Code No. 3165/O

FACULTY OF ENGINEERING

B.E. 3/4 (Civil) II - Semester (Old) Examination, May / June 2017

Subject : Water and Waste Water Engineering

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART – A (25 Marks)

1. State the significance of protected water supply [2]
2. What is "Desing period"? Mention design period for various components in a water supply scheme. [2]
3. How do you arrive at the total quantity of water to be supplied to a city? [2]
4. Explain the importance of chemical and bacteriological analysis of water used for domestic purpose. [2]
5. Estimate the quantity of storm water for an area of 10 heaters using Rational method. [2]
6. What are the factors effecting storm sewage. [3]
7. Define hardness and explain any one simple method for its removal. [3]
8. Discuss the tests carried out as chemical analysis of sewage. [3]
9. Describe the components of a septic tank with the aid of neat sketch. [3]
10. What are the methods of collection of solid waste? [3]

PART – A (50 Marks)

11. The population of the past three successive census of a city is as given below:

Census Year	1976	1986	1996	2006
Population	30000	40000	145000	250000

Determine the expected population of the city for the year 2046 by arithmetic increase method. [10]

12. Describe in details the criteria for a good disinfectant, mechanism and methods of disinfection. [10]

13. a). What are the important parameters to measure the organic content in sewage? Explain its significance. [5]
    b). Determine the BOD_5 of sewage at 30^0C given one day BOD @ 30^0C as 130 mg/l. Assume $K_{20} = 0.1\ day^{-1}$. [5]

14. Explain in details about the activated sludge process along with its advantages, disadvantages and design criteria. [10]

..2

15. a). Define municipal solid waste, garbage, refuse and bulk waste. Mention different disposal methods and discuss about each. [5]
    b). Design a septic tank for 50 users, assuming the rate of water supply as 60 litres / head / day. [5]

16. Design a septic tank in an area having 450 users. Assume necessary data suitably. [10]

17. Write short notes on **Two** of the following [10]
    a). Backwashing
    b). Break point chlorination
    c). Bio - chemical Oxygen Demand

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Code No. 3451/N

FACULTY OF ENGINEERING

B.E. 3/4 (Civil) II - Semester (New)(Main) Examination, May / June 2017

Subject : Environmental Engineering

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART – A (25 Marks)

1 What are safety valves? Write down its advantages. (2)
2 Write down any two applications of infiltration galleries. (2)
3 List the various devices used in the design of clariflocculators. (2)
4 Compare slow sand filter against rapid sand filter by considering following items
(a) Efficiency (b) Suitablility (c) Period of cleaning (3)
5 If 5 day BOD of a water sample is 230 mg/L and the value of constant is 0.24 per day. What would be 8 day BOD if test is carried on 17^{o}C. (3)
6 Write down the formula for velocity in sewer and write the use of it. (2)
7 With a neat flow diagram, explain recirculation for the design of trickling filters. (3)
8 Explain the activated sludge process with a neat flow diagram. (3)
9 What is the use of considering free board in the design of septic tank? (2)
10 List out all the component parts of an imhoff tanks, with a neat sketch. (3)

PART – B (50 Marks)

11 (a) Classify any compare various types of intakes. (5)
(b) Explain with a neat sketch the working process of non return valves and shut off valve. (5)

12 For a population of city with 4,00,0000 persons with a daily percapital allowance of 140 litre. Design a coagulation cum sedimentation tank. Make suitable assumptions wherever necessary. (10)

13 (a) Derive the expression to calculate proportionate hydraulic mean depth, proportionate mean velocity and proportionate discharge for variation in flow velocity of a session of circular sewer, when the section is flowing partially full. (5)
(b) Write down the difference between COD, BOD and TOC. (5)

14 (a) Design a horizontal flow grit chamber to remove grit of size greater than 0.2mm if the flow through is 10,000 m^3/day. The specific gravity of particle is 1.9. (5)
(b) Explain with a neat flow diagram the process description of sewage treatment plant. (5)

15 A small residential colony having a population of 800 persons and the rate of water supply is 150 L / person /day. Design the septic tank. What would be the size of soak well if the effluent from the septic tank is to be discharge on it. (10)

..2

16 (a) Describe various methods of water distribution system. (5)
(b) Explain the method of finding dosage of chlorination by Break point method and also super chlorination (5)

17 Write short notes on the following:
(a) Ultimate disposal of sewage (3)
(b) Design aspects of circular sedimentation (4)
(c) Difference between computing and composing of Vern's composing (3)

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Code No. 3459/N

FACULTY OF ENGINEERING

B.E. 3/4 (Inst.) II - Semester (New)(Main) Examination, May / June 2017

Subject : Biomedical Instrumentation

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART – A (25 Marks)

1 State the desirable features of ink-jet recorder. (3)
2 Define (i) Linearity (ii) Signal to Noise ratio (2)
3 Mention the principle of EEG. (3)
4 Define the various heart sounds in a phonocardiogram. (2)
5 Draw and briefly explain the Phonocardiography. (3)
6 Mention the electronic techniques for blood flow measurement. (2)
7 State the principle of generation of X-rays. (3)
8 What is the auto-analyzer? (3)
9 What are the electric Hazards formed during Bio-electric monitoring? (2)
10 What is meant by endoscopy? (2)

