Code No: 11655/O

FACULTY OF ENGINEERING

BE 3/4 (Civil) II – Semester (old) Examination, May / June 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 Marks)

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 20^0C. 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)

Contd..2

i) Combined discharge ii) BOD iiiI) DO and (iv) Temperature

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

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)

****

Code No. 11130

FACULTY OF ENGINEERING

B.E. 3/4 (Civil) II – Semester (Backlog) Examination, May / June 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 List out factors affecting the per capita demand. (2)
2 What are joints? Write any two requirements of joints. (3)
3 Distinguish between slow sand filter and rapid sand filter with reference to rate of filtration, filter media, period of cleaning. (2)
4 What is break point clorination? (3)
5 A sewage sample has 5 day BOD at 20^0C is 180 mg/lt, what will be its 5 day BOD at 30^0C. (2)
6 What do you understand by the terms 'Self cleaning velocity' and 'Limiting velocity' in sewers? (3)
7 Describe with the help of a neat sketch, a horizontal flow grit chamber. (3)
8 Discuss the role of secondary settling tank in activated sludge process. (2)
9 Explain the functioning of septic tank with a sketch. (3)
10 Name the functional elements of solid waste management. (2)

PART – B (50 Marks)

11 a) The census records of a city show population as follows. Workout probable population after two decades selecting any two methods. (5)

Year	1970	1980	1990	2000
Population	25000	28000	35000	41000

b) Explain briefly about Hardy – cross method in finding out the distribution of flow in pipe network. (5)

12 a) Define 'flow through period' and detention tank in a sedimentation tank. (5)

b) Design six slow sand filter beds from the following data and show the arrangement of beds in plan.
Population to be served : 50,000
Quantity of water to be supplied : 200 lit/ head / day
Rate of filtration : 300 lit/sqm/day
Length of each bed is twice the breadth. (5)

13 a) What do you understand by oxygen sag curve? Explain with the aid of a neat sketch. (5)

b) A 600 mm diameter sewer is required to flow at half depth on a grade ensuring a degree of self cleansing equivalent to that obtained at full depth at a velocity of 0.9 m/s. Find the required grade, associated velocities and discharge at full depth and half depth. Take a uniform value of n = 0.15. (5)

14 a) Draw a flow diagram, explain about the activated sludge process. (5)

b) Design a grit chamber to handle a flow of 1.2 MLD, sketch your design. (5)

15 a) Discuss various types of solid wastes or dry refuse. Give the composition of solid wastes for an average Indian city. (5)

b) Design a septic tank for 200 users, water allowance is 120 lts/head/day. Detention period may be taken as 8 hrs. Draw a neat dimensioned sketch of a septic tank you design. (5)

16 Write short notes on:

i) Water distribution system. (5)

ii) Disinfection- Necessity and methods. (5)

17 Explain any **two** of the following.

i) Sewer types and appurtenances. (5)

ii) Sewage filtration. (5)

iii) Sludge digestion and disposal methods. (5)

****

Code No. 11138/BL

FACULTY OF ENGINEERING

B.E. 3/4 (Inst) II – Semester (Backlog) Examination, May / June 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 Define Biopotential. [2]

2 List any four characteristics of any medical instrumentation system. [3]

3 What is let go current? [2]

4 Draw Einthoven triangle. [2]

5 What is monopolar recording in EEG? [3]

6 Define systolic and diastolic pressure. [3]

7 Define plethysmograph. [2]

8 Write the principle of colorimeter. [2]

9 Define endoscopy. What is otoscope. [3]

10 Write at least three applications of CO_2 laser in medical field. [3]

PART –B (5x10 = 50 Marks)

11 a) Explain in detail Heart Lung machine with neat diagram. [7]

b) Explain how noise problems are eliminated in ECG recording. [3]

12 Explain in detail optical recorder with neat diagram. [10]

13 a) Explain catheterization method for measurement of BP. [6]

b) Explain phonocardiograph in detail. [4]

14 a) Write a short note on Collimator. [5]

b) Compare X-rays and Fluoroscopy. [5]

15 a) Explain the origin of heart sounds. [5]

b) Explain brain waves in detail. [5]

16 Explain Microshock and Macroshock in detail and their effect on the physiological behavior of the patient. [10]

17 Write a short note on:

a) Echocardiography. [5]

b) Sleep patterns. [5]

****

Code No. 11618/O

FACULTY OF ENGINEERING

B.E ¾ II – Semester (EIE) (Old) Examination, May/June 2019

Subject: Power Engineering

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. What is the purpose of an economiser? (2)
2. Specify the various types of prime movers used in hydro power plants. Also define specific speed. (2)
3. Define Load factor, diversity factor and Maximum demand. (3)
4. Give the significance of transposition of transmission lines. (3)
5. Mention the role of reactors in power system. (3)
6. What are the advantages of string insulator? (2)
7. Define short circuit capacity of a bus and how it is related to stability of the power system. (3)
8. What is meant by back up relaying? (2)
9. What is over current relay? (3)
10. What are the advantages of per unit representation? (2)

PART – B (50 Marks)

11. a) Explain the various components of a steam power stations with neat sketch.. (5)
    b) Discuss in detail the types of hydro power plants. (5)
12. a) Illustrate the various components of nuclear reactor. (5)
    b) Describe the various solar power collectors. (5)
13. a) Explain in detail various types of overhead Insulators and their applications. (5)
    b) Derive the expression for inductance of single phase transmission line system. (5)
14. a) Determine the voltage at the generating station and the efficiency of transmission for the following 1 - phase system. Transformer ratio 2 kV/ 11 kV. The resistance on L. V side = 0.06 ohms and H. V side is 12 ohms. reactance on L.V side and H.V side is 0.12 ohms and 5 ohms respectively. (5)

    b) Derive the expression for fault current for a L-L-L fault on transmission system. (5)
15. a) Describe the method of protection of internal faults in a generator. (5)
    b) Explain the induction type of relay with neat sketch. (5)
16. a) Maximum demand of a generating station is 100 MW, a load factor is 65%. The plant capacity factor and plant use factor are 50% and 80% respectively. Determine the (5)

Contd..2

i) The daily energy produced

ii) Installed capacity of the plant

iii) Reserve capacity

iv) Utilization factor.

b) Explain the different types of supporting structures. (5)

17. a) Describe the layout of hydro electric power plant. (5)

b) Explain the principle of operation of circuit breaker. How it is different from relay? Also explain the various types of circuit breakers. (5)

****

Code No.11633/O

FACULTY OF ENGINEERING

B. E. ¾ II – Semester (Old) Examination, May/June 2019

Subject: Electronic Instrumentation

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

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

PART – A (25 Marks)

1. Differentiate between Resolution and Sensitivity. 3
2. What is the need for Standards of measurement? 2
3. Which type of transducers are used for measurement of acceleration and explain basic principle involved in it? 3
4. What is the function of Hotwire anemometer? 2
5. List out the characteristics of Sound and Pressure. 2
6. What is the basic principle involved in Aluminum Oxide Hygrometer. 3
7. What do you understand by the term 'SCADA'? 2
8. List out the applications of Digital LCR Meter. 3
9. List out the Salient features of EEG. 3
10. What are Human Physiological systems? 2

