AR16

CODE: 16CE4029 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, January-2020

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)	Discuss the relationship between speed, travel time, volume, density and capacity.	7M
	b)	Criticize whether parallel parking or angular parking is more reliable on roads.	7M
		(OR)	
2.	a)	Explain the steps in conducting volume studies. Tabulate the conversion for vehicles from PCU.	7M
	b)	Summarise the reasons for major accidents and how can they be recorded.	7M

UNIT-II

3.	a)	Differentiate between LOS and Capacity. Explain LOS for Rural Roads.	7M
	b)	Write the various factors influencing the capacity.	7M
		(OR)	
4.	a)	Discuss the significance of LOS criteria for urban arterial roads.	7M
	b)	Define LOS. Explain the concept of LOS using graphical representation	7M

UNIT-III

5.	a)	Brief the scope & objectives of traffic engineering	5M
	b)	The average normal flow of traffic on cross roads A and B during design period are 400 PCU per hour and 250 PCU per hour respectively, the saturation flow values on these roads are estimated as 1250 PCU per hour and 1000 PCU per hour respectively. The all – red time required for pedestrian crossing is 12 sec. Design two phase traffic signal with sketch by Webster's method.	9M
		(OR)	
6.	a)	What are the computer applications in signal design.	7M
	b)	Draw various Un-channelized intersection with traffic movements	7M

UNIT-IV

7.	a)	Describe Effect of traffic on environment?	7M
	b)	Define Air pollution? What are the pollutants emitted due to traffic?	7M
		(OR)	
8.	a)	Write few measures to reduce environmental noise pollution.	7M
	b)	Briefly explain about measures for air pollution reduction due to traffic?	7M

UNIT-V

9.	a)	Illustrate pavement markings and what are the types of pavement markings available in traffic streams explain with examples?	7M
	b)	Explain mandatory signs with sketches.	7M
		(OR)	
10.	a)	With neat sketches show various types of traffic signs, Classify them in proper groups.	7M
	b)	Write about different types of lane markings with neat sketch	7M

AR16

CODE: 16CE4032 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, January-2020

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)	What are the basic concepts of EIA? Explain	5M
	b)	How an initial environmental examination helps for a full scale EIA?	9M
		(OR)	
2.	a)	Describe the elements of EIA?	4M
	b)	Explain the different characteristics that the impact evaluation methods should Have.	10M

UNIT-II

3.	a)	Describe Environmental media Quality Index method in detail.	7M
	b)	Describe the matrix method of EIA.	7M
		(OR)	
4.	a)	Give a brief account on cost benefit analysis of EIA.	7M
	b)	Discuss about the need of EIA for engineering projects	7M

UNIT-III

5.	a)	Explain various developmental activities which cause significant impact on Surface water resources.	7M
	b)	Describe the mitigation measures for surface water environment impact.	7M
		(OR)	
6.	a)	Differentiate between deforestation and forest degradation.	7M
	b)	Explain the common causes of deforestation around the world.	7M

UNIT-IV

7.	a)	What is meant by Environmental Audit? What are the different objectives of it. Explain.	9M
	b)	Write a short note Post Audit activities	5M
		(OR)	
8.	a)	Explain the stages of environmental audit.	7M
	b)	Explain the steps involved in evaluation of audit data.	7M

UNIT-V

9.	a)	Write a short note Environmental Legislation.	7M
	b)	Discuss about the Wild life Act.	7M
		(OR)	
10.	a)	Discuss about The Water Act & The Air Act	5M
	b)	Explain the preparation of Environmental Impact assessment statement with a case study.	9M

AR16

CODE: 16ME4030 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, January-2020

