Code No: 2135/O

FACULTY OF ENGINEERING

BE 3/4 (Civil) II – Semester (Old) Examination, December 2019

Subject: Water and Waste Water Engineering

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

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

PART – A (25)

1. List out different methods of population forecasts. (2)
2. What are common water - Borne diseases? (3)
3. Explain importance of chemical and bacteriological analysis of water used for domestic purpose. (2)
4. Differentiate between rapid sand and slow sand filters with reference to rate of filtration, filter media , period of cleaning and loss of head. (3)
5. What are the factors effecting storm sewage? (2)
6. What are the steps involved in the design of a distribution system? What precautions should be taken to make the design economical. (3)
7. What do you understand by preliminary treatment of sewage? Enumerate various unit operations involved in preliminary treatment of sewage? (3)
8. Describe the various methods used for aeration in the activated sludge Process. (2)
9. What are the methods of collection of solid waste? (2)
10. The 5 day BOD of a waste 200 mg/l and reaction rate constant is 0.17 /day Find the ultimate BOD of the waste. (3)

PART – B (5 x 10 = 50)

11 a) Mention the factors affecting percapita consumption of water. Compare the quality and quantity aspects of ground and surface water sources. (5)

b) The population of a locality as obtained from census report as follows.

Year	1881	1891	1901	1911	1921	1931	1941	1951	1961
Population	8000	12000	17000	22500	29000	37500	47000	57000	67000

Estimate the population of the locality in the years 2001, 2011, and 2021 by Incremental increase method. (5)

12 a) Design a slow sand filter for a small village having a population of 40000. The per capita demand is 90 lpcd. (6)

b) What is meant by coagulation? What are the different coagulants used ? (4)

13 a) A waste water effluent of 560 lps with a BOD = 50 mg/l , DO = 3.0 mg/l and temperature of 23^0 C enters a river where the flow is 28 cumecs and BOD = 4.0 mg/l, DO=8.2 mg/l and temperature of 17^0 C,K=0.1 /day at 20^0 C. The velocity of water in the river downstream is 0.18 m/s and depth of 1.2 m. Determine the following after mixing of Waste water with the river water. (7)
i) Combined discharge ii) BOD iiiI) DO and (iv) Temperature

b) How do you estimate the volume of storm water by rational method. (3)

Contd..2

14. a) Write in detail about pressure filters. Mention its merits and demerits. (5)
    b) Design a low rate trickling filter to treat 5 MLD of sewage with a BOD_5 @ 20^0C is 200 mg/l. (5)

15. a) Define municipal solid waste , garbage, refuse and bulk waste. Briefly explain different disposal methods. (5)
    b) Design a septic tank for 500 people. Assume suitable data. (5)

16 a) Estimate the fire demand for a town with a population of 50 lakhs by any two methods. (5)
    b) Explain chlorine – ammonia treatment for disinfecting drinking water. What are its advantages? (5)

17 Discuss about the following
    (i) Sewer types and appurtenances
    (ii) TOC
    (iii) Composition of solid waste (10)

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Code No. 2133

FACULTY OF ENGINEERING

B.E. 3/4 (Civil) II – Semester (Backlog) Examination, December 2019

Subject: Environmental Engineering

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

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

PART – A (25 Marks)

1 What is the role of an environmental engineer? (2)

2 List out various water borne diseases. (3)

3 State different types of coagulants used in water treatment. (2)

4 Explain the use of ozone and U-V rays for disinfection and list out the advantages. (3)

5 Differentiate between sewer and sewerage. (2)

6 Estimate the quantity of storm water for an area of 10 hectares using rational method. (3)

7 What do you mean by primary treatment? State an example. (2)

8 With the aid of neat sketch, briefly explain the working of a trickling filter. (3)

9 With neat sketch enumerate the functioning of oxidation ponds. (3)

10 State the general composition of solid waste. (2)

PART – B (50 Marks)

11 a) Explain the design period and factors affecting design period. (5)

b) Estimate the water demand expected during 2041, for a town having the past population details given below. Assume the per capita water demand as 155 lpcd. Adopt any two methods. (5)

Year	1961	1971	1981	1991	2001	2011
Population	22500	29000	37500	47000	57000	66500

12 a) How do you determine optimum dosage of coagulant (4)

b) Design slow sand filters for a small village having a population of 35,000. The percapita demand is 85 lpcd. (6)

13 a) How do you estimate the volume of storm water by rational method. (4)

b) A Waste water effluent of 560 lts/sec with a BOD = 50 mg/lt, D.O = 3.0 mg/lt and temperature of 23^0C enters a river where the flow is 28 m^3 /sec and BOD = 4.0 mg/lt, D.O = 8.2 mg/lt and temperature of 17^oC, K for the waste is 0.10 per day at 20^oC. The velocity of water in the river downstream is 0.18 m/s and depth of 1.2 m. Determine the following after mixing of waste water with the river water.
i) Combined discharge
ii) BOD
iii) Temperature (6)

..2

14 a) What is sedimentation? Why sedimentation is required in Sewage treatment? (4)

b) Determine the size of a high rate trickling filters for the following data.
Sewage flow = 4 mld
Recirculation ratio = 1.4
BOD of raw sewage = 260 mg/lt
BOD removal in primary clarifier = 35%
Final effluent BOD desired = 40 mg/lt. (6)

15 a) What is septic tank? Explain the design aspects of a septic tank. (5)

b) Name the different R's of solid waste management system and state example for each. (5)

16 Write short notes on the following:
i) Air relief valve. (5)
ii) Design of clariflocculator (5)

17 Explain any **Two** of the following:
i) Velocity in Sewers/; (5)
ii) Grit chambers (5)
iii) Oxidation ponds. (5)

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Code No. 2144

FACULTY OF ENGINEERING

B.E. 3/4 (Inst) II – Semester (Backlog) Examination, December 2019

Subject: Biomedical Instrumentation

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

Note*: Answer All Questions in* ***Part – A*** *and any* ***five*** *questions from* ***Part – B****.*

PART – A (25 Marks)

1	Discuss the role of superior venacava and inferior venacava.		[3]
2	Define linearity and stability of biomedical instrument.		[3]
3	What is the role of ramp generator in optical recorder?		[2]
4	Define electromyograph.		[2]
5	Define cardiac cycle and stroke volume.		[3]
6	What is the cause of heart murmurs?		[2]
7	Why grid is used in radiography?		[2]
8	Define leakage current.		[2]
9	Define threshold of perception.		[3]
10	Write any three characteristics of Bio amplifier.		[3]

PART – B (5x10 = 50 Marks)

11	a)	Explain basic electronic recording system with neat diagram.	[3]
	b)	Explain the potentiometric recorder in detail with neat sketch.	[7]
12	a)	Write a short notes on SA node.	[5]
	b)	Draw and explain PQRST.	[5]
13	a)	Differentiate between direct and indirect method of BP measurement.	[6]
	b)	Explain microphones for Phonocardiography.	[4]
14	a)	Write the advantages and disadvantages of CT scan.	[6]
	b)	Write a short note on image intensifier.	[4]
15		Explain 10-20 electrode system in EEG.	[10]
16		Describe ventricular fibrillation and explain isolation transformer in detail.	[10]
17		Write a short note on:	
	a)	Ink Jet recorder.	[5]
	b)	MRI.	[5]