PART – B (50 Marks)

11. Discuss in detail about IEEE standards and Elements of ISO 9001. 10
12. With a neat constructional diagram of LVDT, explain its principle of operation. 10
13. With a neat diagram, explain the principle involved in thermocouple and also give its advantages and limitations. 10
14. Discuss in detail about the Data acquisition system and give its applications. 10
15. Draw the block diagram of CT Scanner and explain its operating principle. 10
16. a) Derive the expression for Gauge factor of a Strain gauge. 5
    b) Explain in detail about Ultrasonic imaging Systems 5
17. Write short notes on
    (a) Digital Signal Oscilloscope 5
    (b) Photo emissive transducers 5

****

Code No. 11148/BL

FACULTY OF ENGINEERING

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

Subject : Control Systems 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 Define the terms – Time constant, Hydraulic resistance. (2)

2 What is mean by servo system? Give some of its applications? (2)

3 Determine the unit step response of a system given by (3)

$$\frac{C(S)}{R(s)} = \frac{10}{(s+10)}$$

4 Determine the sensitivity of the closed loop transfer function to the changes occurring in parameter 'b' if H(s)=1. (3)

$$G(s) = \frac{K}{s(s+b)}$$

5 The characteristic equation of a feedback system is $s^5 + s^4 + 2s^3 + 2s^2+s+1=0$. Check its stability by using Routh criterion. (3)

6 Sketch the Polar plot of the system given by (3)

$$G(s) = \frac{10}{s(s+1)}$$

7 Write short notes on Phase lag compensator. (2)

8 Briefly explain the importance of PID controller. (2)

9 What is Bandwidth? Give its importance. (2)

10 If $A = \begin{bmatrix} 0 & 1 \\ -1 & -2 \end{bmatrix}$, $B = C = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$, find the transfer function. (3)

PART – B (50 Marks)

11 Derive the transfer function $X^2(s) / F(s)$ of the physical model shown below. (10)

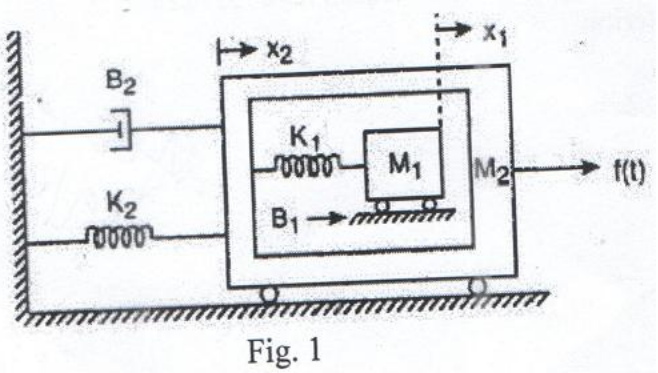


Fig. 1

12 Solve the given block diagram using reduction technique and verify the result by using Mason's gain formula. (10)

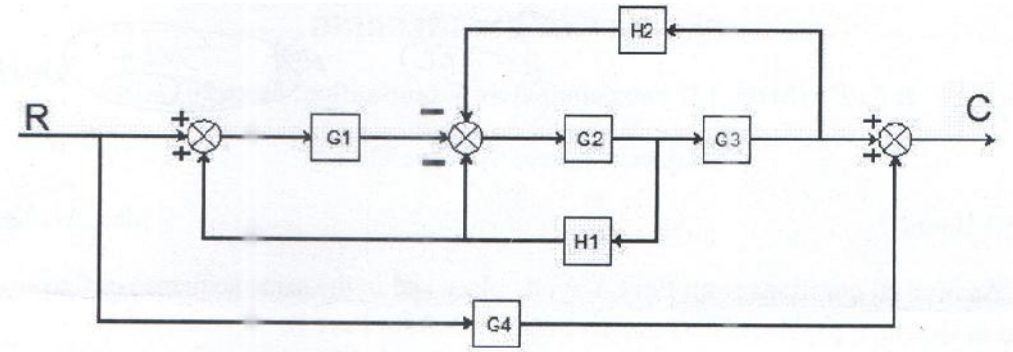


Fig. 2

13 Sketch the Bode plot for the control system and hence determine K for PM = 30° (10)

$$G(s)H(s) = \frac{K(1+0.1s)}{s(1+0.25s)(1+0.01s)}$$

14 Sketch the root locus and determine the range of K for stability of a system given by (10)

$$G(s)H(s) = \frac{K(s+1)}{s(s+2)(s^2+2s+5)}$$

15 (a) Develop the state space model for a system given by (10)

$$\frac{Y(s)}{U(s)} = \frac{s^2+5s+11}{s^3+8s^2+7s+9)}$$

(b) Check the Controllability and Observability of the developed model.

16 State Nyquist Stability criterion. Check the closed loop stability of the system given below by using this criterion. (10)

$$G(s)H(s) = \frac{K(s+1)}{s(s+10)}$$

17 Write short notes on the following: (3+4+3)

(a) Time domain specifications of II order under damped system

(b) Transfer function of simple liquid level system

(c) BIBO criterion

*****

Code No. 11155/BL

FACULTY OF ENGINEERING

B.E. 3/4 (AE) II - Semester (Backlog) Examination, May / June 2019

Subject : Automotive Air Conditioning

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	What is psychrometric chart? State its uses.	2
2	What do mean by adiabatic chemical dehumidification?	3
3	Write a short note on by-pass factor for cooling coil.	2
4	What do you understand by effective room sensible heat factor?	3
5	What is the function of evaporator?	2
6	List the classification of condenser.	3
7	Define Ton of refrigeration.	2
8	What are the advantages of air conditioning protection?	3
9	Write a note on compressor service.	2
10	What are various ducts?	3

PART – B (50 Marks)

11 The pressure and temperature of the air in a room are 1 bar and 28^0C. If the relative humidity is found to be 30%. Find the following :
   i) The partial pressure of water vapour,
   ii) Dew point temperature and
   iii) Specific humidity 10

12 Atmosphere air at a dry bulb temperature of 16^0C and 25% relative humidity passes through a furnace and then through a humidifier, in such a way that the final dry bulb temperature is 300C and 50% relative humidity. Find the heat and moisture added to the air. Also determine the sensible heat factor of the process. 10

13 a) With neat sketch explain each components of basic air conditioning system. 5
   b) Explain with neat sketch the working of thermostatic expansion valve. 5

14 Describe about ford automatically controlled air conditioner and heater system with suitable sketch. 10

15 a) What are various components of air distribution system? Explain with suitable sketch. 5
   b) List the causes and remedial measures for air conditioning on over loading. 5

16 a) Describe with help of neat diagram the summer air conditioning system. 5
   b) Explain key factors which forms load on automobile Air Conditioner. 5

17 a) How the refrigerants are classified? Discuss the important properties of ideal refrigerants. 5
   b) What are different types of temperature control systems in automobile air conditioner? 5

******

Code No: 11634/O

FACULTY OF ENGINEERING

B. E. ¾ (CSE) II – Semester (Old) Examination, May/June 2019

Subject: Principles of Programming Languages

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

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

PART – A (25 Marks)

