

FACULTY OF ENGINEERING**B. E. 4/4 (EEE/Inst.) II – Semester (Main & Backlog) Examination, May/June 2019****Subject: Renewable Energy Sources (Elective-III)****Time: 3 Hours****Max.Marks:75****Note: Answer all questions from Part-A & Any 5 questions from Part-B****PART – A (25 Marks)**

1. What are the advantages of use of renewable energy sources 3
2. Define the following terms 3
 - a. Solar altitude angle
 - b. Zenith angle
 - c. Declination angle
3. What are the main difference between conventional thermal plant & Biomass power Plant? 3
4. What are the reasons for variations in solar radiations reaching earth than received at the outside of the atmosphere? 3
5. What is the basic principle of wind energy conversion? 2
6. Discuss the advantages and disadvantages of horizontal & vertical axis windmill. 2
7. Explain the process of Photosynthesis? What are the conditions, which are necessary for it? 3
8. What is the difference between biomass & Biogas? 2
9. What are the methods to extract energy from ocean thermal power generation. 2
10. List the advantages of tidal power generation 2

PART – B (50 Marks)

11. What are the renewable energy sources? Discuss their importance in India's power requirement context. 10
12. a) Explain the working principle of Brayton engine with diagram. 5
b) Discuss the working of flat plat collector with a suitable diagram. 5
13. a) Describe horizontal axis type aero generator with a neat diagram and discuss about its components. 5
b) Write a short note on 5
 - i) Applications of wind energy
 - ii) savonius rotor
 - iii) Darrius rotor
 - iv) wind energy storage
14. Derive the expression for the maximum power in a horizontal axis turbine & explain about the power density duration curve 10
15. a) List the technologies of biomass conversion & explain about them in detail 5
b) Explain about fluidized Bed gasifier with a suitable Diagram 5
16. a) Explain anyone method to extract energy from ocean waves by Floats 5
b) What are the environmental impacts of OTEC plant 5
17. Write a short note on:
 - a) Fixed dome type biogas plant 5
 - b) Difference between Tidal energy & wave power generation 5

FACULTY OF ENGINEERING

BE 4/4 (inst) II Semester (Main & Backlog) Examination, May / June 2019

Subject: Process Plant and Safety Management (Elective-III)

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 are the three C's for good documentation practices?
2. What are the basic functions of data collection systems?
3. Enumerate the different types of purging systems?
4. What is ERP?
5. Explain the need for upgrading the control room?
6. What is meant by Ergonomics in work station design?
7. Discuss about securing the network with firewalls?
8. What is meant by Encryption?
9. Draw the block diagram of PSM and explain?
10. What is HAZOP?

PART – B (50 Marks)

11. (a) Discuss with a case study about upgrading control rooms and work station?
(b) Discuss the VR tools for testing Control room?
12. (a) Explain about the Auditing procedures for updation in process Industries?
(b) Write about Historical data storage and evaluation?
13. (a) What are the elements of process safety management?
(b) Explain high integrity pressure protection system in process industries?
14. (a) Explain how the hazardous area is classified?
(b) What is Entity concept? Explain briefly?
15. Explain with examples about OS security and log in and password security?
16. Write short notes on
 - (a) Inerting systems and Purge flow regulators
 - (b) Intelligent alarm management
17. Explain the field bus intrinsically safe concept with examples?

FACULTY OF ENGINEERING**B.E. IV/IV (ECE) II – Sem. (Main & Backlog) Examination, May/June 2019****Global Navigational Satellite Systems (Elective – IV)****Time: 3 Hours****Max. Marks : 75**

- Note :** i) *Answer All Questions from Part – A & any five questions from Part – B.*
 ii) *Answers to the questions of Part – A must be at one place and in the same order as they occur in the questions paper.*
 iii) *Missing data, if any, may suitably be assumed.*

PART – A (25 Marks)

1. Differentiate between VDOP and PDOP. [2]
2. Define various Keplerian elements. [3]
3. Explain about UERE [2]
4. Explain about GPS signal structure. [3]
5. Write briefly about LAAS Concept. [2]
6. What is the principle of DGPS? [3]
7. What is the frequency allocation of GLONASS in different bands? [2]
8. Write briefly on the constellation of BeiDou-2. [3]
9. What are the various regional navigation satellite systems? [2]
10. Write briefly on GPS / INS integration. [3]