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Code No. 2152/O

FACULTY OF ENGINEERING

B.E. 3/4 (ECE) II – Semester (Old) Examination, December 2019

Subject: Electronic Instrumentation

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

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

PART – A (25 Marks)

1. Define Limiting error and explain with an example. (3)
2. What are the 'Quality Management Standards'? (2)
3. List out the Salient features of Photo emissive transducers. (3)
4. Compare passive and active transducer. (2)
5. Explain briefly about loudness measurements. (3)
6. What is the basic principle involved in Resistance wire thermometer. (2)
7. Bring out at least three differences between Delayed time base Oscilloscope and Digital Storage Oscilloscope. (3)
8. List out the application of DVMs. (2)
9. What is the use of Ultrasonic Imaging systems? (3)
10. List out the salient features of EEG. (2)

PART – B (50 Marks)

11. Discuss in detail about various types of Errors and explain how they can be mitigated. (10)
12. List out the factors for selection of a transducer and explain the principle involved in Photo voltaic cell. (10)
13. With a neat diagram, explain in detail about the operation of Aluminum oxide Hygrometer and semi conductor thermometer. (10)
14. Enumerate in detail the concept involved in GPIB interface and protocol. (10)
15. Draw the diagram of a CT Scanner and explain its operation in detail. (10)
16. (a) Compare ECG and EMG with respect to various parameters. (5)
    (b) Explain the basic principle involved in Semiconductor thermometer. (5)
17. Write short notes on:
    (a) Mixed Signal Oscilloscope. (5)
    (b) Strain gauges. (5)

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Code No. 2158

FACULTY OF ENGINEERING

B.E. 3/4 (Mech.) II - Semester (Backlog) Examination, December 2019

Subject : Control System Theory

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

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

PART – A (25 Marks)

1 Evaluate the inverse Laplace transform of

$$G(s) = \frac{s^2}{(s^2 + a^2)}$$

2 State importance features of negative feedback in control system theory.

3 The response of system is given by c (t) =1+0.2 $e^{-60\,t}$ -1.2$e^{-10\,t}$. Determine closed loop transfer function when it is subjected to a unit step input.

4 Define type number and order of a system.

5 List the standard test signals used in control systems.

6 State PID controller applications.

7 List the advantages of frequency response

8 Define gain margin and phase margin

9 State the features of lead compensator.

10. List the properties of state transition matrix

PART – B (50 Marks)

11 Evaluate the transfer function of field controlled DC servo motor

12 The unity feedback system is characterized by an open loop transfer function

$$G(s) = \frac{k}{s(s+10)}$$

Determine K so that system having damping ratio of 0.5. for this value of K determine settling time Peak overshoot, and peak time for a unit step input.

13 a) List the advantages of Routh-stability criterion.

b) Using Routh- Hurwitz criterion, determine the stability of the system described by the equation

$$s^5 + 2s^4 + 2s^3 + 4s^2 + 3s + 6 = 0$$

14 The open loop transfer function of a system

$$G(s) = \frac{1+4s}{s^2(1+s)(1+2s)}$$

Using Nyquist theory determine the stability of closed loop system.

15 The transfer function of a control system is given by

$$G(s) = \frac{2s^3 + 7s^2 + 12s + 8}{(s^3 + 6s^2 + 11s + 9)}$$

Check for controllability and observability.

16 A unity feedback control system has an open loop transfer function

$$G(s) = \frac{K(S + \left(\frac{4}{3}\right))}{s^2(s + 12)}$$

Sketch the root locus .Determine the value of K for which all roots are equal.

17 Write a short note on any of **THREE** of following

a) Masons gain formula in signal flow graph
b) Linearization of Nonlinear systems
c) Open loop vs closed loop system
d) sensitivity in control systems
e) Nyquist theory

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Code No: 2172/O

FACULTY OF ENGINEERING

BE 3 / 4 (CSE) II - Semester (Old) Examination, December 2019

Subject: Principles of Programming Languages

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

Note: Answer All questions from Part-A and Any Five Questions from Part-B.

PART – A (25 Marks)

1	List any four Declarative programming languages.	(2)
2	What do you mean by Interpretation?	(3)
3	Describe the differences between static and dynamic type binding.	(2)
4	What is Type Conversion? Give Example.	(3)
5	What are macros?	(2)
6	What is Structure Type Equivalence?	(3)
7	Explain call by vale and reference.	(3)
8	Write the uses of constructors and destructors in OOP.	(2)
9	What is Lambda expression?	(2)
10	What is Horn clause?	(3)

PART – B (50 Marks)

11	a) Why to study Programming Languages?	(5)
	b) List various phases of Compilation?	(5)
12	Discuss about Stack and Heap based storage management.	(10)
13	Write short notes on: a) Sequencing b) Selection c) Iteration	(10)
14	Explain various parameter passing methods with suitable examples.	(10)
15	Explain sequential and thread based handlers events.	(10)
16	a) Discuss about scheme programming language	. (5)
	b) Explain the features of logic programming languages.	(5)
17	Write short notes on:	
	a) Dynamic Method binding	(5+5)
	b) Encapsulation in OOPS	

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Code No. 2178

FACULTY OF ENGINEERING

B. E. ¾ (I.T.) II – Semester (Backlog) Examination, December 2019

Subject: Computer Graphics (Elective – I)

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

Note: Answer All questions from Part-A and Any Five Questions from Part-B.

PART – A (25 Marks)

1. Differentiate between raster scan and random scan systems. 2
2. What is bitmap method? 2
3. Define curve attributes. 3
4. What are affine transformations? 2
5. What do you mean by viewing pipeline? 2
6. List out various viewing functions used in clipping algorithms. 3
7. What are modelling concepts? 3
8. What is meant by polygon shading? 3
9. Define a surface. 2
10. What do you mean by spline specifications? 3

Part – B (5 x 10 = 50 Marks)

11. a) Explain midpoint circle generation algorithm. (5M)
    b) Discuss briefly about flood fill algorithm. (5M)

12. a) Discuss briefly about composite transformations. (5M)
    b) Explain about color and gray scale level. (5M)

13. a) Explain Liang Barsky line clipping algorithm. (5M)
    b) Explain how window to viewport coordinate transformation is carried out. (5M)

14. a) Discuss how to edit structures. (5M)
    b) Discuss about various logical input devices. (5M)

15. a) Explain about B – spline surfaces. (5M)
    b) Explain about Back – face detection method. (5M)

16. a) Explain basic positioning method to construct a picture. (5M)
    b) What are BSP trees? (5M)

17. Write short notes on:
    a) Gourand shading (3M)
    b) Projections (4M)
    c) Input modes (3M)

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Code No. 2183 / O

FACULTY OF ENGINEERING

B. E. ¾ (I.T.) II – Semester (OLD) Examination, December 2019

Subject: Computer Graphics (Elective-I)

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

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

PART – A (25 Marks)