1. Describe the differences between compilation and interpretation. (3)
2. What do you mean by Programming Environment? (2)
3. What is Binding Time? (2)
4. Discuss the differences between Iteration and Recursion. (3)
5. What is Type Equivalence? (2)
6. List the differences between logically and enumerated controlled loops. (3)
7. What is an Activation Record? (3)
8. What is the purpose of garbage collector? (2)
9. Define Semaphore? (2)
10. What is Higher Order function? Give example. (3)

PART – B (50 Marks)

11. List the principal phases of compilation, and describe the work performed by each. (10)
12. Discuss about Object Lifetime and Storage management. (10)
13. Describe four common parameter-passing modes. How does a programmer choose? Which one to use when? (10)
14. Explain in detail about Exception handling in C++ and Java. (10)
15. Demonstrate Initialization and Finalization programming constructs in OOPS. (10)
16. a) Describe the process of Unification and Resolution in prolog. (5)
    b) Discuss about Control flow and Assignment in Scheme. (5)
17. Write short notes on:
    a) Multiple Inheritance (5)
    b) Context Free Grammars (5)

****

Code No. 11631/O

FACULTY OF ENGINEERING

B.E. (I.T.) 3/4 II - Semester (Old) Examination, May / June 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	Define Software Testing. List the long-term goals of software testing.	(3)
2	Define : (i) Defect (ii) Incident (iii) Bug	(3)
3	Specify various criteria for logical coverage.	(2)
4	Compare alpha and beta testing.	(2)
5	Define software metric. Mention different types of software metrics.	(3)
6	Write short notes on the design model.	(3)
7	List the variants of System testing.	(2)
8	What is Unit testing?	(2)
9	What are the advantages of using automation tools?	(3)
10	List out the uses of JMeter.	(2)

PART – B (50 Marks)

11	(a) Explain various states of a bug.	(5)
	(b) What are the objectives of software testing? Describe about test plan.	(5)
12	(a) Discuss in detail about Cause-effect graphing based testing.	(5)
	(b) Describe mutation testing with one example.	(5)
13	(a) Write in detail about test plan hierarchy.	(5)
	(b) Explain total statement coverage prioritization with example.	(5)
14	(a) What are the various Testing strategies for testing Web based applications? Explain	(5)
	(b) Describe steps to perform debugging process and discuss different types of debugger.	(5)
15	(a) Explain the architecture, features and use of silk test.	(5)
	(b) How to test an application using Winrunner?	(5)
16	(a) Discuss integration testing level of an OOS? Which UML diagrams are useful in testing an OOS?	(6)
	(b) Differentiate function testing and system testing.	(4)
17	Write short notes on the following:	
	(a) Various categories of testing attributes	(4)
	(b) Inspections Vs Walkthroughs Vs Reviews?	(3)
	(c) Regression Testing	(3)

*****

Code No. 11169/ BL

FACULTY OF ENGINEERING

B.E. 3/4 (I.T.) II – Semester (Backlog) Examination, May/June 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.	Draw the lifecycle of a bug.	3
2.	Difference between Verification and Validation	3
3.	Write the importance of Equivalence Class Testing.	2
4.	What is the use of White box testing?	2
5.	Write the different software testing metrics.	3
6.	What is Regression testing?	2
7.	List issues in Object Oriented testing.	3
8.	What is navigation modeling?	3
9.	Write the disadvantages of automated testing tools.	2
10.	What is silk testing?	2

PART – A (50 Marks)

11.	Explain Effective Testing Vs Exhaustive Testing.	10
12.	(a) Write about various review methods.	5
	(b) Explain Cause Effect Graphing based Testing with an example.	5
13.	Explain the classification of software metrics.	10
14.	(a) Write about integration testing.	5
	(b) Differentiate between Conventional testing and Object oriented Testing.	5
15.	(a) Draw and explain Silk Test – architecture.	5
	(b) Explain how to select automated testing tools?	5
16.	(a) Compare Static and Dynamic testing.	5
	(b) Explain the importance of Cyclomatic complexity of code.	5
17	Write briefly about	
	(a) White box and black box testing methods.	5
	(b) Load Runner.	5

****

Code No.11170/BL

FACULTY OF ENGINEERING

BE 3/4 (IT) II – Semester (Backlog) Examinations, May/June 2019

Subject: Natural Language Processing (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 aspects of Natural Language are studied by Computational Linguists. 2M
2. State different types of knowledge relevant for Natural Language Processing. 3M
3. What are Open-Class words? Give two examples. 2M
4. What do you achieve by determining the most likely lexical category for each word in a sentence? Explain briefly. 3M
5. What are feature Values? Give an example. 3M
6. Explain briefly the term 'Word Sense'. 2M
7. What is the use of PoS tagging? 2M
8. Distinguish between Contextual Interpretation and Semantic Interpretation. 3M
9. Distinguish between Bigram and Trigram. 3M
10. Where do you find the use of the following statement? '*Always choose the interpretation that occurs most frequently in the training set*'. 2M

PART – B (5 x 10 = 50 Marks)

11. a) Explain the significance of Discourse Knowledge and World Knowledge in NLP. 4M
    b) State and discuss the Contextual Interpretation and Realization steps using Natural Language Understanding system. 6M

12. a) Examine the use of Predicate Calculus in NLP. 5M
    b) Demonstrate Encoding Ambiguity in Quasi-Logical Form. 5M

13. a) Illustrate Depth-First Top-Down parsing for the sentence *the tired man sighed* using the Grammar, G given below: 6M

    G:

    1. S NP VP
    2. NP ART N
    3. NP ART ADJ N
    4. VP V
    5. VP V NP

    b) State the morphological Issues in the design of lexicon and discuss. 4M

14. a) Present a Parse Tree with Feature Values and explain. 5M
    b) Write a Bottom-up Parsing algorithm and explain its working. 5M

15. a) Give an example to show the calculation of Bigram Probability and Lexical-Generation Probability. 6M
    b) Explain the following statement: the probability of a category occurring depends only on the category before it. 4M

16. a) Write short notes on Statistical Methods in Ambiguity Resolution. 5M
    b) Write short notes on Feature Systems. 5M

17. a) Discuss pros and cons of Probabilistic Context-free Grammar. 5M
    b) Sketch and explain a HMM Capturing the Bigram Probabilities. 5M

****

Code No.11534 / CBCS

FACULTY OF ENGINEERING

B.E. (Civil) VI – Semester (CBCS) (Main) Examination, May/June 2019

Subject: Waste Water Treatment (Elective – II)

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

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

PART – A (10x2 = 20 Marks)

1 State the main objective of treating sewage.

2 Explain the purpose of sedimentation in sewage treating process.

3 What is flocculation in sewage water treatment process?

4 What is a facultative partially mixed lagoon?

5 What are tertiary ponds?

6 What is irrigation or slow rate treatment system?

7 What is landscape vegetation?

8 What is an outfall in ocean disposal of effluent?

9 What is the method of dilution of sewage water?

10 What is mass transport process in effluent disposal?

PART – B (5x10 = 50 Marks)

