R16

III B.TECH. II SEM

SUPPLEMENTARY EXAMINATIONS

MARCH 2022

Narasaraopeta Engineering College (Autonomous)

Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16CC32OE05

III B.Tech II Semester Supplementary Examinations, March 2022
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING (OPEN ELECTIVE– I)
(CSE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of Part-A and Part-B.
Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) A 100Ω resistance is directly switched on across a 10 V battery. What is the current through resistor? How much is the power loss?

   (b) Define Back EMF.

   (c) Distinguish between core type and Shell type transformers

   (d) In an Indcution motor slip is always positive, Why?

   (e) Write a brief notes on applications of OP-AMP.

   (f) What is aPN junction diode? How its terminals are identified?

                                                                       [2+2+2+2+2+2]

PART-B

                                                                       4 X 12 = 48

2. (a) Explain Different types of network elements.   [4M]

   (b) Find the voltage drop across the 10Ω resistor for the network shown below   [8M]
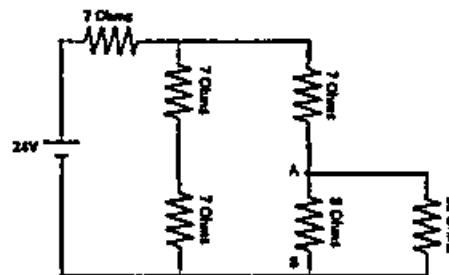
3. (a) The wave connected armature of a two pole 200V generator has 400 conductors and runs at 300rpm . calculate the useful flux per pole.   [6M]

   (b) Derive the torque expression for a DC Motor.   [6M]

4. (a) Explain the necessity for conducting OC and SC test on a single phase transformer and give its outcome.   [4M]

   (b) The full load copper and iron losses of a 15 kVA, 1 phasetransformer are322W and 200W respectively.Calculate the full load efficiency and half load efficiencyatapowerfactor of 0.2lagging.
                                                                       [8M]

5. (a) Outline the principle and operation of 3 phase Induction motor. [6M]

   (b) A 3-phase, 6-pole induction motor working from a 3-phase 400V, 50 Hz supplyis running at 970 r.p.m. What is the synchronous speed, slip speed, and thefrequency of rotor currents?   [6M]

6. (a) Explain in detail and give the realization of OP-AMP as an Integrator? [6M]
   (b) Obtain the average & RMS output voltage expression of half wave rectifier with relavent wave forms and circuit diagram. [6M]

7. (a) List the circuit confugarations, which can be obtained from a bipolar junction transistor.[6M]
   (b) Draw and explain the common –emitter transistor characteristics. [6M]

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Subject Code: R16CC32OE10

III B.Tech II Semester Supplementary Examinations, March 2022
FRONT END UI AND FRAME WORK TOOLS (OPEN ELECTIVE – I)
(EEE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of Part-A and Part-B.
Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Mention the different types of 'Lists' in HTML.

   (b) How can you integrate CSS on a web page?

   (c) Describe the primitive data types that Java script uses.
   (d) List the features of JQuery.
   (e) How to sort a list alphabetically using jQuery?
   (f) What is synchronous request in AJAX?

                                                                        [2+2+2+2+2+2]

PART-B

                                                                        4 X 12 = 48

2. (a) Define frame. Create a HTML page that displays multiple frames in a window.
   (b) Write HTML code to display your class time table.

3. (a) Explain different types of cascading styles with suitable examples.
   (b) With the neat block diagram explain the CSS Box Model.

4. (a) Write a script that asks the user to enter two numbers, obtains the two numbers from the user and outputs text that displays the sum, product, difference and quotient of the two numbers.
   (b) Explain how events are handled in JavaScript.

5. (a) What is jQuery? Write the Differences between JavaScript and jQuery.
   (b) Write a jQuery program that implements event handling.

6. (a) How can you use array with jQuery? Explain with example.
   (b) Develop the jQuery program to implement the Date picker.