PART – B (50 Marks)

11. (a) Discuss various steps involved in the satellite position determination. [5]
 (b) List out the importance of DOP and explain when we will get good GDOP. [5]
12. Explain various errors occur in GPS measurements and also the various methods minimize or overcome those errors. [10]
13. Explain in detail various Augmentations systems with examples ? [10]
14. (a) Mention few applications of GNSS. [4]
 (b) Explain the differences between GLONASS, Galileo and COMPASS. [6]
15. (a) Draw and explain in detail about IRNSS architecture. [6]
 (b) Enumerate the advantages of GPS integration and mention various types. [4]
16. (a) Explain about EGNOS and MSAS augmentation systems. [5]
 (b) Write short notes on GPS navigation and observation data formats. [5]
17. Write Short notes on any 2 (two) of the following: [10]
 - (a) GPS and UTC time
 - (b) GAGAN
 - (c) QZSS

FACULTY OF ENGINEERING**B.E 4 /4 (ECE) II – Semester (NEW)(Main & Backlog) Examination, May / June 2019****Subject: Fuzzy Logic & Applications (Elective IV)****Time: 3 Hours****Max. Marks: 75****Note: Answer all questions from Part A & any five questions from Part B****PART – A (25 Marks)**

1. Contrast between Crisp sets and fuzzy sets. (3)
2. What are the Demorgan's laws and Excluded middle laws for Fuzzy sets? (2)
3. Write the extension principle for Fuzzy sets. (2)
4. Give Fuzzy relation with an example. (3)
5. What are the characteristic properties of binary Fuzzy relations? (3)
6. What are the features of membership function? Plot them in a Venn diagram. (3)
7. Define Fuzzification. List different Fuzzification methods. (2)
8. What is Defuzzification? State different Defuzzification methods. (2)
9. What is an adaptive FAM? (2)
10. What are FAMs as mapping? Give an example. (3)

PART – B (5 x10 = 50 Marks)

11. a) Write all the properties of Fuzzy sets. (4)

b) Consider $A = \left\{ \frac{0.3}{1} + \frac{0.4}{2} + \frac{0.5}{3} + \frac{0.9}{5} \right\}$,

$$B = \left\{ \frac{0.2}{1} + \frac{0.3}{2} + \frac{0.1}{3} + \frac{0.6}{5} \right\}, \text{ \& C = } \left\{ \frac{0.1}{1} + \frac{0.5}{2} + \frac{0.3}{3} + \frac{0.7}{5} \right\}$$

Prove all the operations & Properties of Fuzzy sets. (6)

12. Explain in detail operations on Fuzzy sets with non-parametric and Parametric functions for Fuzzy Complement. (10)

13. What are similarity relations? Consider the similarity relation $R(X, X)$

$$R(X, X) = \begin{matrix} & \begin{matrix} x_1 & x_2 & x_3 & x_4 & x_5 \end{matrix} \\ \begin{matrix} x_1 \\ x_2 \\ x_3 \\ x_4 \\ x_5 \end{matrix} & \begin{bmatrix} 1 & 0.7 & 0.3 & 0.6 & 0.7 \\ 0.7 & 1 & 0.3 & 0.6 & 0.9 \\ 0.3 & 0.3 & 1 & 0.3 & 0.3 \\ 0.6 & 0.6 & 0.3 & 1 & 0.6 \\ 0.7 & 0.9 & 0.3 & 0.6 & 1 \end{bmatrix} \end{matrix}$$

Draw the partition tree for the above similarity relation. (10)

14. What is Fuzzification? Explain in detail all the Fuzzification methods.

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15. What is Defuzzification? Explain in detail all the Defuzzification methods. (10)
16. Explain in detail Bi-directional FAM theorem for
- (a) Correlation-minimum encoding (5)
 - (b) Correlation-Product encoding (5)
17. Explain in detail FAM system architecture with an example. (10)