PART – B (50 Marks)

11 (a) Describe the special features of Thermo-sensitive and Optical recorder with neat diagram. (6)
(b) Explain the principles of wave generation and shaping. (4)

12 Explain the operating principle with the Block diagram of ECG machine. Mention the special types of ECG recorders with the suitable diagrams. (10)

13 (a) Explain clearly the blood flow measurement using the Doppler method. (5)
(b) Explain the instrumentation consisting filters in phonocardiography. (5)

14 (a) Write short notes on Absorption photometry. (5)
(b) Explain the working of image intensifier in radiography with neat diagram. (5)

15 Describe the electrical factors governing the hospital design. (10)

16 (a) Distinguish between X-Ray and CT scan with block diagram. (5)
(b) Explain the techniques for Direct measurement of Blood pressure. (5)

17 Write short notes on the following: (10)
(a) Electric Hazards in Bio-electric Monitoring
(b) EMG

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Code No. 3174/O

FACULTY OF ENGINEERING

B.E. 3/4 (Inst.) II - Semester (Old) Examination, May / June 2017

Subject : Biomedical Instrumentation

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART – A (25 Marks)

1	Define Biopotential.	(2)
2	What is the cause of Heart murmurs?	(2)
3	Write any three applications of Laser in medical field.	(3)
4	Draw the generalized biomedical instrumentation system.	(3)
5	Define “Let go” current.	(2)
6	Discuss properties of X-rays.	(3)
7	Define monopolar recording in EEG.	(2)
8	What is the role of superior Venacava and inferior venacava?	(3)
9	Define Cardiac cycle.	(2)
10	Write the principle of Electrophoresis.	(3)

PART – B (50 Marks)

11	(a) Discuss ECG lead configuration in detail.	(6)
	(b) Differentiate between direct and indirect methods for measuring blood pressure.	(4)
12	(a) Compare X-rays and fluoroscopy.	(5)
	(b) Write advantages and disadvantage of CT scan.	(5)
13	(a) Explain Ink Jet recorder with neat sketch.	(6)
	(b) Explain in detail the origin of Heart sounds.	(4)
14	(a) Explain clearly the blood flow measurement using electromagnetic principle.	(5)
	(b) Write a short note on Image Intensifier.	(5)
15	(a) Explain electrocardiograph system for stress Testing.	(5)
	(b) Explain resting rhythms of EEG.	(5)
16	Explain microshcok and macroshcok in detail and their effect on the physiological behaviour of the patient.	(10)
17	(a) Explain Flurometry in detail.	(5)
	(b) Define electromyogram and explain bock diagram of electromyography in detail.	(5)

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Code No. 3179/O

FACULTY OF ENGINEERING

B.E. 3/4 (ECE) II - Semester (Old) Examination, May / June 2017

Subject : Electronic Instrumentation

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART – A (25 Marks)

1. What are primary standards ? where are they used ? 3
2. What is the significance of “Limiting Error”? 2
3. List five physical quantities that transducer measures . 2
4. What is an LVDT ? Where is it used ? 3
5. Differentiate between sound pressure level and sound power level. 2
6. Suggest the merits of a thermo couple system for the measurement of temperature when compared with the wire resistance thermometer. 3
7. List out the advantages of Dual slope over Ramp type DVMs . 3
8. What is the basic principle pf LCR meter? 2
9. Draw a typical ECG waveform and explain its significance 3
10. What are the applications of computed tomography. 2

PART – B (5x 10 = 50 Marks)

11.a) Explain about various quality management standards. 5

b) Enumerate types of errors that are likely to occur in a measurement and show such error can be minimized and evaluated. 5

12.a) compare piezoelectric , photo conductive , photo voltaic and photo emissive transducers. 5

b) Show how a capacitive transducer can be used to monitor the thickness of an insulating sheet in motion without making a physical contact. Comment on the linearity and sensitivity of the system. 5

13.a) What is a microphone? With help of neat diagrams explain about the constructional details and principles of operation of different microphones. 5

b) What is Hygrometer ? Explain different methods used for measurement of humidity . 5

14.a) Draw the schematic of a swept – super spectrum analyzer and explain its operation . 5

b) With help of block diagram, Discuss in detail the operation of mixed signal oscilloscope.

15 a) What are the resting and action potentials? Explain with their wave forms . 5

b) Draw the block diagrams for ultrasonic imaging system and magnetic resonance imaging system. Compare their operation. 5

..2

16..a) What is the difference between MSO and DSO ? Draw the block diagram for sampling oscilloscope and explain its operation . 5

b) What is the significance of IEEE 488 or GPIB inter face ? Draw the block diagram for harmonic distortion analyzer and explain in brief its operation. 5

17. Write short notes on

a) Virtual Instrumentation 5

b) SCADA . 5

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Code No. 3468/N

FACULTY OF ENGINEERING

B.E. 3/4 (Mech.) II - Semester (New)(Main & Backlog) Examination, May / June 2017

Subject : Control System Theory

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART – A (25 Marks)