11 a) What are the different processes in the treatment of sewage? Draw the layout of the sewage treatment plant. 5M

b) Explain the process of nitrification following the conventional biological treatment in a tertiary application following secondary treatment using the flow diagram. 5M

12 Design an aerated lagoon to treat 10,000 m^3/d of waste water for the following conditions.(i)Influent soluble BOD and suspended solids = 150 mg/l, (ii)Overall first order BOD removal rate constant= 2 /d at 20^0 C. (iii) Summer temperature = 27^0 C. (iv) Winter temperature = 7^0 C. (v) Waste water temperature = 15^0 C. (vi) Temperature coefficient = 1.07 (vii) Aeration constants α = 0.85, β = 1.0 (viii) Elevation = 1250m (ix) Oxygen concentration to be maintained = 2 mg/l (x) Lagoon depth = 2m (xi) Hydraulic residence time = 10d (xii) Temperature proportionality constant f = 12 $X10^6$. Determine the surface area, summer and winter temperatures in the lagoon and the effluent BOD in summer and winter. If the growth yield is approximately 0.5 (BOD based) determine the biological solids concentration in the lagoon, the oxygen requirements and the power requirements for summer and winter condition. Use surface aerators rated at 1.5 Kg O_2/KW-h. 10M

13 a) Explain the effect of temperature on the design of flow through lagoons. 5M

b) An irrigation system is used to accept 35 l/s of effluent for an application rate of 6 cm/week. For a year round operation, calculate the field area. If the system is designed for only 36 week/year, calculate the field area. 5M

..2

14 a) Explain in detail the quantities of waste sludge produced from primary sedimentation and secondary aeration. Also explain the calculation of the volume of wet sludge. 5M

b) Explain the aerated lagoon type of stabilization pond. 5M

15 a) Explain the water quality of the effluent in the zone of initial dilution in an ocean outfall. 5M

b) Discuss about the quality limits for wastewater discharge and also state the values of quality limits for the various parameters for ocean discharge. 5M

16 a) Explain in detail the process of self-purification of streams. 5M

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

17 Write short notes on: 10M

(i) Rapid infiltration with figure.

(ii) Diffusion-Advection process.

(iii) Disposal of screening.

****

Code No. 11535 / CBCS

FACULTY OF ENGINEERING

B.E. (Civil) VI – Semester (CBCS) (Main) Examination, May/June 2019

Subject: Ground Improvement Techniques (Elective – II)

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

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

PART – A (10x2 = 20 Marks)

1. List out different mechanical stabilization methods.
2. What are the factors affecting the selection of ground improvement techniques?
3. State any two applications of grouting in ground improvement.
4. List the admixtures used in clay soil stabilization.
5. What is the function served by lower jet in vibro-floatation method?
6. Define suitability number.
7. Differentiate sand drains and stone columns.
8. Discuss the suitability of thermal method of stabilization.
9. Define reinforced earth.
10. Mention the differences between woven and non-woven geotextiles.

PART – B (5x10 = 50 Marks)

11 a) Discuss in detail about mechanical stabilization. (5)

b) What is the necessity of ground modification? Explain in detail. (5)

12. a) Briefly explain about compaction grouting and jet grouting. Discuss their advantages and disadvantages. (5)

b) State the procedure of lime stabilization and factors affecting it. (5)

13 Mention the types of vibro-floatation techniques. Discuss them in detail. Write their merits and demerits. (10)

14. a) Discuss in brief about the methods of dewatering. (5)

b) Explain about vacuum method of ground modification. Discuss the necessary conditions for its effectiveness. (5)

15. a) What are the various tests conducted on geo-textiles. (5)

b) Discuss the principles involving in the design of reinforced earth. (5)

16. a) Discuss the advantages and disadvantages of cement stabilization over bitumen stabilization. (5)

b) What is terraprobe technique? Explain. (5)

17. Write short notes on following

a) Lime piles (5)

b) Woven Vs non-woven fabrics. (5)

****

Code No. 11553 / CBCS

FACULTY OF ENGINEERING

B.E. (EEE) VI - Semester (CBCS) (Main) Examination, May/June 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 Why the use genetic algorithms?
2 Write the application of neural networks.
3 What are the applications of fuzzy logic?
4 What is defuzzification?
5 What are the characteristics of ANN?
6 What are the steps involved in training algorithms of perception?
7 What is encoding in the genetic algorithms?
8 Write the Demorgan's law for a fuzzy set.
9 What is Hoppfield neural network?
10 Give the role of neural networks in power system.

PART – B (5 x 10 = 50 Marks)

11 a) Let X, Y, Z are the 3 fuzzy sets defined on the universe of discourse X : $\{x_1\ x_2\ x_3\}$, Y : $\{y_1\ y_2\}$, Z : $\{z_1\ z_2\ z_3\}$ respectively. Fuzzy relation $R = \begin{bmatrix} 0.5 & 0.1 \\ 0.2 & 0.9 \\ 0.8 & 0.6 \end{bmatrix}$ and $S = \begin{bmatrix} 0.6 & 0.4 & 0.7 \\ 0.5 & 0.8 & 0.9 \end{bmatrix}$. Find Min Max composition. 6

b) Write the short notes on neural network approach to computation. 4

12 Determine the weights of a neural network with 4 input and 2 output unit using delta learning rule with the activation function $f(a) = \frac{1}{1+\bar{e}^{a}}$ for the following input-output pairs.

Input : $[1100]^T$ $[1001]^T$ $[0011]^T$ $[0110]^T$
Output : $[11]^T$ $[10]^T$ $[01]^T$ $[00]^T$ 10

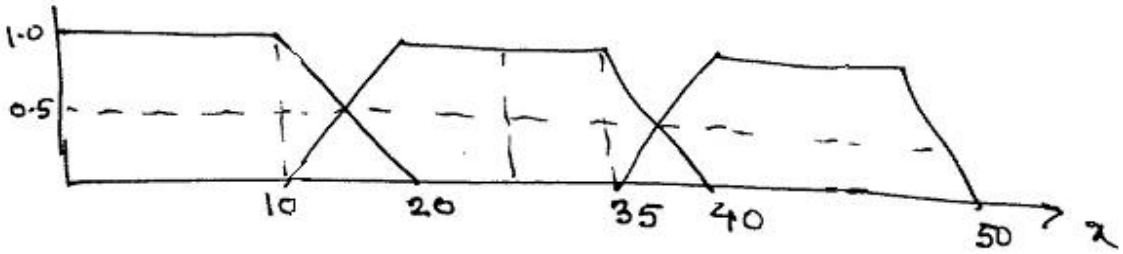
13 a) Name and describe the main features of genetic algorithms. 5

b) Perform one point and 2 point cross and uniform crossover for the genes and show the off springs. 5

x_1 : 87126601 ; x_2 : 65413532 ; x_3 : 23921285 ; x_4 41852094

14 a) Write short notes on Lamda-cut defuzzification methods with example. 5

b) Given the membership function, find the degree of membership values and the expression for them x : 37.5 5