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FACULTY OF ENGINEERING**B.E. 4/4 (ECE) II – Semester (New)(Main & Backlog) Examination, May/June 2019****Subject: Speech Signal Processing (Elective – IV)****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 are formant frequencies? [2M]
2. How nasal sounds are produced? [3M]
3. Define average magnitude difference function. [2M]
4. Electrical equivalent circuit of vocal tract? [3M]
5. What is meant by parametric representation of speech? [3M]
6. Write about vowel triangle? [3M]
7. List few applications of ASR systems. [3M]
8. What is the function of text normalizer? [2M]
9. Draw the block diagram of articulatory speech synthesizer. [2M]
10. Give the equivalent circuit of radiation from mouth? [2M]

Part – B (50 Marks)

11. a) Explain Source-Filter Model of speech production. [5M]
b) Draw the block diagram of adaptive differential PCM and explain. [5M]
12. a) Explain Pitch period estimation using autocorrelation method. [5M]
b) What is Pre – emphasis? Why speech signal need to be preemphasized? [5M]
13. a) How ZCC it used in identifying voiced and unvoiced segment of speech? [5M]
b) Write the equation of a STFT? Why STFT is used to analyze speech signals. [5M]
14. a) Explain transform coding in detail. [5M]
b) Draw and explain the block diagram of a cepstral vocoder analyzer and synthesizer. [5M]
15. a) Explain text to speech synthesis system with a flow chart. [5M]
b) Explain Mermelstein's articulatory model. [5M]
16. a) What are the problems associated with Automatic Speech Recognition? [5M]
b) Explain Dynamic Time warping in detail. [5M]
17. Write short notes on
a) Parallel formant synthesizer. [5M]
b) LPC 10 algorithm. [5M]

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B.E. 4/4 (ECE) II - Semester (Main & Backlog) Examination, May / June 2019

**Subject : Disaster Mitigation and Management
(Elective – IV)**

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 human induced and human made disasters.
- 2 Give examples of geological based disasters.
- 3 Give examples of hydrometeorological based disasters.
- 4 What is a land slide?
- 5 List the causes of traffic accidents.
- 6 List the examples of human induced disasters.
- 7 Define remote sensing.
- 8 How is GIS useful in disaster mitigation and management?
- 9 Define risk and vulnerability in the context of disasters.
- 10 Draw the disaster management cycle.

PART- B (50 Marks)

- 11 (a) What is the impact of disasters on the socio-economic fabric of the country?
(b) Discuss the international decade of natural disaster reduction in detail.
- 12 (a) Write short notes on earthquakes and floods.
(b) Explain hydrometeorological disasters with suitable examples.
- 13 (a) List the effects of a major power breakdown.
(b) Chemical industrial hazards are human induced – justify.
- 14 (a) How is remote sensing used to manage disasters?
(b) How can GIS help in response to a geographical based disaster like landslide?
- 15 (a) Discuss the risks to the people when a disaster occurs.
(b) Discuss the various techniques to forecast droughts.
- 16 (a) Write short notes on
 - (i) Earthquakes
 - (ii) Tsunamis
(b) Discuss the various structural and non-structural methods to control floods.
- 17 (a) Discuss any major chemical industrial hazard.
(b) How does a traffic accident become a disaster? Discuss.

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B.E. 4/4(Mech./Prod.) II – Semester (Main & BL) Examination, May/June 2019

Subject: Product Design and Process Planning (Elective – III)

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. Define a product
2. Define trade mark
3. Explain the importance of packaging in the launch of a new product.
4. Differentiate between cost control and cost reduction.
5. Briefly explain concurrent engineering.
6. Explain briefly about intellectual property rights.
7. Enlist the elements of cost and profit.
8. Briefly explain about ergonomics.
9. Define standardization.
10. Define reliability.

PART – B (5 x10 = 50 Marks)

11. Explain in detail product life cycle.
12. Explain in detail about concurrent engineering.
13. Explain the process of product evaluation and product launching.
14. Explain in detail reliability function.
15. Explain in detail Delphi technique.
16. Explain the importance of value engineering in product design.
17. Write short notes on
 - a) Group technology
 - b) Intellectual property rights.

FACULTY OF ENGINEERING**B.E 4 /4 (Mech./Prod.) II – Semester (Main& Backlog) Examination, May / June 2019****Subject: Modern Machining & Forming Methods (Elective III)****Time: 3 Hours****Max. Marks: 75****Note: Answer all questions from Part A & any five questions from Part B****PART – A (25 Marks)**

1. State the classification of non-traditional machining processes on the basis of energy domain.
2. Sketch the principle of AJM.
3. What are the functions and characteristics of electrolyte in ECM?
4. What are the functions of dielectric medium in EDM?
5. What are the applications of EBM?
6. Why is the energy density of plasma more than electric arc?
7. What are the advantages of rubber pad forming over conventional forming?
8. What is the effect of standoff distance in explosive forming?
9. Sketch the principle of stretch forming.
10. Write the applications of Water Hammer Forming.