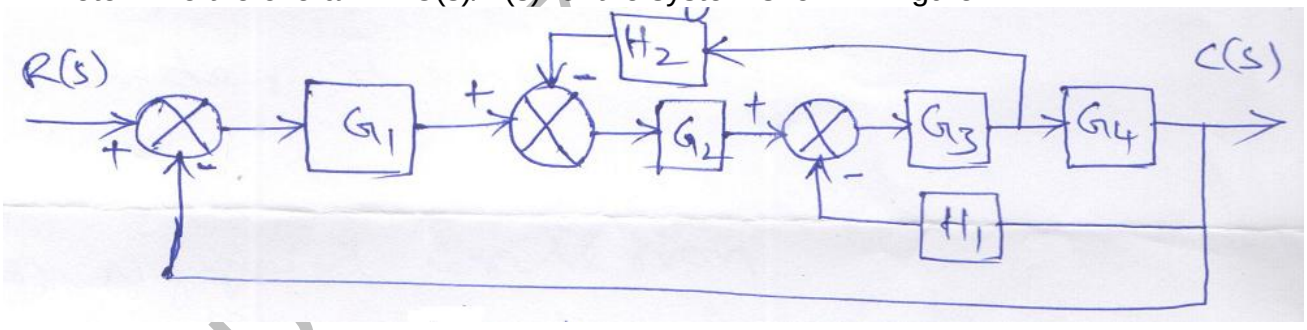
1 What are the components of feedback control system?
2 What is LTI system?
3 Find inverse laplace transform of

$$F(s) = \frac{(S+3)}{(S+1)(S+2)}$$

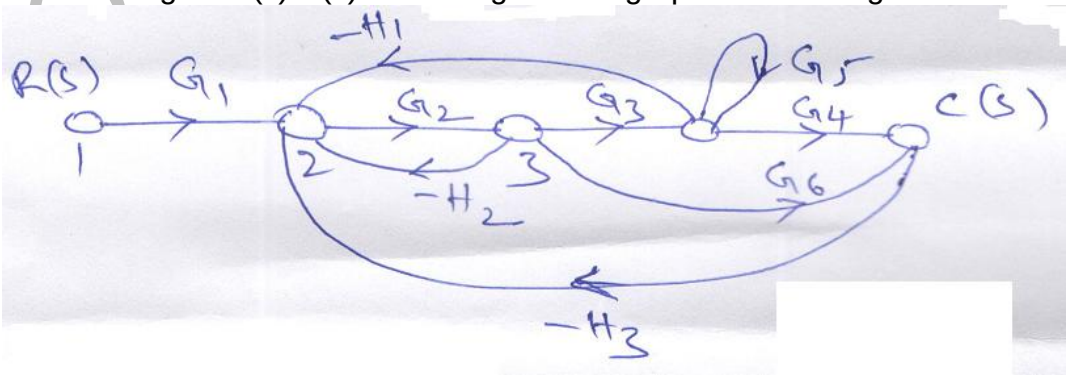
4 State Mason's gain formation.
5 Explain time domain specifications of 1st order system.
6 What are the properties of STM?
7 Write short notes on lead compensation techniques.
8 Define the terms "Gain Margin" and phase margins.
9 What is poles and zeros, explain.
10 What are the advantages of state space analysis over classical control systems?

PART – B (50 Marks)

11 Determine the overall TF C(s)/R(s) for the system shown in figure 1.



12 Find the overall gain C(s)/R(s) for the signal flow graph shown in figure 2.



13 If the open loop TF of unity feedback control system is given by $G(s) = \frac{100}{S(S+10)}$.

Determine its :
(i) Max overshoot (ii) Rise time (iii) Settling time

..2

14 Sketch the Nyquist plot for the system with $G(s) = \frac{100}{S(1+S)+10}$

15 The TF of a control system is given by $G(s) = \frac{S+3}{S^4 + S^2 + 2S + 1}$. Determine the state space model and find the observability.

16 Sketch the root-locus for the system $G(s) = \frac{K(S+2)}{(S+1)^2}$. Determine the range of K for which the system is
(a) Over damped
(b) Critically damped and
(c) under damped

17 Write short notes on the following:
(a) Nyquist criterion
(b) Routh's criterion for stability
(c) Concept of state, state variable and state model.

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Code No. 3184/O

FACULTY OF ENGINEERING

B.E. 3/4 (Mech,) II - Semester (Old) Examination, May / June 2017

Subject : Control Systems Theory

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART – A (25 Marks)

1 Distinguish between Open and Closed loop systems with examples. (3)

2 Find the inverse laplace transform of $F(s) = \frac{S}{(s+3)(s+3)}$. (3)

3 Find the transfer function of a second order system that yield a 12.6% overshoot and a settling time of 1.12 seconds. (3)

4 Sketch polar plot for unity feedback system given by $G(s) = \frac{(S+5)}{S^2(S+10)(S+100)}$. (3)

5 Determine the range of K for stability for a system represented by characteristic equation

$F(S) = S^4 + KS^3 + S^2 + S + 1 = 0$. (3)