7. (a) Discuss the advantages and disadvantages of AJAX
   (b) Discuss the role of WSDL web service in AJAX.

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Narasaraopeta Engineering College (Autonomous)

NEC Kotappakonda.Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16CC32OE18

III B.Tech II Semester Supple Examinations, March-2022
CONSUMER ELECTRONICS (OPEN ELECTIVE-II)
(ECE)

Time: 3 hours

Max Marks: 60

Question Paper Consists of Part-A and Part-B.
Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Write the principle of headphones and types of headphones.
   (b) What are the characteristics of Public Addressing system?
   (c) What are the different types of scanning process?
   (d) Write the merits and demerits of any two colour TV standards?
   (e) What are the operating controls of monochrome and colour TV receiver?
   (f) What is xerography?

   [2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain the principle, construction, working, features and applications of a direct radiating loudspeaker. [6]
   (b) With the help of a block diagram, Explain a high-fidelity system [6]

3. (a) How digital sound is recorded on tape and disc? [6]
   (b) Write the working principle of [6]
      I. Pre-amplifier
      II. Equalizer system

4. (a) Draw and explain the construction and working of monochrome camera tube. [8]
   (b) Write a short note on VSB transmission [4]

5. What is the concept of additive and subtractive mixing of colours in colour TV? Also discuss about colour triangle. [12]

6. (a) Explain the service controls of MAC Encoder and Decoder. [6]
   (b) Explain about the video recording and reproducing using optical disc. [6]

7. (a) Explain the construction and working of a Fax [6]
   (b) Write short notes on Automatic Washing Machine [6]

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Subject Code: R16CC32OE19

III B.Tech II Semester Supple Examinations, March-2022
INTERNET OF THINGS (IOT) (OPEN ELECTIVE-II)
(ECE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of Part-A and Part-B.
Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) What is IOT? Explain the characteristics of IOT?
   (b) Briefly discuss about IOT service specification?
   (c) What is System on Chips?
   (d) What are Raspberry PI cases?
   (e) Describe WAMP?
   (f) Write four home automation applications of IOT?

                                                                        [2+2+2+2+2+2]

PART-B

                                                                        4 X 12 = 48

2. (a) Explain functional block logical design of IOT?
   (b) Compare and contrast IOTvsM2M?

3. (a) Differentiate between process specification and Domain model specification?
   (b) Write about device and component integration?

4. (a) What is an embedded device? Explain about Actuators?
   (b) Discuss the process of pushing code and debugging in Arduino development?

5. (a) Differentiate between raspberry pi and beagle bone black board?
   (b) Explain programming language and debugging on the Raspberry PI?

6. (a) Explain different cloud storage models?
   (b) What is cloud? Explain how it is useful for IOT?

7. (a) Justify how IOT can satisfy the needs of Agriculture?
   (b) Briefly discuss about how we can reach Smart cities through IOT?

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Subject Code: R16CC32OE23

III B.Tech II Semester Supple Examinations, March-2022
DISASTER MANAGEMENT (OPEN ELECTIVE-II)
(CE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.
Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) What is disaster and its type.
   (b) Briefly explain about solid waste management.
   (c) Write a short note on soft-story building.
   (d) What is environmental vulnerability.
   (e) Briefly explain cause and effect of landslide.
   (f) Write a short note on bioterrorism treat in megacities.

                                                                 [2+2+2+2+2+2]

PART-B

                                                                 4 X 12 = 48

2. (a) Explain disaster management cycle.   [6+6]
   (b) What is tsunami and explain post tsunami hazards.

3. (a) Write a short note on climate changes and its probable impacts on environment. [6+6]
   (b) Write briefly on remedy of climate changes.

4. (a) What is fire hazards and how to control it?   [6+6]
   (b) Explain emerging infectious diseases for a society along with a case study.