PART – B (5 x10 = 50 Marks)

11. a) Describe the process of USM with the help of a neat sketch.
b) Explain the principle of water jet machining. Give advantages and applications.
12. a) Explain the principle and working of EDM with a neat sketch.
b) Discuss the limitations and characteristics of ECM.
13. a) Explain transferred and non-transferred arc in plasma arc machining.
b) Explain ION etching process. State its applications.
14. a) Explain the principle of hydro forming process with help of a neat sketch. List its advantages.
b) Explain principle of Guerin rubber forming process. Write its applications.
15. a) Differentiate between stretch draw forming and rotary stretch forming.
b) Explain the methods of tube spinning technique.
16. a) Explain the various process parameters that influence the MRR in ECM.
b) Discuss the effects of the following parameters on MRR and accuracy in AJM.
 - i) Abrasive grain size
 - ii) Jet Velocity and
 - iii) Stand off distance
17. Write short notes on:
 - a) Laser Beam machining
 - b) Explosive Forming
 - c) Hydro static Forming

FACULTY OF ENGINEERING**B.E. 4/4 II – Semester (CSE) (Main & Backlog) Examination, May/June 2019****Subject: Cloud Computing (Elective-III)****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 How does Cloud computing relate to Utility Computing?
- 2 What are the most common types of service models in cloud currently?
- 3 What is modified in Para-virtualized systems?
- 4 What is live VM migration? What is special about it being 'live'?
- 5 "Data security and Privacy are important challenges in Cloud architecture design"
Justify this statement.
- 6 Does Popularity Driven" Resource Provisioning help in better resource management?
- 7 Is " man-in-the middle-attack" security challenge for VM migration?
- 8 What is the use of "Trust overlay networks"?
- 9 What is the main advantage of Dryad as compared to MapReduce?
- 10 How does REST provide improved response time and reduced server load?

PART – B (10 x 5 = 50 Marks)

- 11 a) What are the impacts of cloud platforms on the future of the High Performance computing systems? 7
b) Why is power consumption critical to data-center operations. 3
- 12 a) Explain the differences between hypervisor and para-virtualization and give one example VMM(Virtual Machine Monitor) that was built in each of the two categories. 5
b) Bringout the importance of 5 different stages in Live migration Process of a VM from one host to another. 5
- 13 a) What is Resource pooling? How does this contribute to resource provisioning in Clouds? 4
b) What are the service offerings of Amazon Web Services (AWS)? Explain how they interact to provide solutions to users? 6
14. a) What is the need for various onion layers of encryption? Explain advantage of such system. 5
b) What is Order Preserving Encryption (OPE)? How is it specifically useful in Cloud data management? 5
15. a) Describe the main features of VMware and the specific products like Vsphere, VDirector and VCenter. 7
b) Bringout the importance of OAuth and Open ID as a standards for security in cloud. 3
16. a) With suitable diagrams, explain the relationship between IaaS, PaaS and SaaS. How can a User select the most appropriate service model for his business? Explain with suitable examples. 5
b) Explain the data flow of how the MapReduce frame work can be used in WordCount Problem solution. 5
17. a) How are XML and JSON useful as standards for application development specifically for cloud? 4
b) What is the use of Blobs, Tables and Queues in Storage in Microsoft Azure. 6

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B.E. 4/4 (I.T.) II – Semester (Main & Backlog) Examination, May/June 2019
Subject: Cloud Computing (Elective – V)

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 Amazon's S3 Storage Service. (2)
- 2 List the chief benefits to a multitenancy approach. (3)
- 3 Explain Data Center virtualization. (2)
- 4 Illustrate Modern on-Demand Computing? (3)
- 5 List the objectives of virtualization (3)
- 6 Explain storage virtualization? (2)
- 7 Differentiate between encrypted and trusted federation. (2)
- 8 What are the contents of data governance framework? (3)
- 9 Describe Post Office Protocol. (2)
- 10 What are the features of Ubuntu Mobile Internet Device? (3)