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)	Define automation. Explain reasons for automation	6M
	b)	Explain automation principles and strategies	8M
		(OR)	
2.	a)	Describe ten strategies for automation and production system	8M
	b)	Explain the hydraulic and pneumatic components used in automation	6M
		UNIT-II	
3.	a)	Discuss the classification of transfer lines	6M
	b)	A Geneva with eight slots is used to operate the worktable of a dial indexing machine. The slowest workstation on the dial indexing machine has an operation time of 2.5 seconds, so that the table must be in a dwell position for this length of time. (i) At what rotational speed must the driven member of the Geneva mechanism be turned to provide this dwell time? (ii) What is the indexing time each cycle?	8M
		(OR)	
4.	a)	Discuss the terminology used in transfer line analysis	6M
	b)	An eight station rotary indexing machine operates with an ideal cycle time of **20s**. The fre line stop occurrences is **0.06 stops/cycle** on an average. When a stop occurs it takes an a 3min to make repairs Determine the following: i) Average production time ii. Average production rate Line efficiency	8M
		UNIT-III	
5.	a)	Discuss assembly operations performed on manual assembly line	6M
	b)	The total work content time of a certain assembly job is 7.8 min. The estimated downtime of the line is D = 5% and the required production rate is Rp = 80 units/hr. i) Determine the theoretical minimum number of workstations required to optimize balance de ii) For the number of stations determined in part (i), compute the balance delay d.	8M
		(OR)	
6.	a)	Discuss the line balancing Algorithms	6M
	b)	Discuss the fundamentals of automated assembly systems	8M
		UNIT-IV	
7.	a)	Explain principles of material handling systems	8M
	b)	Describe conveyor operations and features	6M
		(OR)	
8.	a)	Describe Automatic guided vehicles management and safety	6M
	b)	Explain AS/RS types and their applications	8M
		UNIT-V	
9.	a)	Explain the basic functions of Machine vision and how the image processing and analysis can be done	8M
	b)	Explain the coordinate measuring machine operation and programming	6M
		(OR)	
10.	a)	What are the steps to be considered on a shop floor for implementing lean manufacturing principles?	6M
	b)	Define agile manufacturing. How reorganizing can be done in the production system for agility	8M

AR16

CODE: 16EC4031 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, January-2020

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)	Draw the Block diagram of GPS system Architecture and briefly explain its working principle.	7M
	b)	Describe the function of a GPS receiver with block diagram.	7M
		(OR)	
2.	a)	How to determine the satellite position? Explain	7M
	b)	Explain about the broadcast ephemeris.	7M

UNIT-II

3.	a)	Describe how the Navigation message is divided in to Frames and Sub frames.	6M
	b)	Explain the three GPS system segments.	8M
		(OR)	
4.	a)	Explain Signal power levels in GPS	10M
	b)	Determine the free space loss factor on a GPS satellite L2 C/A code signal at a distance of 2.1 x 107 m.	4M

UNIT-III

5.	a)	What is Vernal Equinox	2M
	b)	Describe the Phenomena of Transformation between Cartesian Coordinate Frames	12M
		(OR)	
6.	a)	Describe the ECEF coordinate system. Also compare it with WGS – 84	7M
	b)	Explain the conversion between Cartesian and Geodetic Coordinate system	7M

UNIT-IV

7.	a)	Explain GPS Orbital Parameters.	7M
	b)	Derive the user position estimation using satellite position	7M
		(OR)	
8.	a)	Describe the least squares method used for state parameter determination.	7M
	b)	Discuss about dilution of precision. Explain the difference between VDOP, PDOP and HDOP.	7M

UNIT-V

9.	a)	Discuss about various propagation errors that limit the GPS range measurements	7M
	b)	Discuss how multi path affects the accuracy of GPS signals.	7M
		(OR)	
10.	a)	What is TEC ? How TEC Ionospheric Delay is Related to TEC.	4M
	b)	Describe the various error correction models of GPS.	10M

AR16

CODE: 16CS4031 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, January-2020

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)	List out various security attacks	7M
	b)	What are various security services	7M
		(OR)	
2.	a)	Explain substitution techniques	7M
	b)	What are transposition techniques	7M

UNIT-II

3.	a)	What are different modes of operation in DES	7M
	b)	Explain triple DES	7M
		(OR)	
4.	a)	What is RSA	7M
	b)	Explain Diffie Hellman key exchange	7M

UNIT-III

5.	a)	Analyze cyber security from global perspective	7M
	b)	What are types of malware	7M
		(OR)	
6.	a)	What are zero day vulnerabilities	7M
	b)	Explain attacks on power grid	7M

UNIT-IV

7.	a)	What is unified threat management	7M
	b)	Explain four types of fire walls	7M
		(OR)	
8.	a)	Discuss small office fire wall	7M
	b)	Analyze emerging fire wall technology	7M

UNIT-V

9.	a)	Discuss host based intrusion detection system	7M
	b)	Explain network based intrusion detection system	7M
		(OR)	
10.	a)	What is MCA fee approach to IPS	7M
	b)	Analyse security community approach to IDS	7M

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AR16

CODE: 16IT4002 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, January-2020

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)	What is IOT? Explain its Protocols.	[7M]
	b)	Explain logical design of IoT.	[7M]
		(OR)	
2.	a)	Explain IoT enabled technologies	[7M]
	b)	Describe about domain specific IoTs for Home Automation and Smart Cities.	[7M]