5. (a) Mention any six important salient features of National Building Code – 2005. [6+6]
   (b) what is community-based disaster management.

6. (a) What is earthquake and how a disaster team should response after earthquake? [6+6]
   (b) Explain briefly about nuclear disaster.

7. (a) Explain briefly on financial management of disaster.   [6+6]
   (b) Role of multimedia technology in disaster risk management.

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Subject Code: R16CE3201

III B.Tech II Semester Supple Examinations, March-2022
DESIGN AND DRAWING OF STEEL STRUCTURES
(CE)

Time: 3 hours
Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) what is upper bound theorem
   (b) what is laterally supported and un supported beams
   (c) What is spacing of a truss and pitch of a truss.
   (d) mention the lateral systems that are used in compound columns.
   (e) Draw the slab base and show the components of it
   (f) what is the purpose of horizontal and vertical stiffners

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. Bridge truss carries an axial pull of 500 KN. It is to be a gusset plate20mm thick by a double cover butt joint with 22 mm diameter power driven rivets. Design an economical joint. Determine the efficiency of the joint

3. A simply supported beam of span 8m carries a UDL of 30kN/m. In addition to UDL the beam is carrying a central point load of 60kN. The beam is laterally supported. Design the section and check the section for shear and deflection.

4. A single angle discontinuous strut ISA 65 x 65x 6 is 1.5m long. It is connected by one bolt at each end. Calculate safe load this strut can carry.

5. Design a column with single lacing system to carry a factored axial load of 1200kN. The effective length of column is 6m. Use two channels placed back to back.

6. Design the base plate for the column ISHB400 subjected to an axial factored load of 1000kN. The base plate is rest on a concrete pedestal of M25 grade concrete.

7. Design a gantry girder for an industrial building carrying an EOT crane for the following data:
   Crane capacity = 300 kN.
   Total self weight of all components = 250 kN.
   Minimum approach at the carne hook of gantry girder = 1.2m
   Wheel base = 3.5m C/C distance between gantry rails = 15m C/C
   distance between columns = 8m
   Self weight of rail section = 300 N/m, Yield stress = 250 N/mm^2

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Subject Code: R16CE3202

III B.Tech II Semester Supple Examinations, March-2022
ENVIRONMENTAL ENGINEERING-I
(CE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of Part-A and Part-B.
Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Write the different water born diseases
   (b) What is pressure conduits
   (c) What are the WHO guidelines
   (d) What is Adsorption?
   (e) Define sedimentation
   (f) Write the methods of water distribution system

                                                      [2+2+2+2+2+2]

PART-B

                                                      4 X 12 = 48

2. A water supply scheme has to be designed for a city having a population of 1,00,000. Estimate the important kinds of drafts which may be required to be recorded for an average water consumption of 250 lpcd. Also record the required capacities of the major components of the proposed water works system for the city using a river as the source of water supply. Assume suitable data where needed.

3. (a) Explain the factors to be considered while selecting the type of source for water supply scheme.
   b) Explain about Mass curve analysis

4. (a) Explain the characteristics of water
   (b) Differentiate the surface and sub-surface sources of water supply with respect to quantity. Quality. treatment and suitability

5. (a) Why coagulants are used in the water treatment? List various coagulants used along with their effectiveness in sedimentation of water.
   (b) Draw the flowchart of water treatment plant

6. (a) Differentiate the Osmosis and Reverse Osmosis
   (b) Describe the applications of Ultra Filtration

7. What factors affect the pressure in pipe lines of distribution system? What pressures are usually adopted for various pipes? What points should be kept in mind while designing pipe lines?