15 a) Explain about generalized radial basis network. 5

b) Comparison between single layer and multilayer feed forward networks. 5

16 a) Explain various types of soft computing techniques. 5

b) Explain fuzzification and defuzzification to fuzzyset. 5

17 a) Consider the two fuzzy sets 6

$$A:\left\{\frac{1}{1.0}+\frac{0.75}{1.5}+\frac{0.3}{2.0}+\frac{0.15}{2.5}+\frac{0}{3}\right\}$$

$$B:\left\{\frac{1}{1.0}+\frac{0.6}{1.5}+\frac{0.2}{2.0}+\frac{0.1}{2.5}+\frac{0}{3}\right\}$$

Find $(A \cup B)$, $(A \cap B)$, $\overline{B}$, $\overline{A \cup B}$

b) What are the limitations of back propagation learning algorithms? 4

******

Code No. 11554 / CBCS

FACULTY OF ENGINEERING

B.E. (EEE) VI - Semester (CBCS) (Main) Examination, May/June 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 The load curves of two different categories of loads and system peak load are as follows :
Peak load for industrial load : 2000 kW; Peak load for residential load : 2000 kW; System peak load : 3000 kW. What is diversity factor and coincidence factor of the system.
2 Define coincidence factor and non-coincidence demand.
3 Write the benefits that obtained from the distribution systems.
4 Discuss briefly about the role of distribution transformer.
5 Write the list of protective devices that are used in the distribution system.
6 What is the effect of how power factor in the distribution system?
7 Define the terms i) Nominal voltage ii) Rated voltage
8 Why voltage drop considerations are important in a distribution system?
9 What are the demerits for low P.F. in the distribution system?
10 What are the components of distribution in SCADA?

PART – B (5 x 10 = 50 Marks)

11 a) What is loss factor? How it is related to load factor? Discuss it's significance. 5
b) Assume that a load of 100 kW is connected at the riverside sub-station. The 15-min. weekly the maximum demand is given by 75 kW, and the weekly energy consumption is 4200 kWh. Assuming a week is 7 days. Find the demand factor and the 15-min. weekly load factor of the sub-stations. 5

12 a) Draw the single line diagram of 33/11KV substation and explain the purpose of each component. 5
b) List the design and operational aspects that affects the primary feeder voltage level. 5

13 a) List the design and operational aspects of electrical sub-station and it's voltage level. 5
b) Explain in detail about the design considerations of network type distribution feeder. 5

14 a) Discuss importance of voltage drop and power loss calculations in distribution system. 4
b) A 2-wire DC distributor AB, 600m long is loaded as under distance from :

Distance (MTs)	150	300	350	450
Load (AMPs)	100	200	250	300

..2

The feeding point-A is maintained at 44V and that of B at 430V. If each conductor has a resistance of 0.01Ω per 100 mtr. Calculate i) The currents supplied from A to B ii) The power dispatched in the distributed. 6

15 a) Compare and explain the role of shunt and series capacitors for power factor correction. 5

b) A 3-phase 500 hp, 50 Hz, 11 KV star connected induction motor has a full load efficiency of 85% at a lagging P.F. of 0.75 and connected to a feeder. If it is desired to correct it to a P.F. of 0.9 lagging load. Determine the following i) The size of capacitor bank in KVAR ii) The capacitance of each unit if the capacitors are connected in star as well as Delta. 5

16 a) Compare the radial, loop and ring main primary distribution systems on the basis of load, reliability of supply and economy. 5

b) An industrial area near a city was found to have a load capacity density 0.5 MVA/KM^2. The total area was to be located between the rectangular strip 8 KM x 4 KM. Determine suitable number of 33/11KV substations, their capacity and feeder length. The loads are served by 11KV feeders. 5

17 a) Explain in detail about the effect of shunt compensation on distribution system. 4

b) A 440V, 50 cycles, three phase line delivers 250 KW at 0.7 P.F. (Lag.). It is desired to bring the line P.F. to unity by installing shunt capacitors, calculate the capacitance if they are i) Star connected ii) Delta connected 6

******

Code No. 11555 / CBCS

FACULTY OF ENGINEERING

B.E. (EEE) VI - Semester (CBCS) (Main) Examination, May/June 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 Define the terms Quantization, Quantizing, Quantization error.

2 Write the state equation and output equation for observable canonical form.

3 State cayley Hamilton theorem.

4 What is pole placement by state feedback?

5 Define the terms constant attenuation loci and constant frequency loci.

6 Obtain the Z-transform of cosine function.

7 What are the effects of PID controller on system performance?

8 Write the ackerman's formula to find the state observer gain matrix K.

9 What are the necessary and sufficient conditions for stability using bilinear transformation coupled with Routh criteria?

10 Define the term steady state response.

PART – B (5 x 10 = 50 Marks)

11 Obtain the inverse Z-transform of $X(Z) = \frac{z^2 + z + 2}{(z-1)(z^2 - z + 1)}$ by using partial fraction expansion method. 10

12 A discrete time system is described by the difference equation Y(k+2)+5y(k+1)+6y(k)=u(k), y(0) = y(1) = 0, T = 1 sec a) Determine a state model in canonical form b) Find the state transition matrix c) for input u(k)=1, $k \geq 1$ find the output y(k). 10

13 a) Draw the Jury stability table and mention the conditions for system to be stable. 5

b) Examine the stability of the following characteristic equation $P(Z) = Z^4 - 1.2Z^3 + 0.07Z^2 + 0.3Z - 0.08 = 0$ 5

14 a) Define the following transient response specifications i) Delay time ii) Rise time iii) Peak time iv) Settling time 5

b) Explain the design procedure in W-plane. 5

..2

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

16 Define A/D conversion. Explain any one method with a neat sketch and also mention errors in A/D converters. 10

17 a) Explain the mapping between S-plane to Z-plane. 5

b) Solve the following different 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

******

Code No. 11560 / CBCS

FACULTY OF ENGINEERING

B.E. (Inst.) VI - Semester (CBCS) (Main) Examination, May/June 2019

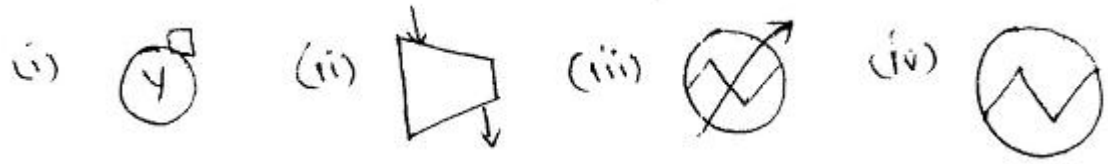
Subject : Piping & Instrumentation Diagrams (Elective-II)

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 What does P & I diagrams mean? Explain with an example.
2 What does the following symbols indicate



3 Mention various types of software used in preparation of P & I diagrams.
4 What do you mean by Inscription? Explain.
5 Outlined the various sample connections with schematics.
6 Define KKS numbering system with examples.
7 What are the minimum information of instrumentation and piping to be shown on P & I Diagrams?
8 Discuss the various conditions to be followed for revision of P & I Diagrams.
9 Mention the abbreviations of the following :
i) ST(H) ii) NC iii) HHLL iv) TI
10 What do you mean by equipment labeling and identification?