6 Explain the effects of PD compensation technique on the performance of a system. (3)

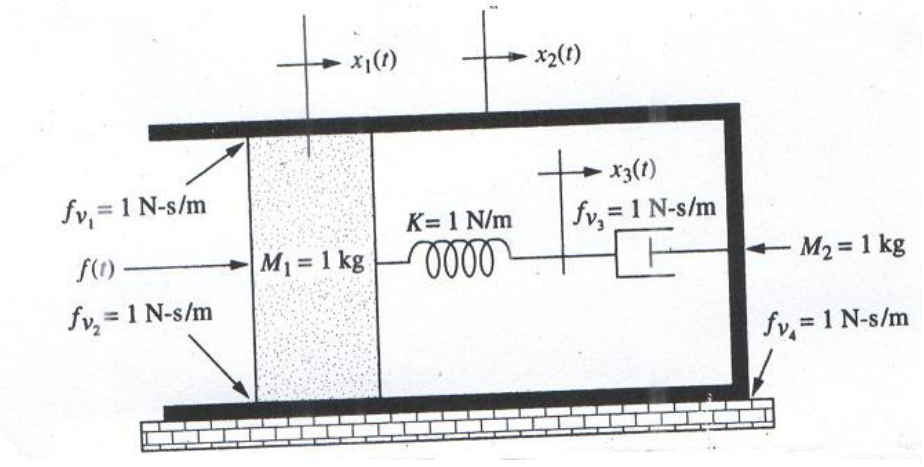
7 Find state transition matrix when $A = \begin{pmatrix} 1 & 3 \\ 2 & 7 \end{pmatrix}$. (4)

8 Differentiate between state space methods and classical control system. (3)

PART – B (50 Marks)

9 (a) Derive the transfer for a DC Servomotor. (5)

(b) Derive the transfer function $G(S) = \frac{X_3(S)}{T(S)}$ for the system given in figure 1 (5)

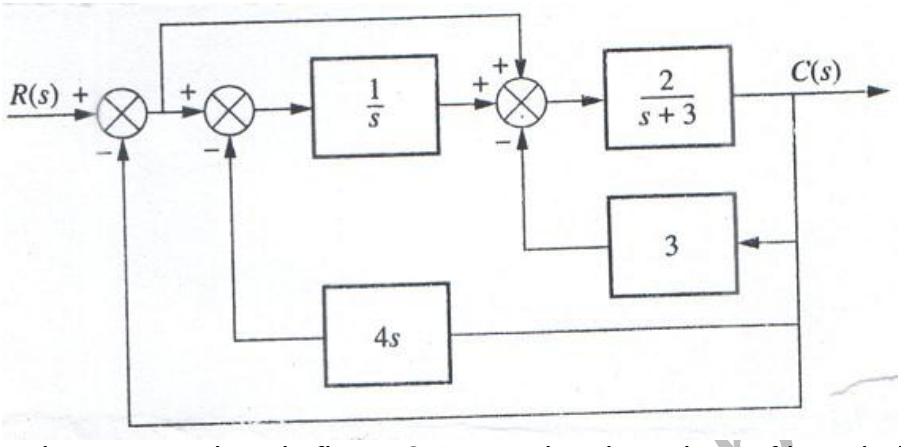


10. With the help of Bode plots, determine stability, gain margin and phase margin of a system represented by unity open loop transfer function

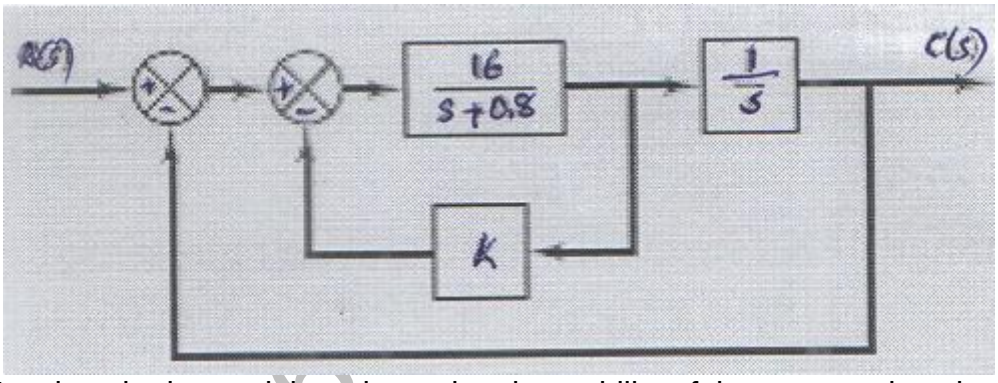
$$G(s) = \frac{100K(S+50)}{S^2(S+25)(S+250)}$$ (10)

..2

11 (a) For the system given below, determine the type and order, then find the values of k_p, k_v, k_a and finally comment on the steady state errors for a given unit step input. (5)



(b) Consider the system given in figure 2, Determine the values of k such that the damping ratio is 0.5, then obtain all the transient parameters for a unit step response. (5)



12 State Nyquist criterion and then determine the stability of the system given by

$$G(s) = \frac{K}{s(s+2)(s+5)}$$ (10)

13 For the unity feedback system given below, sketch the complete Root Locus and determine the following:

(i) Find the location of closed loop dominant poles if the system has 15% overshoot

(ii) Find the corresponding valve gain factor K.

