	a)	Describe the effects of tropospheric error on GPS signals.	7 M
	b)	Illustrate the multipath effects on GPS signals.	7 M
		(OR)	
10.	a)	Explain how clock errors will affect the performance of GPS system.	6 M
	b)	Summarize the types of errors which affect GPS signals.	8 M

AR16

CODE: 16EC4033 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Regular Examinations, November-2019

MICROCONTROLLER AND IT'S APPLICATIONS

(Electronics and Communication Engineering)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Explain the pin diagram of 8051 microcontroller with neat sketch.	**8M**
	b)	Explain the following 8051 instructions with examples. i) MOVX ii) MOVC iii) PUSH & POP	**6M**

(OR)

2.	a)	Illustrate the register set of 8051 microcontroller.	**8M**
	b)	What are the various development tools needed for testing and development of microcontroller boards?	**6M**

UNIT-II

3.	a)	Define interrupt? Enlist the interrupts in 8051 and explain interrupt priority (IP) register in 8051.	**8M**
	b)	Explain the following i) SBUF register ii) Serial communication modes	**6M**

(OR)

4.	a)	Draw the block diagram of Atmel 89CXX microcontroller and explain each block in detail.	**8M**
	b)	Explain the TMOD register of 8051 and write a program to initialize Timer0 in mode1 and Timer1 in mode0.	**6M**

UNIT-III

5.	a)	Explain the following instructions in PIC 16C6X microcontroller. i) Swapf f, F(W) ii) Movf f, F(W) iii) Andwf f, F(W) iv) Comf f, F(W)	**8M**
	b)	Explain the timers in PIC 16C61/71 and what do you mean by the prescaling of PIC timers?	**6M**

(OR)

6.	a)	What are the various addressing modes in PIC microcontroller? What is the role of INDF in indirect addressing mode?	**8M**
	b)	What is the need of ADC in PIC 16C71? Explain the ADC configuration with example.	**6M**

UNIT-IV

7.	a)	What are the advantages of 16F8XX over PIC 16C6X/7X microcontroller? List the features of 16F877 microcontroller.	**8M**
	b)	List the interrupts in PIC 16F877 microcontroller and explain each interrupt in detail.	**6M**

(OR)

8.	a)	Write short notes on i) Program memory ii) Data memory in PIC 16F8XX	**8M**
	b)	Explain power control register and OPTION_REG register in PIC 16F877 microcontroller.	**6M**

UNIT-V

9.		What are advantages of LCD over LED? Draw the interfacing diagram of LCD with 89C51 microcontroller and write interfacing program to display message ECE Department.	**14M**

(OR)

10.	a)	Draw and explain interfacing 7-segment LED with Atmel 89C2051 microcontroller.	**10M**
	b)	How to drive electromechanical relay with a microcontroller pin?	**4M**

AR16

CODE: 16CS4031 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Regular Examinations, November,2019

CRYPTOGRAPHY AND CYBER SECURITY

(CSE Branch)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Illustrate the types of active attacks with neat sketch.	7M
	b)	Encipher the message "INFORMATION" using caeser cipher(key=3) and state the weakness of this cipher.	7M
		(OR)	
2.	a)	Summarize a table with relationship between security services and mechanisms	7M
	b)	Explain the Asymmetric Key Encryption scheme with diagram.	7M

UNIT-II

3.	a)	Give the general depiction of DES encryption algorithm	8M
	b)	Make use of Diffie-Hellman Key Exchange algorithm to calculate Secret key for the values q=7, α =3, X_A= 4, X_B= 5. K=?	6M
		(OR)	
4.	a)	Discuss about the Strength of DES.	7M
	b)	Determine the public and private keys in an RSA algorithm, for given inputs p=3, q=11 and e=7. Find C for M=2.	7M

UNIT-III

5.	a)	Explain about Trojan and give features of any one Trojan.	7M
	b)	Write about Polymorphic Malware.	7M
		(OR)	
6.	a)	Briefly explain about web-based malware.	7M
	b)	Discuss about metamorphic methods.	7M

UNIT-IV

7.	a)	Explain stateful packet filtering.	7M
	b)	Write the comparisons of the four types of firewall	7M
		(OR)	
8.	a)	Illustrate working of circuit-level gateway.	7M
	b)	Draw and explain architecture for primary-backup firewall	7M

UNIT-V

9.	a)	Explain briefly about the IDS/IPS in a system.	7M
	b)	Discuss about Host-based IDS.	7M
		(OR)	
10.	a)	Elaborate working of Signature –based IDS	7M
	b)	Justify, Honeypots can be replace with IDS/IPS.	7M

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AR16

CODE: 16IT4002 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Regular Examinations, November-2019

INTERNET OF THINGS

(Information Technology)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Define IOT and explain different characteristics of IOT.	7M
	b)	Discuss different IOT protocols with a neat diagram.	7M
		(OR)	
2.	a)	Classify different applications of IOT for smart cities with a neat diagram.	7M
	b)	Explain different applications of IOT for environment with a neat diagram.	7M

UNIT-II

3.	a)	Differentiate M2M and IOT.	7M
	b)	Interpret different components of SDN architecture.	7M
		(OR)	
4.	a)	What is the need for IOT systems management? Explain.	7M
	b)	Discuss different network operator requirements.	7M