1 Explain the major elements of graphics system. 3
2 What are the two classes of primitives that OPENGL supports? Explain. 2
3 What are Window Events and Keyboard Events? Explain with examples. 2
4 What is bilinear interpolation and how it is used for interpolation of a triangle? 3
5 Derive the Shear transformations from the rotation, translation and scaling transformations. 3
6 Derive the perspective- projection matrix when the COP can be at any point and the projection plane can be at any orientation. 2
7 Estimate the amount of extra calculations required for Phong Shading as compared to Gouraud Shading. 2
8 Consider two line segments represented in parametric form : $p(\alpha) = (1-\alpha)p1 + \alpha p2$, $q(\beta) = (1-\beta)q1 + \beta q2$. Find a procedure for determining whether the segments intersect. 3
9 Find equations for the position of any point on the simple robot in terms of the joint angles. 3
10 Write the Explicit Representation of curves in x-y space. 2

PART – B (50 Marks)

11. a) Explain the Synthetic –Camera Model System with the Center of Projection. 5M
b) Describe how you would adapt the RGB-Color model in OpenGL to allow you to work with a subtractive color model. 5M

12. a) Explain how display lists are powerful tools for building hierarchical models. 5M
b) Explain spinning of a cube by using OPENGL functions. 5M

13. Write a program to generate a Sierpinski Gasket as follows: Start with a white triangle. At each step ,use transformations to generate a three similar triangle that are drawn over the original triangle, leaving the center of the triangle white and the three corners black. 10M

14. Explain how the Phong Lighting Model characterizes the light source and explain the reflection of light using Ambient Reflection, Diffuse Reflection and Specular Reflection. 10M

15. a)Write short notes on Open Scene Graph and related APIs. 5M
b) Write short notes on Cubic-B-Splines. 5M

16. a)Explain the functioning of Pinhole-Camera. 5M
b) Explain Orthogonal Projections with equations. 5M

17. Write short notes on
a) Bresenham's Algorithm 5M
b) Clipping in three dimensions. 5M

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Code No. 2184/O

FACULTY OF ENGINEERING

B.E. (I.T.) 3/4 II - Semester (Old) Examination, December 2019

Subject : Software Testing (Elective – I)

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

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

PART – A (25 Marks)

1	What is unit testing?	(2)
2	List any three goals of software testing.	(3)
3	What is a graph matrix? Give an example.	(3)
4	Explain acceptance testing.	(2)
5	What is JMeter?	(2)
6	Define error. How is it different from fault and failure?	(3)
7	What is a testing tool? Why is it needed? Give an example.	(2)
8	What is the role of scripting languages in software testing?	(3)
9	Why is software testing considered to be a tedious job?	(2)
10	List the metrics used in software testing.	(3)

PART – B (50 Marks)

11 (a) Describe any three testing myths and facts. (5)
(b) Discuss the concept of software testing life cycle. (5)

12 Discuss the following White-Box testing techniques in detail:
(i) Basis Path Testing (ii) Data Flow Testing
(10)

13 (a) Discuss the measurement Objectives for Testing. (5)
(b) Describe Efficient tests suite management. (5)

14 Discuss the issues and challenges in testing object – oriented software. (10)

15 Write short notes on :
(i) Scripting Language
(ii) Load Runner
(iii) Architecture of Silk Test (10)

16 What do you mean by web-based system? How is testing web-based system different from testing a traditional software system. Give an example. (10)

17 List and briefly explain the various regression testing techniques. (10)

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Code No.2180

FACULTY OF ENGINEERING

B. E. 3/4 (IT) II – Semester (Backlog) Examination, December 2019

Subject: Software Testing (Elective – I)

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

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

PART – A (25 Marks)

1.	Draw life cycle of a bug.	3
2.	What is validation?	3
3.	List elements of state table based testing.	2
4.	What is the use of block box testing?	2
5.	What are the different software quality metrics?	3
6.	What is a test case?	2
7.	List issues in inheritance testing.	3
8.	What is navigation modeling?	3
9.	What are the advantages of testing automation?	2
10.	What is stress testing?	2

PART – B (50 Marks)

11.	Explain the importance of software testing in software development.	10
12.	(a) Write the differences between inspection and walkthrough.	5
	(b) How do you calculate cyclomatic complexity of a code segment?	5
13.	Explain the techniques for regression testing.	10
14.	(a) Describe the process of testing web applications.	5
	(b) Differentiate between conventional and object oriented testing.	5
15.	(a) Describe silk test – its components and working.	5
	(b) Explain the advantages of automated testing tools.	5
16.	(a) Give details on application of Boundary value analysis.	5
	(b) Explain different types of integration testing.	5
17.	Write notes on:	
	(a) Static and dynamic testing.	5
	(b) Load runner.	5

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Code No. 2181

FACULTY OF ENGINEERING

B.E. 3/4 (IT) II – Semester (Backlog) Examination, December 2019

Subject: Natural Language Processing (Elective – I)

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

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

PART – A (25 Marks)

1. Describe briefly two NLP applications each for text and dialog. (2)
2. What is a Natural Language Understanding System? (3)
3. What is a Verb Phrase? Explain briefly. (2)
4. Give an example to explain that the grammar specifies structures allowable in the language while parsing analyze the sentence to find the structure as per the grammar. (3)
5. What does a Transition Network represent? What items are augmented on arcs of an Augmented Transition Network? (2)
6. Attempt a representation for Context-Independent Meaning with a specific example. (3)
7. What is Semantic Interpretation? (2)
8. Explain the thematic role in the sentences: (3)
   a. Sam painted the door with the brush.
   b. The brush painted the door.
   c. The door was painted.
9. How do you estimate Lexical Probability? (3)
10. Discuss briefly the sources of Ambiguity. (2)

PART – B (50 Marks)

11. (a) Illustrate Contextual Processing. (6)
    (b) Write applications of NLP. (4)

12. (a) Present an overview of Basic Logical Form Language. (5)
    (b) Analyze why a word or a morpheme cannot be treated as the basic semantic unit. (5)

13. (a) Present a basic feature system for English. (6)
    (b) Explain how grammatical formalism is extended to allow constituents to have features. (4)

14. (a) Explore to relate Ambiguity and Word Sense. (5)
    (b) State and analyze issues in linking syntax and semantics. (5)

15. (a) Present a Bigram Model. (6)
    (b) Explain Brown Corpus and Penn Treebank. (4)

16. (a) Write short notes on Statistical Methods in NLP. (5)
    (b) Write short notes on Machine Translation. (5)

17. (a) Demonstrate how the most likely sequence of categories for a sequence of words is found. (5)
    (b) Illustrate Encoding Ambiguity in Logical Form. (5)

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Code No.2673 / CBCS

FACULTY OF ENGINEERING

B.E. (Civil) VI – Semester (CBCS) (Suppl.) Examination, December 2019

Subject: Waste Water Treatment (Elective – II)

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

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

PART – A (10x2 = 20 Marks)

1 What is the difference between the primary and secondary treatment of sewage?

2 Explain the effect of BOD concentration on the nitrification rate.

3 Write the various land treatment systems.

4 What is a facultative partially mixed lagoon?

5 Write the examples of forage crops and yield crops which can be irrigated by slow rate treatment system.

6 The volume of sludge collected from primary settling tank is 145 m^3 at moisture content of 95%. If after exposing it to atmosphere, its water content reduces to 80%, determine

its volume.