(iii) At this value of K, determine the sensitivity of the closed pole and then find the change in pole position for a 5% change in gain factor.

$$G(s) = \frac{K}{(S+3)(S+10)(S+100)}$$ (10)

14 Check the controllability and observability of a system represented by unity feedback system $G(s) = \frac{S^2 + 14S + 110)}{2S^3 + 18S^2 + 48S + 68}$. (10)

15 Write short notes on : (10)

(i) Correlation between Time and Frequency response of a second order system.

(ii) Signal flow graphs

(iii) Linearization of non linear systems

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Code No. 3192/O

FACULTY OF ENGINEERING

B.E. 3/4 (IT) II - Semester (Old) Examination, May / June 2017

Subject : Automative Air Conditioning

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART – A (25 Marks)

1	Define the term “Psychrometry”.	(2)
2	Define degree of saturation.	(3)
3	What are the sources of internal heat gain?	(3)
4	Describe the term sensible heating.	(2)
5	List the different types of expansion devices.	(2)
6	Distinguish between air cooled condenser and water cooled condenser.	(3)
7	List the different physical properties of refrigerants.	(2)
8	What are the advantages of automotive heaters?	(3)
9	What are the causes of compressor failure? Explain any three.	(3)
10	Name different types of ducts.	(2)

PART – B (50 Marks)

11 The atmospheric air with dry bulb temperature 28^{o}C and wet bulb temperature 17^{o}C is cooled to 15^{o}C without changing its moisture content. Find: (i) Original relative humidity, (ii) Final relative humidity ; and (iii) Final wet bulb temperature.

12 (a) Explain the methods of estimating heat gain due to infiltrated air.
(b) Draw a neat labeled diagram of summer air conditioning system.

13 Explain about various types of expansion devices used in refrigeration system and how evaporator temperature may be controlled.

14 Explain about refrigerant handling and charging into the refrigeration system.

15 Explain about automobile air conditioner maintenance and service.

16 The following data refer to an air conditioning system for industrial process for hot and wet summer conditions :

Outdoor conditions	= 30^{o}C DBT and 75% RH
Required conditions	= 22^{o}C DBT and 70% RH
Amount of out-door air supplied	= 200m^{3}/min
Coil due point temperature	= 14^{o}C

If the required conditions are achieved by first cooling and dehumidity and then heating, find: (i) The capacity of the cooling coil and by-pass factor and (ii) The capacity of the heating coil and surface temperature of the heating coil if by-pass factor is 0.2.

17 (a) Explain about ford air conditioning system with suitable sketch.
(b) What is air routing? Explain flow through the Dash recirculation unit.

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Code No. 3475/N

FACULTY OF ENGINEERING

B.E. 3/4 (AE) II - Semester (New)(Main) Examination, May / June 2017

Subject : Automotive Air Conditioning

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions from Part-A and answer any five questions from Part-B. Use Psychrometric Chart and Steam tables.

PART – A (25 Marks)

1. List various psychrometric processes.
2. Define dew point temperature and wet bulb temperature
3. Explain the working of simple vapour compression Refrigeration system. using p-h (pressure-specific enthalpy) chart.
4. Define Bypass factor of heating coil.
5. Write the chemical formula for R-12 and R-113.
6. Explain the use of filters and ducts in air conditioning system.
7. Name the refrigerant generally used in automotive air conditioners
8. What are the substitutes for CFC Refrigerants?
9. What is a psychrometer? List out different types of psychrometers.
10. Explain about hermetic compressor.

Part-B (50 Marks)

11. A small office hall of 25 persons capacity is provided with summer air-conditioning system with the following data:
    Outside conditions= 34^{o}C DBT and 28^{o}C WBT
    Inside Conditions= 24^{o}C DBT and 50% RH
    Volume of Air supplied =0.4 m^{3}/min/person
    Sensible heat load in room =125600 kJ/h
    Latent heat load in the room =42000 kJ/h
    Find the sensible heat factor of the plant.

12. The readings from a sling psychrometer are as follows:Dry bulb temperature=30^{0}C; Wet bulb temperature=20^{0}C; Barometer reading=740 mm of Hg.Using steam tables,determine:Dew point temperature,Relativehumidity,specifichumidity,degree of saturation,Vapourdensity,Enthalpy mixture per kg of dry air.

13. Explain the following: (a) Adiabatic mixing of air streams (b) Adiabatic saturation temperature (c) RSHF and GSHF (d) Adiabatic chemical dehumidification.

14. (a) Write the classification and desirable properties of refrigerants
    (b) Explain about ASHRAE coding of refrigerants.

15. (a) Explain how cooling load is estimated for a car.
    (b) Explain with a neat sketch how General Motor air conditioning system is different from Ford air conditioning system.

16. (a) What are the advantages of automotive heaters?
    (b) Explain with neat sketches different types of compressors used in air conditioning units.
17. (a) Write notes on Control systems used in car air-conditioners
    (b) Explain about various expansion devices used in refrigeration units.