PART – B (5 x 10 = 50 Marks)

11 What is the importance of Engineering drawing in instrumentation field? Explain. 10

12 With examples, explain interpreting of various P&I diagrams equipments. 10

13 a) Discuss the scope of P&I diagrams. 3
b) Explain the minimum information of general requirement to be shown on P&I diagrams. 7

14 a) What do you mean by steam trap assembly? 4
b) Explain various designing criteria for preparation of P&I diagrams with relevant examples. 6

15 Outlined the general establishment of P&I diagrams preparation steps in detail. 10

16 a) Explain different types of line symbols used in P&IDs. 5
b) What is the importance of smart P&IDs in process instrumentation system? 5

17 Discuss briefly any two of the following : 10
a) P&ID symbols
b) Utility connections
c) Line and value numbering

******

Code No. 11566/CBCS

FACULTY OF ENGINEERING

B.E. (ECE) VI – Semester (CBCS) (Main) Examinations, May/June 2019

Subject: Digital Image Processing (Elective-I)

Time: 3 hrs **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 subjective brightness and brightness adaptation?

(2) Assume that a 20m high structure is observed at a distance of 150m. What is the height of the image formed at retina?

(3) Discuss the applications of Image transforms?

(4) Mention the Properties of Slant transform?

(4) Highlight the advantages of wiener filter over inverse filter?

(5) Differentiate blurring and ringing effects in spatial filters?

(6) Give the formula for transform function of a Butterworth low pass filter.

(7) Differentiate Image Enhancement and Image Restoration?

(8) What is geometric transformation?

(9) List out different types of derivative filters?

(10) Calculate the Entropy of the image.

5	10	15	15
10	15	20	20
20	20	25	30
25	25	30	30

PART – B (5 x 10 = 50 Marks)

11. (a) What is Digital Image processing? Draw the block diagram and explain the various fundamental steps involved in Digital Image processing? (6)

(b) Image transmission is done in packets. A packet consists of a start bit, a byte of data and a stop bit. (4)

(i) How many minutes would it take to transmit a 512 x 512 image with 128 grey levels at baud rate?

(ii) What would be the time at 9600 baud rate?

12. (a) Show that 1-D DCT can be implemented via N-point FFT. (5)

(b) Obtain the Haar transform matrix for N = 4. (5)

13. (a) What is Histogram? Show that Histogram equalization of a given Image gives a uniform PDF independent of Input PDF $P_r(r)$. (6)

(b) With the help of block diagram, explain the Homo morphic filtering approach for Image enhancement. What are the advantages of these filters? (4)

14. (a) Explain Sharpening spatial filtering techniques? (5)

(b) What is Median filter? Mention its advantages? If the following segment of

contd..2

image Is affected by salt and pepper noise, replace those pixels with median values using a 3x3 mask. (5)

24	22	33	25	32	24
34	255	24	0	26	23
23	21	32	31	28	26

15. (a) Explain Image restoration of degraded images by Weiner filtering? (5)

    (b) What is Salt and pepper noise? How it can be removed explain in detail with an example? (5)

16. (a) Explain how a Point, Line and Edge are detected in Image segmentation. (5)

    (b) Given a four symbol source **{a,b,c,d}** with source probabilities **{0.1,0.4,0.3,0.2}** arithmetically encode the sequence **b a a d c**. (5)

17. Write short notes any two (10)

    (a) Discuss various adjacencies in an Image

    (b) Periodic noise reduction method

    (c) Pixel replication

****

Code No: 11567/CBCS

FACULTY OF ENGINEERING

B.E.VI – Semester (CBCS) (ECE) (Main) Examination, May/June 2019

Subject: Data Communications & Computer Networking (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)

1. What is the need for Layered Protocol Architecture?
2. Explain different network topologies.
3. What is bit stuffing? Give an example.
4. List the design issues in Data link layer.
5. What are Network layer Services?
6. What is IP addressing?
7. Compare TCP and UDP protocols.
8. What do you mean by Framing?
9. What are the elements of Transport Layer?
10. What are the three important aspects of security? Define them.

PART – B (50 Marks)

11. a) Explain TCP/IP Model .What are advantages of TCP/IP over OSI model. 5M
    b) Compare the circuit switching to Datagram circuit Networks. 5M

12. a) Explain the IEEE 802.16 standard. 5M
    b) Discuss design issues at Data Link Layer. 5M

13. a) Comparison of IPV4 and IPV6. 5M
    b) Explain about static and dynamic routing algorithms in brief? 5M

14. a) Explain Transport layer services. 5M
    b) Explain ATM AAL layer protocol. 5M

15. a) Explain the architecture and services of E-mail. 5M
    b) What is IP addressing? Describe IPV4 protocol. 5M

16. a) Explain congestion control algorithm. 5M
    b) Explain Digital signature. 5M

17. Write short notes on any two of the following: 10M
    a) CRC
    b) HDLC
    c) ATM

****

Code No. 11568 / CBCS

FACULTY OF ENGINEERING

B.E. (ECE) VI - Semester (CBCS) (Main) Examination, May/June 2019

Subject : Optical Communication (Elective-I)

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

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

PART – A (20 Marks)

1 Define critical angle with respect to optical law. 2
2 Derive an expression for maximum acceptance angle of a fiber. 2
3 Define group delay. 2
4 Define mode coupling of a fiber. 2
5 An LED operating at 850 nm has a spectral width of 45nm. What is the pulse spreading in ns/km due to material dispersion if D_{mat} = 58.8 ns/km.nm. 2
6 Explain the principle of LASER action. Explain also the spontaneous and stimulated emission process. 2
7 Explain the working principle of APD. 2
8 Give the necessary conditions for lasing threshold. 2
9 What is numerical aperture? 2
10 Review the similarities and differences between SONET and SDH. 2

PART – B (50 Marks)

11 a) What are the merits and demerits of optical fibers. 5
b) Explain the structure of single mode and multimode step index and graded index optical fibers with cross section and ray path. 5

12 a) Explain the material dispersion in optical waveguides. 5
b) Estimate cut-off wavelength for step index fiber in single mode operation. The core refractive index is 1.46 and core radius is 4.5μm. The relative index difference is 0.25%. 5

13 a) Compare the parameters of LED and LASER. 5
b) Explain lensing schemes for coupling improvement. 5

14 Explain the following term relating to PIN photodiode with proper expressions.
i) cut-off wavelength
ii) quantum efficiency
iii) responsivity 10

15 Explain operational principles of WDM and what are the applications of WDM in LAN's. 10

16 a) Explain the principle of operation of a typical optical receiver. 5
b) In an optical receiver explain the different sources of errors. 5

17 Write short notes on :
a) Over head of SONET 3
b) Various performance parameters of optical coupler 4
c) The principles of good connector design 3

******

Code No.11575/CBCS

FACULTY OF ENGINEERING

B. E.VI – Semester (CBCS)(Mech.)(Main) Examination, May/June 2019

Subject: Non-Conventional Energy Sources (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. Write the merits of Renewable energy sources.
2. Comment on prospects of fossil fuels in India.
3. Define solar azimuthal angle.
4. What is solar pond?
5. What are various applications of Wind Energy?
6. What is the principle involved in wind energy conversion?
7. Give the Statistics of Geothermal energy in India.
8. What is meant by anaerobic digestion?
9. What are limitations of Wave Energy?
10. What are limitations of OTEC power plant?