PART – B (5x10 = 50 Marks)

- 11 Enumerate the advantages and challenges of cloud computing. (10)
- 12 Explain Fully Integrated, Enterprise-Class Unified Communications. (10)
- 13 a) What are the benefits of SaaS. (5)
b) Explain the role of open source software in Data Centers. (5)
- 14 a) Write an overview of VMware features and products. (5)
b) Explain the risks associated with virtualization (5)
- 15 a) What are observations on the future of policy and confidentiality in the cloud. (5)
b) Explain Virtual Machine Security in Software-as-a-Service Security (5)
- 16 a) Explain the purpose of the Open Cloud Consortium (5)
b) Explain Collaboration Applications for Mobile Platforms (5)
- 17 Write short notes on
 - a) Kernel-based Virtual Machine (4)
 - b) Massively Parallel Processing Systems (3)
 - c) Storage Virtualization (3)

FACULTY OF ENGINEERING**B.E V Semester (CBCS) (Civil) (Suppl.) Examination, May /June 2019****Subject: Transportation Engineering-I****Time: 3 hours****Max. Marks: 70****Note:** Answer All Questions from Part-A and any five Questions from Part-B.**PART-A (2x10=20 Marks)**

1. What is meant by lag distance and braking distance in the computation of safe SSD?
2. What is grade compensation?
3. Differentiate between basic capacity and practical capacity of a traffic lane.
4. What are the various applications of spot speed studies?
5. Differentiate between Hydrophillic and Hydrophobic aggregates.
6. What is the significance of softening point of bitumen?
7. What is stress ratio?
8. Why joints are provided in CC pavements?
9. What is map tracking?
10. What are the objectives of providing prime coat?

PART-B [50 Marks]

11. (a) Define camber and show how it is achieved in the field with the help a neat sketch. [4]
(b) A valley curve is formed by a descending grade of 1 in 25 meeting an ascending grade of 1 in 30. Design the length of valley curve to fulfill both comfort condition and head light sight distance requirements for a design speed of 80 kmph. Assume allowable rate of change of centrifugal acceleration $C = 0.6 \text{ m / sec}^3$. [6]
12. (a) Explain briefly how origin and destination studies are carried out ? How is the O & D study data represented and interpreted? [5]
(b) Explain the principle of Webster's method of traffic signal design. Mention the advantages of this method [5]
13. (a) What are the different types of bituminous materials used in the road construction? Under what circumstances each of these materials is preferred? [5]
(b) What is aggregate proportioning? What is its importance in bituminous mix design? [5]
14. (a) What are the factors to be considered for the design of pavements? [4]
(b) The following data is obtained from an axle survey conducted on a rural highway for 3 days. Determine the equivalent number of standard axle loads of 80 kN per year by using fourth power damage rule. [6]

Axle load (k N)	30-40	40-50	50-60	60-70	70-80	80-90	90-100
No. of axles	50	60	60	70	60	60	50

15. (a) What are the requirements and specifications of granular base course of a flexible pavement? [5]
(b) Briefly explain the various causes due to which distresses are developed in rigid pavements. [5]
16. (a) What are the causes of road accidents and what measures are to be taken to reduce them? [5]
(b) Explain why dowel bars and tie bars are placed in different road joints? [5]
17. Write short notes on any **four** of the following: [10]
a. Grade separated intersections
b. Parking studies
c. Viscosity Grading of Bitumen
d. Vehicle Damage Factor
e. Maintenance of CC pavements

FACULTY OF ENGINEERING**BE (EEE) V – Semester (CBCS) (Suppl.) Examination, May /June 2019****Subject: Electrical Machines-II****Time: 3 Hours****Max.Marks: 70****Note: Answer All Questions From Part-A, & Any FIVE Questions From Part-B.****PART – A (10x2 = 20 Marks)**

1. How no-load current is measured for a 1-w transformer?
2. Discuss relative merits and demerits of an auto-transformer.
3. Why the rating of transformer is expressed in KVA rather than in KW?
4. What do you understand by phase conversion in poly phase transformers?
5. How can the direction of rotation of the 3 phase induction motor be reversed?
6. Define slip speed?
7. List out the methods of speed control of cage type 3 phase induction motors.
8. What are the advantages and disadvantages of double cage rotor?
9. Why single phase induction motors are not self starting?
10. Write the various applications of universal motor.