7 What are the reasons for the protection of ocean water when discharging the effluent into ocean?

8 Under what circumstances is the dilution method of effluent disposal most suitable.

9 What is self-purification of streams?

10 What is mass transport process in effluent disposal?

PART – B (5x10 = 50 Marks)

11 a) Discuss the public health and environmental issues due to water reuse from waste water treatment plants. 5M

b) Determine the effect of reducing the surface area of an aerated lagoon from 1 ha to 0.5 ha on temperature from the following data

(i) Waste water flow rate Q= 3800 m^3/d

(ii) Waste water temperature $T_i=15^0$ C

(iii) Air Temperature during coldest month $T_a=2^0C$

(iv) Proportionality constant=0.5. 5M

12 Explain the process of nitrification - denitrification following the conventional biological treatment in a tertiary application following secondary treatment using the flow diagram. 10M

13 a) Explain the process of dual powdered flow through logoon system. 5M

b) Explain about the wetland treatment system with figure. 5M

14 The evaporation, percolation and precipitation for a piece of land are given below. If a flow of 1 mgd with a BOD_5 of 40 mg/l is to be applied, what are the land requirements for (a) irrigation (b) rapid infiltration (c) overland flow (d) wetland methods of treatment?

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Evapo-transpiration	1.8	3.8	7.9	9.9	13.2	16.5	17.8	16.5	11.2	9.9	3.8	2
Percolation (cm)	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4
Precipitation (cm)	5.8	5.8	5.3	4.1	1.0	0.5	0.3	Trace	0.5	1.5	2.6	5.6

10M

15 a) Explain the discharge of effluent into ocean using the ocean outfall with the help of a schematic plan and profile diagram. 5M

b) What are the different processes in the treatment of sewage? Explain them using the figure of the layout of the sewage treatment plant. 5M

16 a) Enumerate the factors which directly affect the self-purification process of streams. 5M

b) Explain diffusion-advection process and hydraulic models of the effluent disposal. 5M

17 Write short notes on 10M

(i) Septic tank leaching field system

(ii) Flow equalization

(iii) Quality limits for wastewater discharge

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Code No. 2674/CBCS

FACULTY OF ENGINEERING

B. E.VI – Semester (CBCS)(Civil)(Suppl.) Examination, December 2019

Subject: Ground Improvement Technique (Elective II)

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

Note: Answer all questions from Part – A & any five questions from Part-B

PART – A (10 x 2 = 20 Marks)

1. What is the need for improving the ground?
2. How is Dynamic compaction different form static compaction?
3. What are the various methods of grouting?
4. What is the purpose of cut backs in Bitumen stabilization duly mentioning the commonly used cut backs?
5. What do you understand from the term in-situ desification?
6. Differentiate vibro-compaction with vibro-replacement?
7. What are the various methods of preloading?
8. What is the need for dewatering?
9. What is the significance of anchorage length in reinforced earth structures?
10. Name types of geotextiles used in civil engineering?

PART – B (50 Marks)

11. (a) Explain the Rothfutch's method of proportioning of materials in Mechanical stabilization of soils? 5
    (b) What are the factors affecting the section of ground improvement? 5

12. (a) Write a detailed note on Bitumen Stabilization. 5
    (b) Describe the requirements of a grout material. Explain the classification of grout material. 5

13. (a) What are the various vibro compaction methods used for densification? Explain in detail. 5
    (b) Write a detailed note on sand compaction files. 5

14. (a) Explain the dewatering methods in detail and how they help in ground Improvement. 5
    (b) Explain the preloading techniques and suggest its applications. 5

15. (a) With neat sketch explain in detail the various applications of reinforced earth for Ground improvements. 5
    (b) Explain with the help of a flow chart, the various classifications of geosynthetics in detail. 5

16. (a) What are the objectives and emerging trends of ground improvement techniques. 5
    (b) Identify the benefits and factors Influencing soil-cement stabilization. 5

17. Write the short notes on any Two of the following
    (a) Vibro techniques 5
    (b) Pre loading 5
    (c) Geosynthetics as reinforcement.

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Code No. 2675 / CBCS

FACULTY OF ENGINEERING

B.E. (Civil) VI – Semester (CBCS) (Suppl.) Examination, December 2019

Subject: Watershed Management (Elective – II)

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

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

PART – A (10x2 = 20 Marks)

1. Define watershed
2. List the objectives of watershed development
3. Write briefly about hydrogeology of a watershed
4. Explain basic data of watersheds briefly
5. List the effects of erosion on land fertility
6. Briefly explain Gabion
7. Compare and contrast artificial recharge and percolation tanks
8. Compare and contrast alkaline soils and saline soils
9. What is meant by crop husbandry?
10. List the applications of geospatial techniques in watershed management

PART – B (5x10 = 50 Marks)

11 a) Explain the need for watershed development in India. (5)

b) Explain the integrated approach to watershed development. (5)

12 a) Explain with diagrams wherever necessary the size, shape, slope drainage and hydrology of watersheds. (5)

b) Explain the socioeconomic characteristics of watersheds. (5)

13 a) Explain the universal soil loss equation in detail with the help of an example. (5)

b) Explain rock-fill dams and brushwood dams with the help of suitable diagrams. (5)

14 a) Compare and contrast the concept of rain water harvesting and catchment harvesting. (5)

b) Define land capability classification along with suitable examples. (5)

15 a) Explain inter mixed and strip cropping with the help of examples. (5)

b) Explain the social aspects of watershed management with the help of examples. (5)

16 a) Explain integrated development of watershed with the help of an example (5)

b) Briefly describe the various types of rainwater harvesting structures with diagrams wherever necessary. (5)

17 a) What kind of community and private sector participation is required for successful implementation of a watershed management system. (5)

b) Describe briefly the various measures to control soil erosion. (5)

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Code No. 2683 / CBCS

FACULTY OF ENGINEERING

B.E. (EEE) VI - Semester (CBCS) (Suppl.) Examination, December 2019

Subject : AI Techniques (Elective-II)

Time : 3 hours **Max. Marks : 70**

Note: Answer all questions from Part-A. Answer any Five questions from Part-B.

PART – A (10 x 2 = 20 Marks)

1 List the differences between Artificial neural network and a biological neuron network.

2 Write the fuzzy Demorgan laws.

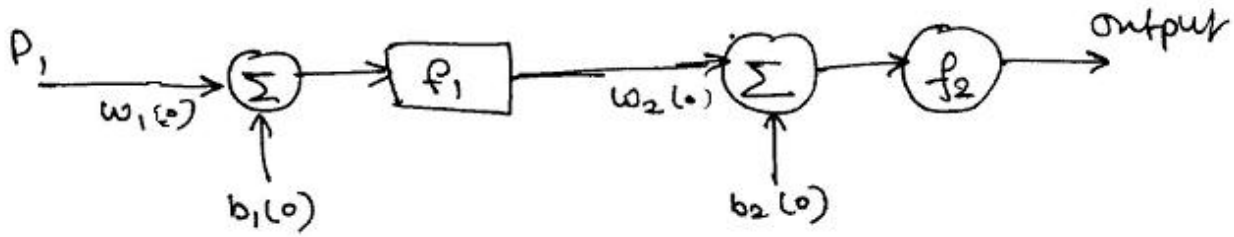
3 Differentiate single layer and multilayer neural network.

4 Define Perceptron.

5 Draw the architecture of fuzzy control system.

6 Define the chromosomes and fitness function.

7 Find the output of the perceptron with given inches weights $w_1(0) : 1$ $w_2(0) : 1$ $b_1(0) : 2$; $b_2(0) : 1$ the activation function is 'purline' with 2. The input target pair is (1, 1). Find the error.