PART – B (50 Marks)

11. Discuss various renewable and non-renewable energy sources with statistics, merits, demerits and prospects in India. 10
12. (a) Explain the construction and working of solar PV cell with neat sketch. 5
    (b) Explain various solar concentrators with neat sketches. 5
13. (a) Explain the working principle of synchronous generator. 5
    (b) Determine the torque coefficient of a wind turbine. 5
14. (a) Classify geothermal energy sources and explain them in brief. 5
    (b) Explain constructional details of gasifier with neat sketch. 5
15. (a) Explain Claude cycle OTEC power plant with neat sketch. 5
    (b) Explain the wave energy conversion device with neat sketch. 5
16. (a) Write about the prospects and limitations of tidal energy in India. 5
    (b) What are the adverse effects of OTEC power plants? 5
17. (a) Explain various biomass chulhas available for rural India 5
    (b) Classify and explain various Wind turbines with neat sketches. 5

****

Code No: 11579/CBCS

FACULTY OF ENGINEERING

B.E.VI – Semester (CBCS) (Prod) (Main) Examination, May/June 2019

Subject: Flexible Manufacturing Systems (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)

1. Define FMS and give the different types of FMS.
2. What are the different types of FMS layouts?
3. What are the typical functions performed by FMS software?
4. Define simulation in FMS.
5. What do you understand by library of parts?
6. What is the importance of a database in an FMS environment?
7. What is a Bipartite Graph?
8. What are the different manufacturing costs in Cost-based method for matrix formulation?
9. What are the objectives for machine-loading?
10. Define Scheduling and give its significance in FMS.

Part – B (5 x 10 = 50)

11. Discuss the different types of AGV's used in FMS.
12. Compare Flexible Manufacturing Cell (FMC) and Flexible Manufacturing System (FMS).
13. Explain the Intrinsic Operating Functions of FMS Control.
14. Explain the typical system design and database layout for FMS with the help of a neat sketch.
15. What are the basic five components of a knowledge-based Group Technology? Explain in detail.
16. Explain the physical configuration of FMS application for Sheet Metal Fabrication.
17. (a) Explain the significance of Computer Control in FMS.
    (b) Write any three advantages and disadvantages of FMS application.
    (c) What is AS/RS in FMS?

****

Code No: 11587/CBCS

FACULTY OF ENGINEERING

BE VI – Semester (CBCS) (A.E.) (Main) Examination, May/June 2019

Subject: Material Handling & Earth Moving Vehicles (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. How the Rollers are classified?
2. What is Half Gantry Crane?
3. Write the properties of Carcass Belt.
4. Compare the Mechanical Grader and Hydraulic Grader.
5. What is Dipper Stick?
6. Mention any four off-road Vehicles.
7. Write the uses of Fork-lifts.
8. Give the difference between Crawler Mounted and Truck Mounted Cranes.
9. What are the components of Dozers?
10. Write Uses of Belt Cleaners.

Part – B (5 x 10 = 50 Marks)

11. Explain various Drive Pulley arrangements with neat sketches. 10

12. a) What is Crane and give the classification of them. 3

    b) Explain the working of Crawler Crane with a neat sketch. 7

13. a) Give the classification of Rippers. Mention their uses. 4

    b) Write about the Hydraulic Control Unit of Towed Scraper. 6

14. a) Write a short note on Hydraulic Mechanism of Hydraulic Shovel. 5

    b) Explain the Hydraulic Motor working principle. 5

15. What are the major components of Dump Trucks? Explain them detail. 10

16. a) What is Slewing mechanism? 5
    b) Distinguishes between Diesel Shovel and Hydraulic Shovel. 5

17. Explain about the EOT-Cranes with neat sketches. 10

****

Code No. 11593/CBCS

FACULTY OF ENGINEERING

B.E.VI – Semester (CBCS)(CSE)(Main) Examination, May / June 2019

Subject: Graph Theory and its Applications

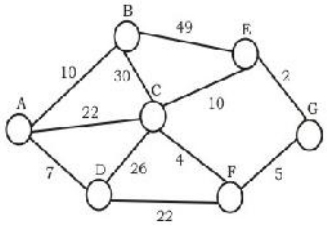
Time : 3 hours **Max. Marks : 70**

PART – A (20 Marks)

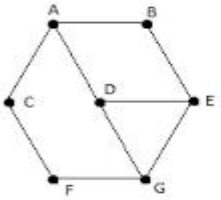
1) Is there a graph with degree sequence (1,2,3,5,4,4)? [2]
2) Define Walk ,Path ,Circuit in a graph? [2]
3) Define Bipartite graph. [2]
4) Find the chromatic number of complete graph of n vertices. [2]
5) What is tournament? [2]
6) What is Independent set and covering? [2]
7) What is line connectivity? [2]
8) What is Chordal graph? [2]
9) What is degree and out degree of a graph? [2]
10) What is Eulerian circuit? [2]

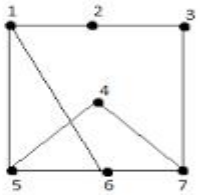
PART – B (5 x 10 = 50 Marks)

11. a) Using the algorithm of Kruskal, find a shortest spanning tree in the following Graph. [5]

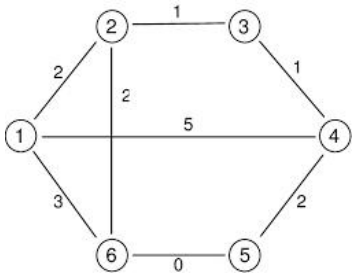


b) For the following pair of graphs, determine whether the graphs are isomorphic or not? Give the justification for your answer? [5]
[5]





12.a) Explain Fleury's algorithm [5]
b) Find optimal tour by using Chinese postman problem for given figure. [5]



Contd..2

13.a) Write necessary and sufficient conditions for a Hamiltonian graphs. [5]

b) Write a short note on matching in bipartite graphs . [5]

14.A diagonal of an n × n matrix is a set of n entries no two of which belong to the same row or the same column. The weight of a diagonal is the sum of the

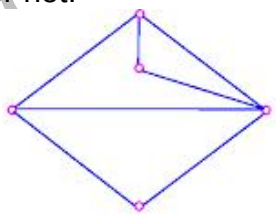
entries in it. Find a minimum-weight diagonal in the following matrix: [10]

$$\begin{bmatrix} 4 & 5 & 8 & 10 & 11 \\ 7 & 6 & 5 & 7 & 4 \\ 8 & 5 & 12 & 9 & 6 \\ 6 & 6 & 13 & 10 & 7 \\ 4 & 5 & 7 & 9 & 8 \end{bmatrix}$$

15.a) Explain Brook's theorem with example? [5]

b) A local restaurant has 8 different banquet rooms. Each banquet requires some subset of these 8 rooms. Suppose that there are 12 evening banquets that are to be scheduled in a given 7 day period. Two banquets that are scheduled the same evening must use different banquet rooms. Model and restate the scheduling problem as a graph coloring problem [5]