PART – B (5x10 = 50 Marks)

- 11 Define voltage regulation of transformer. Derive condition for
 - i) Zero regulation
 - ii) Maximum regulation [10]
- 12 The maximum efficiency of a 150 kVA, 2,200/220 V, 50 Hz single phase transformer is 98.5% and occurs at half-full load at unity power factor. Determine its full-load efficiency at 0.8 leading power factor. [10]
- 13 Explain the following in brief:
 - i) Tertiary windings. [5]
 - ii) Parallel operation of 3-phase transformers. [5]
- 14 A 440 V, 6-pole, 50 Hz, 3-phase delta-connected induction motor running on full load develops a useful torque of 160 N-m when the rotor emf makes 120 complete cycles/min. Determine the shaft power output. If the mechanical torque lost in friction and for core loss is 10N-m, estimate:
 - i) Copper loss in rotor windings.
 - ii) Input to the motor
 - iii) Efficiency.
 The total stator loss is 1 kW. [10]
- 15 a) Derive the expression for torque, maximum torque and starting torque of 3-phase induction motor. [5]
 - b) A 60Hz induction motor has 2 pole and runs at 3,510 rpm. Calculate (i) the synchronous speed and (ii) the per cent slip. [5]
- 16 What are different methods of starting 3-phase induction motor? Describe, with the help of neat diagram, the method of starting slip-ring induction motor and squirrel cage induction motor. [10]
- 17 Explain the double revolving field theory for operation of single phase induction motor. [10]

FACULTY OF ENGINEERING**B.E (Inst.) V-Semester (CBCS) (Suppl.) Examination, May / June 2019****Subject : Instrumentation Systems****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 critical velocity. [2]
2. Define laminar flow. [2]
3. Why angular velocity measurement method is preferred to measure linear velocity? [2]
4. Discuss crystal hygrometer. [2]
5. What is seebeck effect? [2]
6. What is the principle of ultrasonic method for measurement of liquid level? [2]
7. What is thermopile? [2]
8. Define SPL. [2]
9. Discuss Signal to noise ratio. (S/N) [2]
10. Draw solid cylinder strain gauge accelerometer. [2]

PART – B (50 Marks)

11. a) Differentiate between DC Tachogenerator and AC Tachogenerator. With Diagram. [6]
b) Explain electromagnetic velocity transducer. [4]
12. a) Explain laws of thermocouple in detail. With relevant Diagram [5]
b) Explain the need of humidity measurement in industries. [5]
13. a) Explain in detail Aluminium Oxide Hygrometer. With relevant Diagram. [6]
b) Explain the working of Flow nozzle with neat diagram. [4]
14. a) If the sound pressure level measured at 10m from an automobile horn is 110db. Determine the sound pressure level at distance of a) 20m and b) 80m assume that the inverse square law holds good between intensity and distance. [6]
b) Explain capacitor type microphone in detail. [4]
15. Explain with neat diagram venturimeter for measurement of volumetric flow rate. Write its advantages and disadvantages. [10]
16. Explain with neat diagrams Absorption Dynamometers. [10]
17. Write a short notes on
a) Electromagnetic flow meter. [5]
b) Measurement of P^H . [5]

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B.E. V Semester (CBCS) (ECE) (Supple.) Examination, May / June 2019

Subject: Computer Organization and Architecture**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. What is normalization and alignment in floating point arithmetic? [2]
2. Show the hardware for implementing Booth's algorithm. [2]
3. Explain arithmetic and logical right shift operations with an example. [2]
4. List the control function and micro operations needed to execute the 'ADD' memory reference instruction in the basic computer. [2]
5. Compare Hardwired and Micro programmed control unit. [2]
6. A non-pipeline takes 50ns to process a task. The same task can be processed in a Six segment pipeline with a clock cycle of 10ns. Determine the speed up ratio of the pipeline for 100 tasks. What is the maximum speed up that can be achieved? [2]
7. Differentiate between Synchronous and Asynchronous data transfer. [2]
8. Why does DMA have priority over CPU when both request a memory transfer? [2]
9. Explain the terms Tag, Index and Block in relation to cache memory. [2]
10. What do you mean by a page fault? Which hardware is responsible for detecting the page fault? [2]