8 What is the difference between a genotypic and phenotypic representations?

9 What are the prereunits when genetic algorithm are applied to solve problem.

10 Explain the Cartesian product of crisp relations.

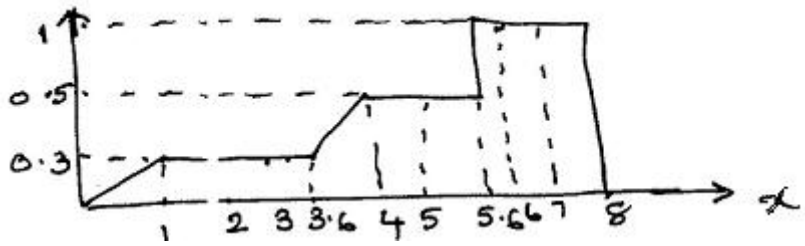
PART – B (5 x 10 = 50 Marks)

11 a) Explain the concept of Artificial neural network and its basic model. 6
b) Explain the role of neural networks in power system planning. 4

12 a) Explain with suitable example about back propagation algorithm. 5
b) Write about Hebbian learning rule. 5

..2

13 a) Compute crisp value of x by using centroid of sums methods as shown in the figure. 6



b) Name and describe the main features of genetic algorithms. 4

14 Suppose a genetic algorithm uses chromosomes of the form x : abcdefgh with a fixed length of 8 genes. Each gene can be any digit between 0 and 9. The fitness of individual X can be calculated as f(x) : (a+b) – (c+d) + (e+f) – (g+h). The initial population consists of 4 individual with the following x_1 : 65413532 ; x_2 : 87126631 ; x_3 : 23921285 ; x_4 : 41852094 evaluate the fitness of each individual and arrange them in order with the fitter first and least fit last. 10

15 a) Explain the working of a fuzzy logic based inference system using a example of fan speed controller. Draw the related membership function to show fuzzification and defuzzification. 6

b) Explain various crossover method with examples. 4

16 a) What are the merits and demerits of supervised and unsupervised learning? 5

b) Write short notes on the application of genetic algorithms in electrical engineering. 5

17 a) What are fuzzy sets? Discuss the operation of fuzzy sets. 5

b) Write short notes on recurrent neural network and fuzzy relation. 5

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Code No. 2684 / CBCS

FACULTY OF ENGINEERING

B.E. (EEE) VI - Semester (CBCS) (Suppl.) Examination, December 2019

Subject : Electric Distribution System (Elective – II)

Time : 3 hours **Max. Marks : 70**

Note: Answer all questions from Part-A. Answer any Five questions from Part-B.

PART – A (10 x 2 = 20 Marks)

1 Define Diversity factor.
2 Define Demand factor.
3 Mention different types of sub-transmission system.
4 List out the commonly used substation bus schemes.
5 What are the factors affecting the decision for feeder routing?
6 When a single-phase three-wire circuit can be regarded as unbalanced.
7 Mention different types of laterals.
8 What are the methods to reduce flickering due to motor starting?
9 What are the economic benefits derived from capacitor installation?
10 Write a short note on SCADA.

PART – B (5 x 10 = 50 Marks)

11 a) Explain different types of distribution transformers. 4
b) Assume that the annual peak-load of a primary feeder is 2000 kW. A computer program that calculates voltage drops and I^2R losses shows that the total copper loss at the time of peak load is 100 kW. The total annual energy supplied to the sending end of the feeder is 5.61×10^6 kWh.
i) Determine the annual loss factor for urban area
ii) Calculate the total annual copper loss energy and its value at Rs.2/kWh. 6

12 a) Explain briefly about double bus-double breaker scheme with a neat sketch and discuss advantages and disadvantages. 5
b) Compare the four and six feeder patterns for thermally limited feeder circuits. 5

13 a) Explain the factors affecting the design loading of a feeder. 4
b) Derive the total series voltage drop and copper loss per phase on radial feeders with uniformly distributed load. 6

14 a) Derive the voltage drop and power loss of a single-phase two-wire laterals with ungrounded laterals. 6
b) Explain the shortcut method to calculate the voltage dips due to a single phase motor start. 4

15 a) Explain the general procedure to determine the best location of the capacitors in distribution system. 5
b) Write a short note on power factor correction. 5

16 a) Explain the Double bus-single breaker scheme with a neat sketch and discuss advantages and disadvantages. 5
b) Explain the loop type of primary feeder with a neat sketch. 5

17 a) Explain the shortcut method to calculate the voltage dips due to a three phase motor start. 6
b) List out the components of distribution SCADA and give the importance of the SCADA in a present system. 4

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Code No. 2685 / CBCS

FACULTY OF ENGINEERING

B.E. (EEE) VI - Semester (CBCS) (Suppl.) Examination, December 2019

Subject : Digital Control System (Elective-II)

Time : 3 hours **Max. Marks : 70**

Note: Answer all questions from Part-A. Answer any Five questions from Part-B.

PART – A (10 x 2 = 20 Marks)

1 Write a short notes on D/A converters.
2 What are the necessary and sufficient conditions for controllability and observability for pulse transfer function?
3 Define the terms primary strips and complementary strips.
4 What are the effects of lead compensator on discrete system?
5 Define full order and reduced order state observer.
6 Obtain the Z-transform of sine function.
7 Give the properties of state transition matrix.
8 A control system has the following characteristic equation $P(Z) = Z^3 - 1.3Z^2 - 0.08Z + 0.24 = 0$. Determine the stability of the system.
9 What are the effects of PI controller on discrete system?
10 What is pole placement by state feedback?

PART – B (5 x 10 = 50 Marks)

11 Obtain the inverse Z-transform of $X(Z) = \frac{z^2}{(z-1)^2(z-e^{-aT})}$ by using inversion integral method. 10

12 Consider the matrix A. Compute e^{At} by using matrix exponential method and Laplace transformation method $A = \begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix}$ 10

13 a) Explain the design procedure for stability using bilinear transformation coupled with routh criterion. 5
b) Check for stability of the sampled data control system represented by the following characteristic equation $P(Z) = Z^3 - 0.2Z^2 - 0.25Z + 0.05 = 0$ by bilinear transformation. 5

14 Write short notes on
a) Transient response analysis 5
b) Steady state response analysis 5

15 Discuss the design of full order observer with neat block diagram. 10

16 State and prove
a) Initial value theorem b) Final value theorem 10

17 a) Explain the mapping between S-plane to Z-plane. 5
b) Solve the following difference equation using the Z-transform method
C(K+2)-1.5C(K+1)+C(K) = 2U(K) where C(0) = 0, C(1) =1 5

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Code No. 2687 / CBCS

FACULTY OF ENGINEERING

B.E. (Inst.) VI - Semester (CBCS) (Suppl.) Examination, December 2019

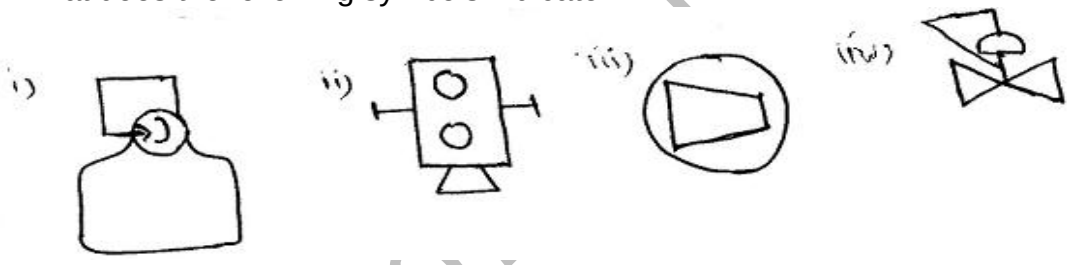
Subject : Piping & Instrumentation Diagrams (Elective-I)

Time : 3 hours **Max. Marks : 70**

Note: Answer all questions from Part-A. Answer any Five questions from Part-B.