16. a) Explain Euler's Formula. Give the dual graph for the following planar graph. Check whether it is self dual or not. [5]

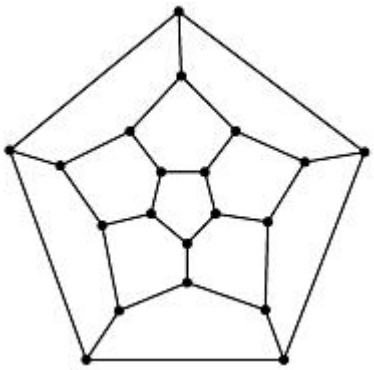


b) Write short note on

i) Eulerian Directed graphs. [5]

17.a) What is Clique? Write the sum of degrees theorem. [5]

b) Find Hamiltonian cycle and Euler circuit for the following graph. [5]



****

Code No. 11595/CBCS

FACULTY OF ENGINEERING

B.E. VI Semester (CBCS) CSE(Main) Examination, May/June 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 table inheritance? Give an example.
2. How does the concept of an object in the object-oriented model differ from the concept of an entity in the entity-relationship model?
3. What is X Path?
4. Describe FLWOR Expressions in XML.
5. What is semi join?
6. What is materialized evaluation?
7. List the features of parallel databases.
8. What are the potential advantages of distributed databases?
9. What is Multimedia database?
10. What are the three levels at which a database system can be tuned by the database administrator to improve performance?

Part – B (5 x 10 = 50 Marks)

11. a) Explain Object identity and reference types with suitable examples. (6M)
    b) How is object-oriented database different from object-relational database? (4M)
12. a) Explain the use of DTD for structuring the XML document. (6M)
    b) State the differences between XML Schema and DTD. (4M)
13. a) With a neat sketch discuss the steps involved in query processing. (8M)
    b) Why is query optimization important? (2M)
14. a) Compare and contrast Homogeneous and Heterogeneous databases. (4M)
    b) What is Pipelined parallelism? List the benefits and drawbacks of pipelined parallelism. (6M)
15. Write short notes on the following: (10M)
    a) Spatial and Temporal databases
    b) XML based Standards
16. a) Discuss in detail two phase commit protocol with its merits and demerits. (8M)
    b) Enumerate the applications of XML? (2M)
17. a) Explain the features of Persistent Java System. (5M)
    b) Describe about TPC benchmarks. (5M)

****

Code No.11600/CBCS

FACULTY OF ENGINEERING

B.E. VI – Semester (CBCS) (I.T.) (Main) Examination, May/June 2019

Subject: Data Mining (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 What are the different types of attributes? Give examples.
2 What is the need for preprocessing of data?
3 Define the following:
(i) Market Basket Analysis
(ii) Strong Association Rule
4. Define the following terms:
(i) Classification
(ii) Supervised Learning
(iii) Unsupervised Learning
5. Define classifier accuracy measures.
6. Differentiate lazy learners and eager learners.
7. When does a class-imbalance problem occur? How do you overcome it?
8. Differentiate single linkage and complete linkage in hierarchical clustering.
9. Discuss the essential features of temporal data and temporal inferences
10. What is web-mining? List the categories of web -mining tasks.

PART – B (5 x 10 = 50 Marks)

11. (a) Summarize various methods used to handle missing values in data cleaning technique? [5]
(b) Explain the techniques of data integration. [5]

12. (a) Write the FP-growth algorithm using this algorithm compute the frequent patterns for the following transactional data base with min-sup = 60%. [5]

Tid	Item list
T100	C,M,S,B
T200	S,M,A,P
T300	A,M.B,P
T400	B,M,S

(b) Explain how to mine the multi-level and multidimensional association rules. [5]

13. (a) Explain classification by decision tree induction method. [5]
(b) Explain hierarchical clustering algorithm. [5]

Contd..2

14. Write short notes on:
    (a) Density based method [5]
    (b) DBSCAN [5]
15. Explain Navie Bayesian Classification with example [10]
16. (a) How do you increase the accuracy of classifier [5]
    (b) Explain dissimilarity of binary asymmetric attributes [5]
17. Write short notes on:
    (a) Web Mining [3]
    (b) Text mining [3]
    (c) Bayesian belief networks [4]

****

Code No. 11601/CBCS

FACULTY OF ENGINEERING

B.E. (IT) VI – Semester (CBCS) (Main) Examination, May/June 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 (10 x2 = 20 Marks)

1.	Define Software Quality Assurance	2
2.	Explain the terms Software errors, faults and failures	2
3.	Differentiate between verification, validation and qualification.	2
4.	List different types of Integration testing.	2
5.	Write the different Software Quality Metrics.	2
6.	Give examples of Software Quality Management Standards.	2
7.	Why is acceptance testing performed?	2
8.	What is a test report?	2
9.	Write the advantages of automated testing tools	2
10.	What is performance testing?	2

PART – A (50 Marks)

11	Explain the objectives of a Software quality assurance system	10
12	(a) Compare the various review methods used in SQA.	5
	(b) Write the differences between top-down and bottom-up integration.	5
13	Explain the different SQA project process standards	10
14	(a) What are the steps followed in Software Testing Process?	5
	(b) Explain the importance of test plan document.	5
15	(a) How to you test web-based systems?	5
	(b) Explain the taxonomy of automated testing tools.	5
16	(a) How are software errors, faults and failures related?	5
	(b) Explain the importance of cyclomatic complexity of code.	5
17	Write briefly about	
	(a) White box and black box testing methods	4
	(b) CASE tools	3
	(c) Static and Dynamic Testing	3

****

Code No: 11602/CBCS

FACULTY OF ENGINEERING

B.E. VI - Semester (CBCS) (IT) (MAIN) Examinations, May/June 2019

Subject: Internet of Things (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. What do you mean by Internet of Things?
2. Distinguish between M2M and IoT
3. What does Functional View of IoT Reference Architecture describe?
4. Write short notes on interaction and remote control with reference to IoT
5. List the MAC features of IEEE 802.15.4
6 What is Z-Wave?
7. Compare Standard TCP and MPTCP.
8. What is the role of MQTT protocol in IoT?
9. Write the salient features of ETSI M2M.
10 Name the service layer protocols of IoT.

PART – B (5 x10 = 50 Marks)

11.(a) Discuss advantages and disadvantages and applications of IoT. (5)

(b) Describe IoT protocol stack and architecture layers. (5)

12.(a) With a suitable diagram, explain IoT domain model. (5)

(b) Discuss IOT Real-World Design Constraints. (5)

13. (a) Describe the architecture of Wireless HART with neat sketch. (5)

(b) What is the use of IPv6 in IOT? Explain its salient features and advantages. (5)

14. What is Constrained Application Protocol (CoAP)? Discuss the messaging modes of CoAP. (10)

15. Write about importance of Security in IoT protocols. (10)

16. (a) Discuss IOT Deployment and operational view with Parking Lot example. (5)

(b) Explain IoT Information view with neat sketch. (5)

17. Write short notes on the following

a) Zigbee smart energy . (4)

b) XMPP (3)

c) oneM2M (3)

****