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Code No. 3204/O

FACULTY OF INFORMATICS

B.E. 3/4 (IT) II - Semester (Old) Examination, May / June 2017

Subject : Data Warehousing and Data Mining (Elective – I)

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART – A (25 Marks)

1 Define Data warehousing. (3)
2 Define OLAP. (2)
3 Write major issues occur while data Integration. (2)
4 Define pattern. (2)
5 Define Fire summary plot. (3)
6 What is pattern mining? (2)
7 Define metadata. (2)
8 List any four data mining applications. (3)
9 What are the goals of time series analysis? (3)
10 What is spatial mining? (3)

PART – B (50 Marks)

11 (a) Briefly discuss the data smoothing technique. (5)
(b) Explain data mining as a step in the process of knowledge discovery. (5)

12 (a) Differentiate operational database system and data warehousing. (5)
(b) Explain the multidimensional model of data warehousing. (5)

13 Explain briefly classification by Backpropagation. (10)

14 (a) Explain any one of the density based clustering method. (6)
(b) What are limitations of partitioning methods? (4)

15 (a) Write an algorithm of FP. Growth with example. (5)
(b) Write short note on constraint Based Association Rule mining. (5)

16 What is multimedia database? Explain the methods of mining multimedia database. (10)

17 Write short notes on the following:
(a) Architecture of typical data mining system (5)
(b) Text mining (5)

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Code No. 3487/N

FACULTY OF INFORMATICS

B.E. 3/4 (I.T.) II - Semester (New)(Main) Examination, May / June 2017

Subject : Computer Graphics (Elective – I)

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART – A (25 Marks)

1	Define Aspect Ratio and Refresh Rate.	(2)
2	What are the disadvantages of DDA algorithm?	(2)
3	Briefly describe about the line width attribute.	(3)
4	Write about rigid-body transformations.	(3)
5	Define clipping.	(2)
6	Write the four-bit code to identify the nine regions of clip window.	(2)
7	Write about the workstation filters.	(3)
8	Briefly describe e about rubber-band method for positioning straight line.	(3)
9	What are spline representations?	(2)
10	State the properties of Bezier curve.	(3)

PART – B (50 Marks)

11 (a) What are the differences between raster-scan system and random-scan system?
(b) Write the DDA algorithm for line drawing.

12 What is reflection? Derive the transformation matrix for the reflection of a point about the line y = mx +c.

13 (a) Explain Sutherland – Hodgeman algorithm with an example.
(b) Write Sutherland-Hodgeman algorithm and its advantages and disadvantages.

14 (a) Explain polygon shading.
(b) Explain about hierarchical modeling with structures.

15 Write short notes on :
(i) Depth Buffer method
(ii) Back-face Detection method

16 (a) Describe about the flood-fill algorithm.
(b) Show that rotation and translation is commutative.

17 Write short notes on the following:
(a) 3D viewing coordinates
(b) Liang-Barsky line clipping
(c) Graphical software

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Code No. 3203/O

FACULTY OF INFORMATICS

B.E. 3/4 (I.T.) II - Semester (Old) Examination, May / June 2017

Subject : Computer Graphics (Elective – I)

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART – A (25 Marks)

1	Define Resolution.	(2)
2	What is homogeneous coordinates?	(2)
3	What are the graphics functions which give good API support?	(3)
4	List the different types of logical devices.	(3)
5	Explain different Open GL frames.	(3)
6	Define (a) Window (b) View port (c) Object (d) Image	(3)
7	Define Rasterization	(2)
8	What is a polygon mesh?	(2)
9	What is an Octree?	(2)
10	Enumerate illumination models . Which is a better model?	(3)

PART – B (50 Marks)

11	(a) Explain graphics pipeline architecture.	(5)
	(b) What is an API? Write down open GL functions for primitives and attributes?	(5)
12	(a) Discuss interactive picture construction Technique.	(5)
	(b) Explain about display lists and modeling.	(5)
13	(a) Prove that Rotation and scaling transformations do not commute.	(4)
	(b) Find the matrix transformation for rotating the polygon with vertices (2, 6) (4, 8), (10, 10), (3, 8) and (5, 7) with 60^o in counterclockwise direction.	(6)
14	(a) What are the various methods available for shading a polygon mesh?	(5)
	(b) Explain Cohen-Sutherland line clipping technique with an example.	(5)
15	(a) What is hierarchical modeling? How is it achieved?	(5)
	(b) How curves and surfaces are modeled using Bezier curves? Explain.	(5)
16	(a) Explain polygon Rasterization methods.	(5)
	(b) Specify open GL API for generating curves and surfaces..	(5)
17	Write short notes on the following:	
	(a) Anti-aliasing	(3)
	(b) Hidden surface removal	(3)
	(c) 3D viewing	(4)

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Code No. 3489/N

FACULTY OF INFORMATICS

B.E. 3/4 (IT) II - Semester (New)(Main) Examination, May / June 2017

Subject : Software Testing (Elective – I)

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART – A (25 Marks)

1	What are the goals of software testing?	(3)
2	Who can a member of the inspection?	(2)
3	What do you mean by backward and forward traceability?	(2)
4	Define mutation testing. What are various types of mutants.	(3)
5	What is the need for minimizing test case in project?	(2)
6	What is role of testing in object oriented structure?	(3)
7	What are various tools used in software testing?	(3)
8	What are various states of bug?	(2)
9	What is the need of automating the testing process?	(3)
10	What is the co-relation between CMN and TMN?	(2)

PART – B (50 Marks)