PART – A (10 x 2 = 20 Marks)

1 Define P & I diagram. And also explain the need of P&IDs with an example.
2 What is the difference between PFD & P&ID?
3 What do you mean by smart P&ID and why is it so important?
4 Mention the abbreviations of the following :
i) ST(W) ii) NO iii) LLLL iv) BFW
5 How are line numbering designed for the preparation of P&IDs?
6 What do you mean by KKS numbering system?
7 What is the designing criteria of steam trap assembly?
8 Discuss how approval for preparation of P&IDs shall be obtained.
9 What does the following symbols indicate :



10 Write the scope of P&IDs.

PART – B (5 x 10 = 50 Marks)

11 Explain different types of engineering drawing with relevant examples. 10

12 a) Compare binary logic diagram and analog loop diagram with various applications. 4
b) With an example, give the outlined of the P&IDs equipment labeling and identifications systems. 6

13 a) Discuss the definition and terminology of P&IDs. 3
b) Explain in detail the general requirements of P&IDs. 7

14 Explain the various designing criteria for preparation of piping and instrumentation diagrams with relevant examples. 10

15 Discuss briefly the preparation steps for establishment of P&IDs. 10

16 What do you mean by interpreting P&ID equipments? Explain. 10

17 Write short notes on :
a) Philosophy of Instrumentations installation 5
b) Industry codes & Standards 5

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Code No.2693 / CBCS

FACULTY OF ENGINEERING

B.E. (ECE) VI – Semester (CBCS) (Suppl.) Examination, December 2019

Subject: Digital Image Processing (Elective – I)

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

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

PART – A (10x2 = 20 Marks)

1 Define sampling and quantization

2 What is city block distance?

3 Calculate the number of bits required to store a digital image size 512x512 with 64 gray levels

4 What is contrast stretching?

5 Give a 3x3 Sobel mask that is optimized for lines at +45 degrees

6 Compare Image Enhancement and Image Restoration

7 What is the need for Image Compression?

8 Give two properties of Hadamard Transform

9 What is meant by masking?

10 How a degradation process is modeled?

PART – B (5x10 = 50 Marks)

11 a) Explain about the brightness adaptation and discrimination ability of human eye. 5
b) Explain the terms adjacency, path, connectivity, and distance. 5

12 a) Write the forward and inverse 2D DFT equations and prove its separability property. 5
b) Obtain the Haar transformation matrix for N=4. 5

13 a) How Gray level transformation helps in contrast enhancement? Discuss. 5
b) Explain image sharpening using Laplacian operator. 5

14 a) With necessary equations, explain about Homomorphic filter. 5
b) Explain why Hotelling transform is an optimal transform. 5

15 a) Compare canny edge detector with LOG edge detector. 5
b) A source emits for symbols (a, b, c, d) with source probabilities (0.1, 0.4, 0.3, 0.2) arithmetically encode the sequence b b a d c. 5

16 a) Explain about Geometric Transformations. 5
b) Explain the method of estimating the degradation function by image observation and by mathematical modeling. 5

17 Write about:
a) Image sensing 3
b) Application areas of Image processing 3
c) Gradient operators. 4

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Code No. 2694 / CBCS

FACULTY OF ENGINEERING

B.E. (ECE) VI – Semester (CBCS) (Suppl.) Examination, December 2019

Subject: Data Communications & Computer Networking (Elective – I)

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

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

PART – A (10x2 = 20 Marks)

1. Compare Bus, Star, Ring and Hybrid topology.
2. Bring out the necessity of sliding window protocol.
3. Compare pure ALOHA and slotted ALOHA with reference to channel utilization.
4. Differentiate circuit switched network, datagram networks and virtual circuit network.
5. Describe the concept and necessity of tunneling.
6. What is the necessity of Network Address Translation (NAT).
7. Define sockets and port. List out four well known ports.
8. Describe how TCP performs path MTU discovery.
9. Define SNMP and mention its role in network management.
10. Define Domain name system.

PART – B (5x10 = 50 Marks)

11 a) Describe types of Networks and line configurations. (7)
b) Differentiate OSI and TCP/IP model. (3)

12 a) Describe IEEE 802.16 standard with its frame structure. (5)
b) Describe Bluetooth and its applications. (5)

13 a) Differentiate IPv4 and IPv6 header frames. (5)
b) Describe various methods of controlling congestion. (5)

14 a) Describe UDP and differentiate it with TCP. (5)
b) Describe ATM AAL Layer protocol. (5)

15 a) Describe IEEE 802.2 and 802.3 protocol. (5)
b) Explain DES algorithm. (5)

16 a) Describe and contrast symmetric key and public key algorithms. (6)
b) Explain Domain Name System. (4)

17 Write notes on any two of the following: (10)
a) Error detection and correction
b) IP addresses
c) X.25

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Code No. 2695/CBCS

FACULTY OF ENGINEERING

B. E.VI – Semester (CBCS)(ECE)(Suppl.) Examination, December 2019

Subject: Optical Communication (Elective I)

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

Note: Answer all questions from Part – A & any five questions from Part-B

PART – A (10 x 2 = 20 Marks)

1. A typical relative refractive index difference for an optical fiber is 1%. Calculate the cladding refractive index if the core refractive index is 1.46.
2. Describe quantum nature of light.
3. For a given optical fiber with attenuation coefficient of 0.25 dB/Km, determine its output power at the distance of 10Km from a 1W source.
4. What is intermodal dispersion?
5. Explain about lensing schemes for coupling efficiency improvement.
6. Explain 'Population inversion'.
7. Calculate the bandwidth of the LED with a rise time of 20ns.
8. Give the expression for responsivity of avalanche photodiode.
9. Define dark current noise in photo detectors.
10. Give the basic applications of optical amplifiers.