Subject Code: R16CE3203

III B.Tech II Semester Supple Examinations, March-2022
GEOTECHNICAL ENGINEERING–II
(CE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of Part-A and Part-B.
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) write down the expression for shear strength using rectangular vane and mention the parameters
   (b) what is passive earth pressure
   (c) when sudden or rapid down in a slope in cohesion less soil happens walls.
   (d) Define gross bearing capacity of soil.
   (e) what is under reamed pile
   (f) What is grip length. And how do you determine grip length of well foundation

                                                                                        [2+2+2+2+2+2]

PART-B

                                                                                        4 X 12 = 48

2. (a) Enumerate the various methods soil exploration and mention the circumstances under which each test is best suited
   (b) A vane is used to test a deposit of soft alluvial clay, required a torque 72 n-m. The vane dimensions are D = 100mm, H=200mm, determine a for the un drained shear strength of clay.

3. (a) explain Rankines theory of earth pressure, for what type of retaining walls and soils may this theory be used
   (b) a retaining wall with smooth vertical back retains a purely cohesive fill. Height of wall is 12m. Unit weight of fill is 20kN/m^3, cohesion is 1N/cm^2, what is the total active Rankine thrust on the wall? at what depth the intensity of pressure zero and where does the resultant thrust act

4. (a) Discuss about the critical circle method of analysing the stability of slope
   (b) retaining wall 4.5m height retains a soil with C = 2N/cm^2, . ϕ = 20^0 and Υ = 20kN/m^3, with horizontal surface level with the top of the wall. The backfill carries surcharge of 20kN/m^3. Compute the total earth resistance on the wall and its point of application.

5. (a) Describe Terzaghi"s theory of bearing capacity of shallow strip foundations
   (b) Compute the allowable bearing capacity of a square footing of 2m size resting on dense sand of unit weight 20kN/m^3. The depth of foundation is 1m and the site is subjected to flooding. The bearing capacity factors are N$_c$ = 55, N$_q$ = 38, N$_\Upsilon$ = 45

6. (a) Discuss about the various methods used for determining the capacity of a driven pile
   (b) A group of 16 piles of 50 cm diameter is arranged with a centre to centre spacing of 1.0 m. The piles are 9 m long and are embedded in soft clay with cohesion 30 kN/m^2. Bearing resistance may be neglected for the piles. Negative adhesion factor is 0.6. Determine the ultimate load capacity of the pile group.

7. (a) Discuss IRC method for the design of well foundation
   (b) Write important points on the settlement of foundation

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Subject Code: R16CE3204

III B.Tech II Semester Supple Examinations, March-2022
TRANSPORTATION ENGINEERING-II
(CE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of Part-A and Part-B.
Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. a) What is the purpose of using fish plates?
   b) Define super elevation.
   c) Mention the role of switches in railway track.
   d) Define airport zoning laws. What is its significance?
   e) List out the various airfield pavement failures.
   f) Differentiate between dry docks and wet docks.

                                                      [2+2+2+2+2+2]

PART-B

2. What is permanent way? Draw a neat sketch of permanent way cross section. Explain the functions of its components.   [12M]

3. a) Discuss the different surveys involved in fixing the alignment of railway tracks.   [6M]
   b) An 8° curve track diverges from a main curve of 5° in an opposite direction in the layout of a B.G. yard. Calculate the super elevation and the speed on the branch line, if the maximum speed permitted on the main line is 45 Km/hr.   [6M]

4. a) Illustrate with neat sketches a 'Points and crossings' and state its working principles.   [6M]
   b) What is interlocking? Describe the principles of interlocking signals with points and crossings.   [6M]

5. a) Describe the factors to be considered for the selection of site for a commercial airport. [8M]
   b) Discuss the importance of air traffic control.   [4M]

6. a) Describe the necessity, functions and special characteristics of airport drainage.   [6M]
   b) List the elements to be considered in the design of runways. Discuss in detail.   [6M]

7. a) Discuss the different types of harbour in detail.   [8M]
   b) What are the requirements of good port?   [4M]

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Subject Code: R16CE3207

III B.Tech II Semester Supplementary Examinations, March 2022
GROUND IMPROVEMENT TECHNIQUES
(CE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) What are the objectives of grouting?
   (b) Explain static and dynamic techniques of grouting.
   (c) What is sand-compaction pile?
   (d) Name any three methods for in situ densification of cohesive soil.
   (e) Infer the principle behind the electro-osmatic method of dewatering?
   (f) What are the types of geo-textiles?