11 Define cause and effect and discuss the notations used for the cause effect graph. (10)

12 Write short notes on :
(a) Basis path testing (5)
(b) Graph matrix and connection matrix (5)

13 Write short notes on :
(a) Software Testing Life Cycle (STLC) (5)
(b) Debugging (5)

14 (a) Explain BVC, robust, worst-case testing methods. (5)
(b) A program calculates the GCD of three numbers in the range [1, 50]. Design test cases for this program using BVC, robust, worst-case testing methods. (5)

15 Explain the architecture, features and the use of silk test. (10)

16 (a) What is need for minimizing the test cases? (5)
(b) Discuss the key components of test management. (5)

17 (a) What are the principles of software testing? What are the guidelines for designing a good test? (5)
(b) Differentiate between verification and validation. (5)

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Code No. 3205/O

FACULTY OF INFORMATICS

B.E. 3/4 (IT) II - Semester (Old) Examination, May / June 2017

Subject : Software Testing (Elective – I)

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART – A (25 Marks)

1 Define:
(a) Test ware (b) Incident (c) Test oracle (3)
2 Define (a) Critical Bug (b) Major Bug (2)
3 List out test case design using decision table. (3)
4 Compare white box testing and black box testing. (3)
5 What is the need for minimizing test cases in project? (2)
6 What are various parameters used in performance testing? (3)
7 What are various classification of software metrics? (3)
8 Define Usability Testing. (2)
9 Why Load Test an application? (2)
10 What are uses of Load Runner? (2)

PART – B (50 Marks)

11 (a) Explain briefly Testing principles. (5)
(b) Draw and explain life cycle of bug. (5)

12 Program reads A, B, C with range (1 to 50) print largest number. Design test cases of this program using equivalence class testing. (10)

13 (a) Explain briefly procedure for calculating Test-point- Analysis (TPA). (5)
(b) Describe about Henry and Kafurel design metric. (5)

14 (a) What are various guidelines provided by Turner and Robson for the preferred features to be tested in classes. (5)
(b) Write short note on Integration Testing. (5)

15 What is silk test? What can you do with it? Explain about silk Test architecture. (10)

16 (a) Explain about work flow of load runner. (5)
(b) What are various objectives of debugging? Write about debugging process. (5)

17 Write short notes on the following:
(a) Verification and Validation (5)
(b) Graph matrix and connection matrix (5)

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Code No. 3206/O

FACULTY OF INFORMATICS

B.E. 3/4 (IT) II - Semester (Old) Examination, May / June 2017

Subject : Digital Instrumentation and Control (Elective – I)

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART – A (25 Marks)

1 What is a Sensor? (2)
2 What is a ladder diagram? (2)
3 Temperature was measured in 5 locations in a room and the values obtained are 20^oC, 19.5^oC, 18^oC, 22^oC. Calculate the arithmetic mean, standard deviation. (3)
4 List the objectives of a control system. (3)
5 What is analog signal conditioning? (2)
6 Write the expression for output-to-input voltage ratio of a high pass filter and draw its characteristics. (3)
7 What is discrete state process? What is discrete state process control system? (3)
8 List two real time applications of optical sensor. (2)
9 What is the function of an actuator? (3)
10 Define process leg. (2)

PART – B (50 Marks)

11 (a) Distinguish between human aided and automatic control. (5)
(b) With suitable examples explain the process-control bock diagram. (5)

12 (a) Explain about pressure sensor. (5)
(b) What are the evaluation parameters used for designing an effective control system? (5)

13 (a) What is a sample and hold circuit? (2)
(b) Explain the operation of a dual slope ADC and succession approximation type ADC? (4+4)

14 (a) Explain about PLC operation. (5)
(b) Explain about ladder diagram elements. (5)

15 With a neat diagram explain the operation of a stepper motor and its applications in process control system. Give real life examples. (6+4)

16 (a) Draw the ladder diagram symbols. (3)
(b) Explain the function of operation of an elevator with the help of a ladder diagram. (7)

17 Explain the implementation details of PID controller mode. What is tuning. (8+2)

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Code No. 3488/N

FACULTY OF INFORMATICS

B.E. 3/4 (IT) II - Semester (New)(Main) Examination, May / June 2017

Subject : Digital Signal Processing (Elective – I)

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART – A (25 Marks)

1 Differentiate between analog and digital signal. (3)
2 Why Digital signal processing is widely used than analog signal processing. (2)
3 Determine the Z transform of $(1/2)^n[u[n]-u[n-8]]$ and indicate its ROC. (3)
4 Compare FIR and IIR filters. (3)
5 What are the advantages of linear phase characteristics? Which systems exhibit linear phase? (2)
6 Show that the system described by the difference equation in an all pass system (3)
$3y(n) – y(n-1) =-x(n) + 3x (n-1)$
7 What is ALU? Explain. (2)
8 Explain the circular addressing mode of a DSP processor. (2)
9 Find the DFT of the signal x(n)=(1, 3, 5, 7). (3)
10 Distinguish between recursive and non-recursive realizations of filters. (2)

PART – B (50 Marks)

11 Draw the Butter-fly diagram of Cooly-Tukey algorithm for a 8-sample data set. Explain how roots of unity are connected to this algorithm knoen as FFT. (10)