PART – B (50 Marks)

- 11 a) Explain, (with the help of suitable examples) IEEE standard for floating-point numbers. [4]
- b) Using Booth's multiplication algorithm, show the step-by-step multiplication process for the example $(+15) \times (-13)$. Assume 5-bit registers that hold signed numbers. [6]
- 12 a) Explain the various phases of an Instruction cycle. [5]
- b) Draw the block diagram of control unit of a basic computer and explain. [5]
- 13 a) What is the purpose of micro program sequencer? Explain with a block diagram, how the sequencer present addresses the control memory. [6]
- b) Explain stack organization in general purpose computer. [4]
- 14 a) Explain data manipulation operations of a basic computer. [5]
- b) How is Vector processing is different from Array processing .Give their application areas. [5]

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- 15 a) Explain Daisy-chain interrupt priority and draw the logic circuit for one stage of daisy chain priority arrangement. [5]
b) Design parallel priority interrupt hardware for a system with four interrupt sources. [5]
- 16 a) Why page-table is required in a virtual memory system? Explain different ways of organizing a page-table. [5]
b) A two-way set associative cache memory uses blocks of four words. The cache can accommodate a total of 2048 words from main memory. The main memory size is 128K × 32.
i) Formulate all pertinent information required to construct the cache memory. [5]
ii) What is the size of the cache memory? [5]
17. Write any **Two** of the following [10]
a) Handshaking control of asynchronous data transfer
b) Isolated Vs. Memory mapped I/O
c) Various phases of interrupt cycle in basic computer

FACULTY OF ENGINEERING**B.E. V Semester (CBCS) (M/P/AE) (Suppl.) Examination, May / June 2019****Subject: Operation Research****Time: 3 Hours****Max. Marks : 70****Note Answer all questions from Part – A, & any five questions from Part – B.****Part – A (20 Marks)**

1. What is operations research?
2. Define the terms
 - (i) Solution Space and
 - (ii) unbounded solutions
3. Describe degeneracy in L.P.P.
4. Write the procedure to convert primal L P P into Dual L P P.
5. What is unbounded Transportation problem? And write steps to solve it.
6. Distinguish between the Transportation Model and the Assignment Model.
7. What are the important replacement models?
8. Write the characteristics of games.
9. Explain the sequence of steps in Johnson Algorithm.
10. Define the terms (i) Balking and (ii) Jockeying.

PART – B (50 Marks)

11. Minimize $z = 80x_1 + 120x_2$

Subject to constraints

$$x_1 + x_2 \leq 9$$

$$2x_1 + 5x_2 \leq 36$$

$$0 \leq x_1 \leq 2$$

$$0 \leq x_2 \leq 3$$

12. Use the dual simplex method to solve the following problem.

Maximize $z = -3x_1 - 4x_2 - 5x_3$

Subject to constraints

$$x_1 + x_2 \leq 10$$

$$x_1 + 3x_2 + x_3 \geq 9$$

$$x_1 + x_2 \geq 4$$

$$x_1, x_2, x_3 \geq 0$$

13. Solve the following Transportation problem

		Destination					Capacity
		D ₁	D ₂	D ₃	D ₄	D ₅	
Origin	O ₁	3	2	3	4	1	100
	O ₂	4	1	2	4	2	125
	O ₃	1	0	5	3	2	75
Requirement		100	60	40	75	25	

14. The efficiency of five machines on each of the five jobs is given in the following table. Determine an assignment schedule of the jobs to the machines such that the total efficiency is maximum.

Job \ Machine	1	2	3	4	5
I	62	78	50	101	82
II	70	85	60	75	55
III	88	96	118	85	71
IV	48	64	87	77	80
V	60	70	98	66	83

15. A computer contains 10,000 resistors. When any resistors fails it is replaced. The cost of repairing individually is Rs.10 only . If all the resistors are replaced at a time, the cost of resistor would be reduced to Rs. 3.50. The percent surviving by the end of month 't' as shown in the table below.

Month(t)	1	2	3	4	5	6
Percent surviving at the end of month	100	90	70	30	15	0

What is the optimum replacement plan?