                                                      [2+2+2+2+2+2]

PART-B

                                                      4 X 12 = 48

2. (a) write about classification of ground modification techniques with suitable sketch.   [6]
   (b) Explain suitability- feasibility and desirability of ground improvement technique   [6]

3. (a) Describe the vibroflotation technique of densifying granular soil.   [6]
   (b) What is a stone column? What are the methods of installing a stone column?   [6]

4. (a) What is a deep well? When is it adopted? What are its merits and demerits?   [7]
   (b) Explain in detail the well point system of dewatering.   [5]

5. (a) Explain the factors affecting the lime stabilized soils.
      [6]
   (b) Explain in detail mechanical stabilization of soils   [6]

6. (a) Give basic mechanism of reinforced earth.   [5]
   (b) Write a short note on soil Anchoring & soil nailing   [7]

7. (a) Define Grouting. What is its application with regard to Civil Engineered structures?   [8]
   (b) Explain in detail the use of geosynthetics as reinforcement.   [4]

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Subject Code: R16EE3201

III B.Tech II Semester Supple Examinations, March-2022
POWER SYSTEM ANALYSIS
(EEE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of Part-A and Part-B.
Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Mention advantages and disadvantages of per unit quantities
   (b) What are the types of buses that we consider in power flow studies?
   (c) What are the methods used for forming the Zbus matrix?
   (d) What are the different types of symmetrical faults?
   (e) Why sequence networks are required in fault analysis of power systems?
   (f) Define Swing curve. What is the use of this swing curve?

                                                                      [2+2+2+2+2+2]

PART-B

                                                                      4 X 12 = 48

2. (a) Derive the necessary expression to calculate load impedance in per unit.   [6 M]
   (b) Construct the bus impedance matrix for the network shown below. All impedances are shown in
       p.u.   [6 M]
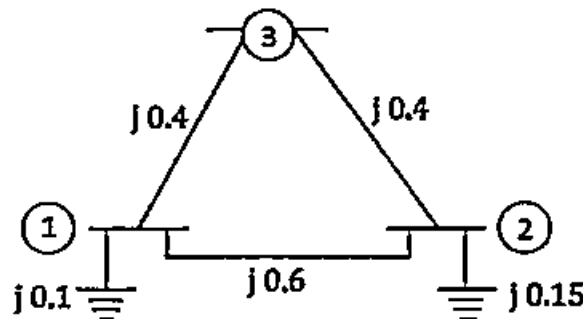
3. (a) Write an algorithm for G-S load flow method including PV buses in the power system. [6 M]
   (b) Derive the expressions of static power flow equations.   [6 M]

4.   Determine the ZBus using building algorithm for a power system whose element data is
     Given in the following table: [12 M]

Element No	Connected Between Bus No.	Self-reactance (p.u)
1	1 – 2	0.3
2	1 – 3	0.1
3	2 – 3	0.2
4	1 – 2	0.1

5. A generator and motor are rated of 20 MVA, 11 kV and both have sub transient reactance of 15% and line reactance of 10% on the base of machine ratings. The motor drawing 15 MW at 0.85 p.f leading. The terminal voltage is 10.5 kV when a symmetrical fault occurs at generator terminals; determine the sub transient current in generator, motor and at the fault point with necessary diagrams. [12 M]

6. (a) Draw the connection of sequence networks for the following types of faults. [6 M]
    i) Single line to ground, ii) Double line to ground and iii) Symmetrical fault LLL-G.
   (b) Derive the expression for fault current of unloaded alternator when LLG fault occurs on its terminals. [6 M]