12 Find the DFT of the sequence {1, 1, 1, 1, 2, 2, 2, 2} using radix -2 Decimation-in-Time FFT sketch the magnitude and phase plot. (10)

13 (a) Is it possible to perform linear convolution through circular convolution if so how? (4)
(b) Perform the linear convolution of $(1/4)^n$ u(n) and $(1/2)^n$ u(n). (6)

14 (a) Explain how bit-reversal is achieved in the Texas based DSP Processor. (3)
(b) Show that FFT can be evaluated with lesser machine cycles using DSP processor compared to any of Micro-controller. (7)

15 (a) Explain what is the role of barrel-shift register. (5)
(b) List and explain the different uses of a MAC in DSP. (5)

16 Describe the eight 16-bit buses of TMS320C54XX. (10)

17 (a) Briefly explain how a DSP chip will help in computing the Discrete Cosine Transform in the realization of JPEG image compression. (5)
(b) Expand the term ‘MATLAB’ and give the script lines of any DSP function of MATLAB programming language. (5)

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Code No. 3490/N

FACULTY OF INFORMATICS

B.E. 3/4 (IT) II - Semester (New)(Main) Examination, May / June 2017

Subject : Natural Language Processing (Elective – I)

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART – A (25 Marks)

1 Discover all of the possible meanings of the following sentences by giving a paraphrase of each interpretation. For each sentence, identify whether the different meanings arise from structural ambiguity, semantic ambiguity, or pragmatic ambiguity. (3)
(i) Mr. Spook was charged with illegal alien recruitment
(ii) He crushed the key to my heart

2 Give the two properties of representation language. (2)

3 What is base relative clause? Give an example. (2)

4 Classify the following verbs as being intransitive, transitive, or bitransitive. Give an example sentence for each form to demonstrate your analysis. (3)
(i) cry (ii) sing (iii) donate

5 Specifically, the lexicon for the following: (2)
"The old man cried"

6 Give parse state for the following using Top-Down Parsing method. (3)
"The dogs cried"

7 Simplify the following formulas using lambda reduction: (3)
((Ū x (Px))A)
((Ū x (x A)) (Ū y (Q y)))
((Ū x ((Ū y *P y)) x)) A)

8 Differentiate between unary predicates and n-ary predicates. (2)

9 Write the forward algorithm for computing the lexical probabilities. (3)

10 How to compute the lexical – generation probabilities? (2)

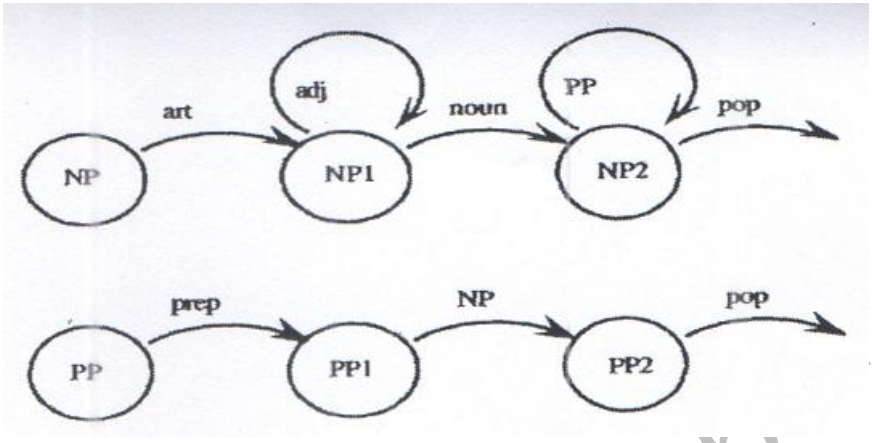
PART – B (50 Marks)

11 (a) Explain different Levels of Language Analysis with an example. (6)
(b) Discuss the significance of Logical form in NLP. (4)

12 (a) Explain about mathematical methods. (5)
(b) Explain how Hidden Markov Models useful in speech recognition. (5)

..2

13 Consider the following CFG and RTN. (10)



NP $\rightarrow$ ART NPI
NPI $\rightarrow$ ADJ NPPS
PPS $\rightarrow$ PP
PPS $\rightarrow$ PP PPS
PP $\rightarrow$ PNP

(a) State two ways in which the language described by these two grammars differ. For each, give a sample sentence that is recognized by one grammar but not the other and that demonstrates the difference.
(b) Write a new CFG equivalent to the RTN shown here.

14 (a) Specify a quasi-logical form for the following sentences. If the sentence is ambiguous, make sure you represent all the possibilities, either using ambiguous logical forms or by listing several logical forms. (5)

S1 : George ate a pizza at every road stop
S2 : Several employees from every company bought a pizza
S3: We saw John in the park by the beach

(b) Discuss briefly Thematic Roles. (5)

15 (a) Explain how to Handle Unknown Words. (6)
(b) Write the new are extension algorithm. (4)

16 (a) Explain in detail the use of Augmented Transition Networks in NLP with an example. (8)
(b) List the basic features systems that are commonly used in grammars of English. (2)

17 Write short notes on the following: (10)
(a) Probabilistic Context – Free Grammars
(b) Encoding Ambiguity in the Logical Form

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