UNIT-II

3.	a)	What do you mean by Network Function Virtualization? Explain	[7M]
	b)	Describe about SDN in detail.	[7M]
		(OR)	
4.	a)	Explain IoT system management in the NETCONF and YANG.	[7M]
	b)	What limitations make SNMP unsuitable for IoT systems? Explain	[7M]

UNIT-III

5.	a)	Discuss about the generic design methodology for IoT systems design in detail.	[7M]
	b)	Write a program to calculate the light intensity using LDR sensor?	[7M]
		(OR)	
6.	a)	Write about Functions, Modules, Packages with examples	[7M]
	b)	List out the file operations in Python with examples.	[7M]

UNIT-IV

7.	a)	Explain various communication APIs in IoT	[7M]
	b)	Write a Python program for blinking an LED for every second on Raspberry Pi	[7M]
		(OR)	
8.	a)	Discuss about Amazon Web Services for IoT.	[7M]
	b)	Write short notes on controller service of the weather monitoring IoT system.	[7M]

UNIT-V

9.	a)	Why distributed Data Analytics frameworks are necessary for IoT? Explain	[7M]
	b)	Briefly describe about using Hadoop Map Reduce for Batch Data Analysis	[7M]
		(OR)	
10.	a)	What is the main purpose of YARN? Give reasons	[7M]
	b)	Write Short notes on (i) Apache Storm (ii) Apache Oozie	[7M]

AR13

CODE: 13OE4001 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, January-2020

AIR QUALITY MANAGEMENT

(Open Elective)

(Civil Engineering)

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

PART-A

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

1. a) What is photochemical smog? How is it different from smog?
   b) Give example of a secondary air pollutant which is a persistent organic pollutant.
   c) What is the global warming potential of laughing gas? What are its sources?
   d) What is the connection of automobile exhaust gases to occurrence of acid rains?
   e) What is the range of particle size that can be removed by Electrostatic Precipitator?
   f) State the formula for efficiency of cyclone dust collectors operating in series.
   g) Which form/type of coal has the least amount of sulphur?
   h) Name two catalysts that are used in selective catalytic reduction of nitrogen oxides.
   i) Which central government agency sets the air pollution standards for India?
   j) What does PM10 mean?

PART-B

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

UNIT-I

2. a) Explain natural phenomena which cause air pollution. 6M
   b) What is smog? How is it formed? Narrate pollution episodes related to smog formation and the meteorological conditions responsible for them. 6M

(OR)

3. a) What are primary and secondary air pollutants? Give examples. 6M
   b) Give examples of propellants used in Aerosol Sprays and their air pollution effects. 6M

UNIT-II

4. a) What is the impact of air pollution on art treasures and tangible heritage of human civilization? 4M
   b) How are acid rains caused? What are our daily activities which contribute to the phenomenon of Acid Rains? 8M

(OR)

5. a) Name any four effects of air pollution on plants and explain them briefly. 4M
   b) What is Urban Heat Island effect? How can we reduce it? 8M

UNIT-III

6. a) Suggest how equipment modifications might help reduce particulate emission with some examples. 6M
   b) Explain the design and working of a plate type electrostatic precipitator. Suggest in which industries this is ideally suited for removing particulates. 6M

(OR)

7. a) What are centrifugal scrubbers? How are they useful in removing particulate pollution from effluent streams? 6M
   b) Explain the working principle of a cyclone and how it helps remove particulates from effluent streams. 6M

UNIT-IV

8.	a)	Sketch and explain the fixed bed and moving bed units used for adsorption of gaseous pollutants.	6M
	b)	Explain the control methods of Sulphur Oxide emissions.	6M
		(OR)	
9.	a)	What is absorption? How is this phenomenon useful in removing gaseous pollutants? Name a few popular absorbents used in pollution control.	6M
	b)	Give some examples of process changes that can help reduce gaseous pollutants in emissions.	6M

UNIT-V

10.	a)	What is RSPM? Why is it important to monitor their levels in ambient air? What are the important sizes in particulates that are monitored in urban areas?	6M
	b)	What are Bharat Stage IV emissions standards for Diesel vehicles? How are they different between agricultural vehicles and construction vehicles?	6M
		(OR)	
11.	a)	What are the important polluting gases that are monitored in industries? Explain how their stacks are monitored for pollutant concentration in flue gases.	6M
	b)	Draw up a table and list the important gas and particulate pollutants and their limits as per the central pollution control board of India.	6M

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AR13

CODE: 13EE4023 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
IV B.Tech I Semester Supplementary Examinations, January-2020
POWER SYSTEM ANALYSIS
(Electrical & Electronics Engineering)

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

PART-A

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

1.(a) Why P.U system preferred for power system calculations?
(b) What is the size of Y_{bus} matrix for '**n**' bus power system?
(c) Classify the power system buses?
(d) Write any one advantage of N-R method over G-S method?
(e) Draw the sequence network for three phase fault ?
(f) The size of Z_{bus} is 3X3, what is size when a link is removed from the system?
(g) What are the unsymmetrical faults?
(h) Evaluate $a-a^2$?
(i) Define inertia constant M and H?
(j) How can steady stability can be improved?