PART – B (50 Marks)

11. (a) Explain the light propagation in graded index fibers with neat diagrams. 5
    (b) Determine V-number for step-index fiber at 820nm having 25μmts core radius, The core and cladding refractive indices are 1.48 and 1.46 respectively. 5

12. (a) How do you get optimum design in Single mode fiber? 5
    (b) Determine the cutoff wavelength for a step-index fiber to exhibit single mode operation when the core refractive index and radius are 1.46 and 4.5 μmts, respectively. These $\Delta = 0.25\%$ 5

13. (a) Explain the operation of surface-emitting LED. 5
    (b) What are the major requirements of a good fiber connector design? 5

14. (a) Explain the operation of avalanche photo diodes 5
    (b) Calculate the efficiency of a p-i-n photodiode if its responsibility is 0.58μW at 800nm. 5

15. Give the block diagram of a fiber optic receiver showing different types of noises generated. Explain about each type of noise giving expressions. 10

16. Write short notes on (i) Ray optics. 5
    (ii) Link Power budget 5

17. Explain the operation of trans impedance amplifiers in optical receiver. Mention its benefits. 10

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Code No. 2708

FACULTY OF ENGINEERING

B.E. (Mech.) VI – Semester (CBCS) (Suppl.) Examination, December 2019

Subject: Non-Conventional Energy Sources (Elective – I)

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

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

PART – A (10x2 = 20 Marks)

1 Write the disadvantages of Renewable energy sources.

2 Comment on prospects of fossil fuels in India.

3 Define Zenith angle.

4 Mention few instruments used to measure solar radiation.

5 What are various favourable sites for installation of wind turbines?

6 What is nacelle in vertical axis wind turbine?

7 Write the disadvantages of geothermal energy.

8 What is pyrolysis?

9 What are limitations of Tidal energy?

10 What are limitations of OTEC power plant?

PART – B (5x10 = 50 Marks)

11 Discuss various renewable and non-renewable energy sources with statistics, merits, demerits and prospects in India.

12 a) Explain the construction and working of solar PV cell with neat sketch.
b) Explain various solar collectors with neat sketches.

13 a) Explain the working principle of induction generator.
b) Determine the torque coefficient of a wind turbine.

14 a) Explain dry steam and wet steam geothermal systems with neat sketch.
b) Explain constructional details of gasifier with neat sketch.

15 a) Differentiate wave and tidal energy systems.
b) Classify and explain OTEC power plants with neat sketches.

16 a) Write about the prospects and limitations of wave energy in India.
b) What are the adverse effects of OTEC power plants?

17 a) Explain various biomass chulhas available for rural India.
b) Classify and explain various Wind turbines with neat sketches.

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Code No: 2710/CBCS

FACULTY OF ENGINEERING

B.E.VI – Semester (CBCS)(PROD) (Suppl.) Examination, December 2019

Subject : Flexible Manufacturing Systems (Elective-I)

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

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

Part - A (10 x 2 = 20 Marks)

1. Define FMS and mention the major elements of an FMS.
2. What are the three levels of Manufacturing flexibility?
3. What is Product Design Flexibility?
4. What is the role of software in FMS?
5. What are the steps in simulation modeling process?
6. What is Group Technology and how is it useful in an FMS environment?
7. What are the material handling systems in FMS?
8. What are the basis for Coding parts in Group Technology?
9. What do you understand by Scheduling in FMS?
10. Explain the areas of application of FMS in an industry.

Part - B (5x10 = 50 Marks)

11. What are the basic components of FMS? Explain each in detail.
12. What are the different types of layouts of FMS? Explain with sketches.
13. Explain the role of Maintenance Planning / Reporting in production for FMS.
14. Explain in detail the database layout for FMS with a figure.
15. Explain the structure of knowledge – based system for Group Technology.
16. What are the factors to be considered during FMS planning and development?
17. (a) What are the four criteria used to judge the quality of documentation in FMS?
    (b) Explain JIT and Lean Manufacturing.
    (c) Depending on the number of machines, categorize the types of FMS.

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Code No: 2714/CBCS

FACULTY OF ENGINEERING

BE VI-Semester (CBCS) (A.E.) (Suppl.) Examination, December 2019

Subject : Material Handling and Earth Moving Vehicles (Elective-I)

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

Note: Answer All Questions From Part-A, & Any Five Questions From Part-B.

PART - A (10 x 2 = 20 Marks)

1. What is the difference between Bunkers and Silo's
2. What are the various mechanical components in Belt Conveyor?
3. Define Boom
4. What is Hoisting?
5. Write difference between Diesel Shovel and Hydraulic Shovel.
6. Write the significance of Cranes.
7. What are the various types of Trailers?
8. Mention the uses of Rippers
9. What is Hauling?
10. Write the applications of Forklifts

PART - B (5x10 = 50 Marks)

11. a) What is the purpose of Belt Take-Up's? 3
    b) Write a short note on the following Take – up's 7
    i) Screw type Take – up's
    ii) Horizontal Take – up's

12. a) What is jib Crane? Write a short note on it 5
    b) Give the different parts of Tower Crane and explain with neat sketch 5

13. Write about the Power Transmission system in Diesel Shovel with neat sketch. 10

14. a) How the Graders are classified? Explain any one in detail 7
    b) What are the functions of Graders? 3

15. Explain the following with neat sketch
    a) Wagon Loader 5
    b) Wagon Tippler 5

16. a. Explain about the Bucket Elevators 5
    b. Write a short note on Gantry Cranes working 5

17. What are the major components of Truck – Tractors and explain them? 10

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Code No. 2721/CBCS

FACULTY OF ENGINEERING

B.E.VI – Semester (CBCS)(CSE)(Suppl.) Examination, December 2019

Subject: Graph Theory and its Applications (Elective – II)

Time : 3 hours **Max. Marks : 70**

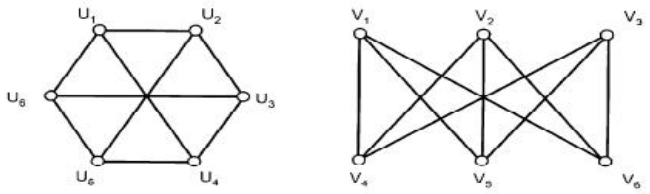
Note: Answer all questions from Part – A & any five questions from Part-B

PART – A (20 Marks)

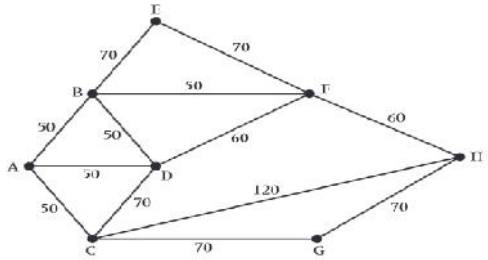
1) Is there a graph with degree sequence (1,3,3,3,5,6,6) Justify? [2]
2) How many Vertices when the following graphs have if they contain 16 edges and all vertices of degree 2? [2]
3) What is Chordal graph? [2]
4) Write two necessary conditions for Hamiltonian cycle. [2]
5) Find the chromatic number of complete graph of n vertices. [2]
6) What is dual graph? [2]
7) Find the chromatic number of complete graph of n vertices. [2]
8) What is Bipartite graph? Draw $K_{2,3}$? [2]
9) What is a clique? [2]
10) Write Euler's formula. [2]

PART – B (50 Marks)

11. What is Isomorphism? Check whether the following graphs are Isomorphic or not? Justify your answer? [10]



12. Find Euler tour in the following graph.



[10]

13.a) Write a short note on Bipartite graphs and line graphs. [5]
b) Prove that in any non directed graph there is an even number of vertices of odd degree? [5]

14. A construction company has four large bulldozers located at four different garages. The bulldozers are to be moved to four different construction sites. The distances in miles between the bulldozers and the construction sites are given below.