16. Find the sequence that minimize the total elapsed time for ten jobs through two machines M_1 and M_2 as shown in the following table . Also find the total elapsed time.

Job	A	B	C	D	E	F	G	H	I	J
Time on M_1	7	3	10	8	13	9	5	11	7	10
Time on M_2	6	5	15	7	12	12	2	8	5	11

17. The mean rate of arrival of planes at an airport during the peak period. Is 20 /hr, but the actual number of arrivals in an hour follows as Poisson distribution. The airport can land 60 planes/hr in bad weather.
- How many planes would be flying over the field in the stack on an average in good weather and in bad weather.
 - How long a plane would be in stack and process of landing in good weather and bad weather?
 - How much stack and landing time should be allowed so that the priority of land out of the order would have to be requested only once in 20 times.

FACULTY OF ENGINEERING**BE V – Semester (CBCS)(CSE) (Supple.) Examination, May 2019****Subject: Computer Graphics****Time: 3 Hours****Max. Marks: 70****Note: Answer all questions from Part-A and any five questions from Part-B****PART – A (20 marks)**

- 1 What are the naming conventions in OpenGL for command name, constant and function.
- 2 a) A raster image is stored in a computer as
A) Shades B) Objects C) lines D) an array of numerical values.
b) In OpenGL a _____ is a line strip and is drawn by drawing lines between successive pairs of points: p0 to p1, P2 to p3 and so on.
a) Vertex b) Polygon c) Polyline d) Graphs
- 3 Define Rasterization.
- 4 What are the characteristics of logical behavior of an input device?
- 5 Show that perspective projection preserves lines.
- 6 Distinguish between parallel and perspective projections.
- 7 Define window, viewpoint and viewing transformation.
- 8 Describe the operations for Constructive Solid Geometry (CSG) modeling.
- 9 How Quad trees can be used to draw an image at different resolutions.
- 10 For a 1024x1280 display screen. What is the maximum number of subdivisions that are needed to render a cubic polynomial surface?

Part – B (50 Marks)

- 11 (a) Explain the components of graphic systems configuration with the help of a diagram.
(b) Explain any four types of physical input devices.
- 12 (a) Prove that simultaneous shearing in both directions (x and y directions) is not Equal to the composition of pure shear along x-axis followed by pure shear along y-axis.
(b) Write the different types of Co-ordinates in OPENGL. Explain.
- 13 (a) Define and explain Affine transformations.
(b) Compute the transformation matrix required to translate a point (x, y) by distance 3 and 4 along x and y axis respectively and then rotate (x, y) anti clockwise by 45° .
- 14 Explain the Bresenham line algorithm for drawing a line with a slope less than 1 and greater than 0.
15. Derive the intensity equations for Phong's shading model. How is it different from Gouraud model?
16. Write an algorithm to remove hidden lines from the scene before drawing it on the display screen.
17. a) Explain 2D transformation for scaling and rotation transformation. Use suitable example.
b) The end points of a given line are (0, 0) and (6, 18). Compute each value of y as x steps from 0 to 6 using DDA and Bresenham's algorithms and plot the resultant line.

FACULTY OF ENGINEERING

BE V Semester (CBCS) (IT) (Supple.) Examination, May / June 2019

Subject: Computer Networks

Time: 3 Hours

Max. Marks: 70

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

PART – A (2x10 = 20 Marks)

1. Mention uses of Computer Networks.
2. What is congestion? Mention the algorithms used to control congestion.
3. What is Tunneling in internetworking?
4. Specify the Transparency issues of RPC.
5. What is use of proxy server?
6. Differentiate public key and private key?
7. What is routing? List out some routing algorithms.
8. What are ICMP Message types?
9. List the elementary socket system calls.
10. Differentiate between static and dynamic Web documents.

Part – B (5x10 = 50 Marks)

11. Explain in detail about ISO-OSI model of network architecture. (10)
12. Draw the TCP Header format and explain various fields in it. (10)
13. Describe about connection-oriented communication with block diagram using Elementary socket system calls. (10)
14. Write short notes on DNS. Explain the fields of DNS Resource record. (10)
15. a) Explain in detail about Asymmetric Key algorithm (5)
b) What are the various approaches used to provide Email security. (5)
16. What is the specific advantage of RPC? (10)
17. Explain about establishing TCP connection in detail. (10)