7. (a) Discuss the various methods of improving steady state and transient state stability. [6 M]
   (b) The power angle characteristics for a synchronous generator supplying infinite bus is given by $P_e = 1.25 Sin\delta$. Constant H is 5 sec and initially it is delivering a load of 0.5 p.u. Determine the critical clearing angle. [6 M]

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Subject Code: R16EE3202

III B.Tech II Semester Supple Examinations, March-2022
POWER SEMICONDUCTOR DRIVES
(EEE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of Part-A and Part-B.
Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) What are advantages of electrical drive?
   (b) Compare circulating and non-circulating mode of dual converters.
   (c) Give the advantages of chopper fed dc drives.
   (d) Give the disadvantages of AC voltage controller fed induction motor drive
   (e) Write the importance of slip power.
   (f) How thyristors are commutated in load commutated inverter?

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Discuss the different modes of operation of electric drive with suitable examples?
   (b) A 220V, 900 rpm, 70 A DC separately excited motor has an armature resistance of 0.05 Ω. It is coupled to an overhauling load with a torque of 200 N-m. Determine the speed at which the motor can hold the load by regenerative braking.

3. (a) Obtain the speed-torque characteristics of separately excited DC motor operated with 3-phase full converter and describe the effect of firing angle?
   (b) The speed of a dc series motor is controlled by a 3-phase semi convertor connected to three –Phase 400V,50Hz source the motor constant is 0.4V-Sec/A radian. Total field and armature resistance is 1 Ohm. Assuming continuous and ripple free. Armature current at angle of 40^9 and speed of 1000 rpm. Determine
   i) Motor current & motor torque
   ii) Power delivered to the motor

4. (a) Explain closed loop operation of a dc-dc converter fed dc motor drive
   (b) A DC chopper is used for regenerative braking of a separately excited DC motor. The supply input voltage is 400 V, armature resistance is 0.25 Ω, Km=1.2V-sec/rad. The average armature current during regenerative braking is kept constant at 200 A. For a duty cycle of 60% of chopper, determine the following: (i) power fed back to the supply. (ii) Minimum and maximum braking speeds. (iii) Speed during regenerative braking

5. (a) Explain the variable voltage control of induction motor using three-phase ac voltage controller.
   (b) A 440V, 3 phase, 50Hz 6 pole 945 RPM delta connected induction motor has the following parameters referred to the stator. R1=2.0 Ω, R2 = 2.0 Ω, X1 = 3 Ω, X2= 4 Ω. When driving a fan load at rated voltage, it runs at rated speed. The motor speed is controlled by stator voltage control. Determine motor terminal voltage, current and torque at 800 RPM.

6. (a) Draw the circuit diagram and explain the operation of rotor- resistance control of Induction motor

(b) What are the advantages of static rotor resistance control over conventional methods of rotor resistance control?

7. (a) Describe the operation of separate controlled Synchronous Motor drives in detail

(b) Explain closed loop speed control of synchronous motor drive fed from VSI

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Subject Code: R16EE3203

III B.Tech II Semester Supple Examinations, March-2022
DATA STRUCTURES
(EEE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of Part-A and Part-B.
Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) What is meant by abstract data type?
   (b) Write a short note on Binary Search?
   (c) Write an algorithm for push operation?
   (d) Define Circular Linked List?
   (e) What is Binary Search Tree? Explain with example?
   (f) Explain directed graph?

                                                        [2+2+2+2+2+2]

PART-B

                                                        4 X 12 = 48

2. (a) Write an algorithm for factorial of a given number?
   (b) Write a program to find the Fibonacci numbers?

3. (a) Explain the Linear Search algorithm with an example?
   (b) Sort the following numbers in ascending order using Merge Sort
           5, 2, 3, ,9, 1, 4, 8, 7, 6

4. (a) Explain the Procedure for con version of infix to postfix expression?
   (b) Write a program to implement the Queue using linked list?