Bulldozer \ Site	A	B	C	D
1	90	75	75	80
2	35	85	55	65
3	125	95	90	105
4	45	110	95	115

How should the bulldozers be moved to the construction sites in order to minimize the total distance travelled? (Hungarian Method) [10]

15.a) State and Prove Brook's theorem. [5]
b) What is Perfect matching? Explain matching in bipartite graphs? [5]

16. a) Write a short note on tournaments and Eulerian directed graphs. [5]
b) Prove that there does not exist a polyhedral graph with exactly 30 edges and 11 regions. [5]

17. Write BFS and DFS algorithms. Illustrate with example. [10]

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Code No. 2723/CBCS

FACULTY OF ENGINEERING

B.E. VI – Semester (CSE) (CBCS) (Suppl.) Examination, December 2019

Subject: Advanced Databases (Elective – II)

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

Note: Answer All Questions From Part-A, & Any Five Questions From Part- B.

PART – A (2 x 10 = 20 Marks)

1 What is complex data type? Give an Example.
2 What is the purpose of object Identity?
3 Give the structure of XML data.
4 Can you store XML in database? Justify your answer.
5 List the various steps involved in query processing.
6 State the purpose of query optimization.
7 Differentiate between intra and inter query parallelism.
8 Why replication is important in distributed database environment?
9 What is database tuning?
10 Write different types of operations performed in temporal query languages.

PART – B (5 x 10 = 50 Marks)

11 Describe about object identity, object structure and type inheritance in object oriented databases. (10M)

12 a) Discuss different ways of storing XML data. (5M)
b) Explain FLWOR Expressions in XML with example. (5M)

13 a) Explain two different approaches for evaluation of expression in query processing. (6M)
b) Write short note on Cost-based optimizer. (4M)

14 What is I/O Parallelism? Discuss different Partitioning Techniques used in parallel database environment. (10M)

15 a) Discuss in detail Multimedia databases. (5M)
b) List and discuss any two techniques used in performance tuning. (5M)

16 a) Compare and contrast distributed database with parallel database. (5M)
b) Discuss the Equivalence rules used in transformation of relational expressions. (5M)

17 a) Explain XPath, XQuery and XSLT with suitable examples. (5M)
b) Mention the collection types supported in SQL? Discuss with suitable example. (5M)

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Code No: 2728/CBCS

FACULTY OF ENGINEERING

BE VI Semester (CBCS) (I.T) (Suppl.) Examination, December 2019

Subject: Data Mining (Elective – II)

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

Note: Answer All Questions From Part-A, & Any Five Questions From Part- B.

Part –A (10 x 2 = 20 Marks)

1 Define the terms Data mining and Data Warehousing
2 Write the differences and similarities between discrimination and classification
3 Explain briefly Market Basket Analysis.
4 How are strong association rules generated from the frequent item sets?
5 What is prediction?
6 What are the metrics for evaluating classifier performance?
7 What is the difference between noise and an outlier?
8 Write the applications of clustering.
9 Define text mining.
10 What is Sequential pattern Mining.

Part –B (5 x10 = 50 Marks)

11 (a) Write about the various data mining functionalities
(b) What is meant by data cleaning explain the various methods of data cleaning

12 A database has five transactions as follows

Tid	Item List
T100	M,O,N,K,E,Y
T200	D,O,N,K,E,Y
T300	M,A,K,E
T400	M,U,C,K,Y
T500	C,O,O,K,I,E

Let min_sup=60% and min_conf=80%.
a) Find all frequent itemsets using Apriori and FP-growth, respectively.
b) Compare the efficiency of the two mining processes.

13 Mention different classification methods. Explain any two in detail.

14 a) Explain K-means clustering algorithm. Give an example.
b) Explain about outlier analysis?

15 Write about Data Mining Applications and Trends.

16 Suppose that the data for analysis includes the attribute *age*. The *age* values for the data tuples are (in increasing order) 13, 15, 16, 16, 19, 20, 20, 21, 22, 22, 25, 25, 25, 25, 30, 33, 33, 35, 35, 35, 35, 36, 40, 45, 46, 52, 70.
(a) What is the *mean* of the data?
(b) What is the *median*?
(c) What is the *mode* of the data? Comment on the data's modality (i.e., bimodal, trimodal, etc.).
(d) Show a *boxplot* of the data.
(e) Partition then into 3 bins using equal – width partitioning

17 Write short note on:
(a) Lazy learners
(b) Evaluation of clustering
(c) Web Mining

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Code No. 2729/CBCS

FACULTY OF ENGINEERING

B.E. (I.T.) VI-Semester (CBCS)(Suppl.) Examination, December 2019

Subject : Software Quality & Testing (Elective – II)

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

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

PART – A (20 Marks)

1	Explain the objectives of Software Quality Assurance system.	(2)
2	Differentiate between SQA, SQC and ST.	(2)
3	List types of CASE tools used in SQA.	(2)
4	Write about White-Box Testing techniques.	(2)
5	What is the need for software quality metrics?	(2)
6	Give examples of project process standards.	(2)
7	What is beta testing?	(2)
8	What are the goals of a test plan?	(2)
9	What are the disadvantages of automated testing tools?	(2)
10	What is system testing?	(2)

PART – B (50 Marks)

11	Explain the components of the software quality assurance system.	(10)
12	(a) Write the differences between Inspection and walkthrough.	(5)
	(b) Explain different types of integration testing.	(5)
13	Describe various software quality metrics.	(10)
14	(a) What is the need for Design Phase Testing?	(5)
	(b) How are test reports useful in SQA process?	(5)
15	(a) How do you test a data warehouse?	(5)
	(b) Describe the criteria for selecting automated testing tools.	(5)
16	(a) Differentiate between static and dynamic testing.	(5)
	(b) Write the unique features of SQA system.	(5)
17	Write briefly about :	
	(a) CMMI	(4)
	(b) Acceptance testing	(3)
	(c) Unit testing	(3)

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Code No. 2730/CBCS

FACULTY OF ENGINEERING

B.E. (I.T.) VI-Semester (CBCS)(Suppl.) Examination, December 2019

Subject : Internet of Things (Elective – II)

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

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

PART – A (20 Marks)

1 List the applications of Internet of Things.
2 What are the different components required for IoT device?
3 What does the communication model for an IoT Reference Model consist of?
4 Write short notes on Data representation and visualization with reference to IoT
5 What are the basic MAC features of 802.11ah?
6 What is the purpose of DHCP?
7 What is the use of Stream Control Transmission Protocol?
8 Why is Datagram Congestion Control Protocol used for?
9 Write any three major features of OneM2M?
10 Is there any mechanism offered by 6LoWPAN for security? If so, specify the mechanism.

PART – B (50 Marks)

11 (a) What are the design principles and needed capabilities of IOT? Explain.
(b) Write about IOT Business processes and Knowledge Management in brief.

12 (a) Explain ITU-T Reference Model of IoT with the help of neat sketch.
(b) Discuss IOT Technical Design Constraints.

13 (a) Describe the architecture of LTE-A.
(b) What is the need for transition from IPv4 to IPv6?

14 (a) Compare and contrast TCP and UDP.
(b) What are the main functions of HTTP? Write three parts of HTTP request?

15 (a) Why security required in IoT? Explain the security aspects of IOT protocols.
(b) What are the functions of ETSI M2M? Explain in detail.

16 (a) What effect will the internet of things (IoT) have on our daily lives? Explain with an example of smart device.
(b) Explain the relationship between core concepts of IoT Domain Model and IoT Information Model with the help of neat sketch.

17 Write short notes on any **two** of the following:
(a) IEEE 802.15
(b) AMQP
(c) Xaas

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