PART – B

Answer One question from each Unit **[5X12=60M]**

UNIT I

2. a) Explain the advantages of P.U system representation ? 5 M
b) Obtained the reactance diagram of the system shown in fig (1). Assume the base values are 5000VA and 250 KV. 7M

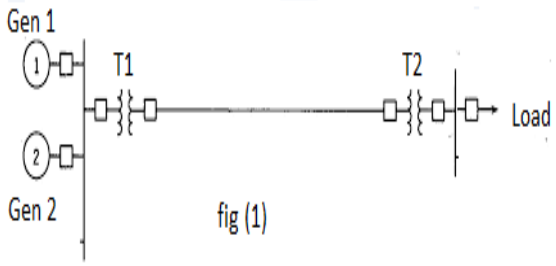

fig (1)

Gen 1 : 1000 VA, 250 V, Z= j 0.2 P.U .
Gen 2 : 2000 VA, 250 V, Z= j 0.3 P.U .
T1: 4000VA, 250 V/ 800V, Z = j 0.2 P.U
T2: 8000VA, 800 V/ 500V, Z = j 0.06 P.U
Load : 2500 VA , 400 V.

(OR)

3. a) Show that for a transformer the P.U values of impedance will be the same when refer to either side of the transformer ? 5M
b) Derive the equations to form Y_{bus} using direct inspection method? 7M

UNIT II

4. a) Classify buses in electric power system. 6M
b) Derive static load flow equations in rectangular form. 6M

(OR)

5. a) What is the necessity of load flow studies and explain the significance of slack bus? 6M
b) Derive the equations of elements of Jacobin matrix in polar coordinates? 6M

UNIT III

6. a) Discuss symmetrical three phase faults in detail. 6M

   b) Write and explain Z-bus formation algorithm. 6M

(OR)

7. a) Explain the necessity of short circuit analysis ? 4M

   b) A power plant has two generators of 10 MVA, 15% reactance each and two 5 MVA generators of 10% reactance paralleled at common bus bar from which load is taken through a 4 MVA step up transformer having a reactance of 5%. Determine the short circuit capacity of breaker on
   (i) low voltage, and (ii) High voltage side of transformer . 8M

UNIT IV

8. a) What is the significance of sequence components and derive the relation between the sequence and actual components ? 6M

   b) A 40 MVA , 11 kV , star connected alternator has a positive, negative and zero Sequence reactance's are 25%,30% and 40% respectively. Neutral is earthed through a reactor of 20% reactance. Calculate the fault current when LLG fault occurs at the terminals. 6M

(OR)

9. a) Obtain the sequence network for a single line to ground fault in a power system net network? 6M

   b) A 25 MVA, 11kV three phase generator has a sub transient reactance of 20%. The generator supplies two motors over a transmission line with transformers at both ends. The motors have rated inputs 15 and 7.5 MVA, both 10kV with 25% sub transient reactance. The three phase transformers both rated 30MVA, 10.8/12kV, connection delta –star with leakage reactance of 10% each. The series reactance of the line is 100 Ω. Draw the positive, negative and zero sequence reactance networks of the system with reactance marked in P.U. 6M

UNIT V

10. a) Find the equivalent inertia constant of two machines swinging coherently? 4M

    b) A 50 Hz, 4 pole turbo generator rated 100MVA.11 kV has an inertia constant of 8 MJ/MVA
    i) Find the stored energy in the rotor at synchronous speed.
    ii) If the mechanical input is suddenly raised to 80MW for an electrical load of 50MW, find the rotor acceleration, neglecting mechanical and electrical losses 8M

(OR)

11. a) Explain the effect of clearing time on stability? 4M

    b) A 50 Hz generator is delivering 50% of the power that is capable of delivering through line to an infinite bus. A fault occurs that increases the reactance between the generator and the infinite bus to 400% of the value before the fault. When the fault is isolated the maximum power that can be drawn is 80% of the original maximum power. Determine the critical clearing angle for the condition described ? 8M