UNIT-III

5.	a)	List different steps involved in IOT system design methodology.	7M
	b)	Draw a neat diagram of domain model of the home automation IOT system.	7M
		(OR)	
6.	a)	Discuss control statements in python with examples.	7M
	b)	Explain functions in python with examples.	7M

UNIT-IV

7.	a)	Explain in detail different basic building blocks of an IOT device.	7M
	b)	List out all the components and peripherals of Raspberry Pi board.	7M
		(OR)	
8.	a)	Discuss key concepts of WAMP.	7M
	b)	With a neat diagram explain WAMP protocol.	7M

UNIT-V

9.	a)	Discuss hadoop map reduce job execution and workflow.	7M
	b)	Explain commands for installing and configuring Hadoop.	7M
		(OR)	
10.	a)	Explain apache storm installation with clear instructions.	7M
	b)	With a neat diagram explain Chef components.	7M

AR13

CODE: 13EE4023 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.TECH I SEM SUPPL. EXAMINATIONS, NOVEMBER, 2019

POWER SYSTEM ANALYSIS

(Electrical & Electronics Engineering)

Time: 3 Hours **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1. a) Mention the advantages of per unit system.
   b) Write down the formula to find YBus by using singular transformation method.
   c) What are the approximations in fast decoupled load flow?
   d) Mention any two advantages of load flow by NR method over GS method.
   e) What is the significance of the bus impedance matrix?
   f) Define symmetrical short circuit current.
   g) Write down the constraints for line – line fault through a fault impedance.
   h) Mention the relative frequency of occurrence of various faults.
   i) Define steady state stability.
   j) What is synchronising power coefficient?

PART-B

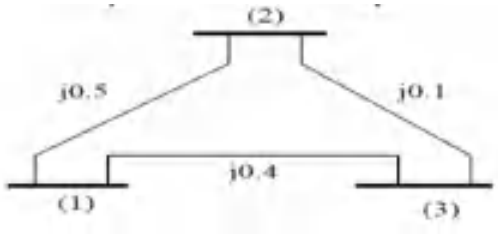
Answer one question from each unit **[5x12=60M]**

UNIT-I

2. a) Explain the properties of bus admittance matrix. 4M
   b) Two generators rated 5MVA, 11KV and 15MVA, 11KV respectively are connected in parallel to a bus. The bus bar feeds two motors rated 6.5MVA and 10MVA respectively. The rated voltage of the motors is 9KV. The reactance of each generator is 12% and that of each motor is 16% on their own ratings. Assume 50MVA, 10KV base and draw the reactance diagram. 8M

(OR)

3. a) With the help of single line diagram, explain the different components of a power system. 6M
   b) Form the bus admittance matrix for the network shown. Per unit impedances are indicated at respective branches. 6M

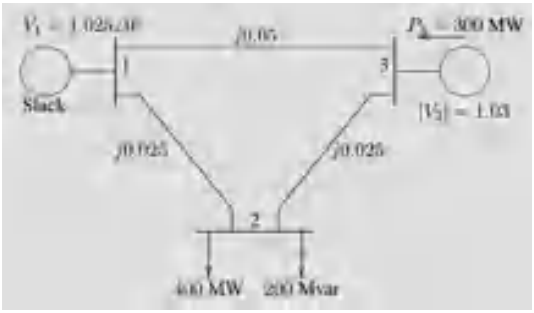


UNIT-II

4. a) Derive the static load flow equations of a n-bus system. 6M
   b) What is Jacobian matrix? How are its elements computed? 6M

(OR)

5. For the system shown below, powers at various buses are specified and the branch impedances in per unit (calculated on a base of 100MVA) are marked for respective branches. Assuming a flat voltage start, find the voltages and bus angles at the three buses at the end of two GS load flow iterations. 12M



UNIT-III

6. a) A 33 kV line has an impedance of (4+ j16) ohm, is connected to a generating station bus bar through a 6 MVA step up transformer which has a reactance of 6%. The station has two generators rated 10 MVA with 10% reactance and 5 MVA with 5% reactance. Calculate the fault current and short circuit MVA when a three phase fault occurs at the HV terminal of the transformer and at the end of the line. 10M

   b) Explain the need of short circuit studies? 2M

(OR)

7. With a neat sketches and relevant equations, explain the Z-Bus building algorithm. 12M

UNIT-IV

8. a) A 3-phase, 37.5 MVA, 33kV alternator having X_1=0.18pu, X_2=0.1pu, based on its rating, is connected to a 33kV overhead line having X_1=6.3Ω, X_2=6.3Ω and X_0=12.6Ω per phase. The alternator is solidly grounded. A single line to ground fault occurs at the remote end of the line. Calculate the fault current. 8M

   b) Discuss about different types of unsymmetrical faults 4M

(OR)

9. a) Derive an expression for the fault current for a double line to ground fault on an unloaded generator and draw its equivalent circuit. 8M

   b) Derive the expression for three phase power in terms of symmetrical components. 4M

UNIT-V

10. a) Derive the expression for critical clearing angle for the case of single machine connected to infinite bus. 6M

    b) Explain various methods to improve the transient stability of power system. 6M

(OR)

11. Derive the swing equation of single machine connected to infinite bus and also write the assumptions to derive it. 12M