5. (a) Write an algorithm to delete a node from Doubly Linked List?
   (b) Explain the Procedure for searching a node in a Single Linked List?

6.   Consider the following Binary Tree. Find the Following Tree Traversal Techniques
       a) in-order   b) pre-order   c) post-order
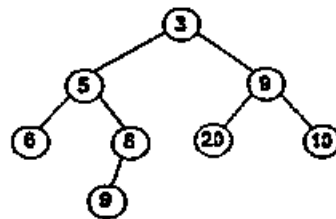
7. (a) How do we implement DFS using Stack? Give an example.
   (b) Explain representations of graphs?

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Subject Code: R16EE3204

III B.Tech II Semester Supple Examinations, March-2022
ELECTRICAL DISTRIBUTION SYSTEMS
(EEE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of Part-A and Part-B.
Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Define the terms contribution factor and coincidence factor.
   (b) How do you choose primary feeder arrangement from the reliability point of view?
   (c) Why is voltage drop consideration important in distribution systems?
   (d) Write the list of protective devices that are used in the distribution system.
   (e) What are the demerits for low p.f in the distribution system?
   (f) What are the effects of AVR on voltage control?

                                                                            [2+2+2+2+2+2]

PART-B

                                                                            4 X 12 = 48

2. (a) Derive the relationship between the load factor and loss factor for steady loads, zero off peak loads and very short lasting peak loads.   [6]
   (b) Describe the classification of loads with their characteristics.   [6]

3. (a) Derive the % voltage drop of a substation service area with 'n' number of primary feeders. [6]
   (b) What are the types of primary feeders and discuss the merits and demerits of them?   [6]

4. (a) Obtain the expression for voltage drop and power loss for radial type uniformly distributed [6] load.
   (b) Assume that a star connected three phase load is made up of three impedances of $50\angle250$ ohms each and that the load is supplied by a three phase four wire primary express feeder. The balanced line to neutral voltages at the receiving end are $V_{an}=7630 \angle 0°V$, $V_{bn}=7630 \angle 240°V$, $V_{cn}=7630 \angle 120°V$. Determine the following.   [6]
   i. The phase currents in each line
   ii. The line to line phasor voltages
   iii. The total active and reactive power supplied to the load.

5. (a) Explain the principle of operation of: i) Line sectionalizer ii) Circuit breaker   [6]
   (b) Explain the principle of operation of Residual Current Circuit Breaker (RCCB) with a neat [6] sketch.

6. (a) Explain the need for p.f improvement in distribution systems.   [6]
   (b) A 50 h.p induction motor has power factor 0.9 and efficiency 0.9 at full load, power factor 0.6 and efficiency 0.7 at half load. At no load the current is 25% of the full load current and power factor 0.1. Capacitors are connected to make the line power factor 0.8 at half load. With these capacitors in the circuit, find the line p.f at (i) full load and (ii) no load.   [6]

7. (a) Explain the effect of series capacitor on voltage control with necessary diagrams. [6]

(b) What is a line drop compensator? How is it used along with tap changer of transformer for [6] voltage control?

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Subject Code: R16EE3207
III B.Tech II Semester Supple Examinations, March-2022
SPECIAL MACHINES
(EEE)
Time: 3 hours   Max Marks: 60

Question Paper Consists of Part-A and Part-B.
Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Mention few applications of universal motor.   CO1, K1
   (b) A 8/6 switched reluctance motor has step angle of 15°. If each phase is switched ON and OFF at a frequency of 600 Hz, what would be the speed of the motor?
   (c) Define stepping rate of a stepper motor.
   (d) Write any four magnetic materials used in PMDC motor.
   (e) Write few applications of a BLDC motor.
   (f) Compare DC and AC traction systems.

                                                                 [2+2+2+2+2+2]

PART-B

                                                                 4 X 12 = 48

2. (a) Write a short notes on split phase induction motors.   [6M]
   (b) Explain the principle of operation of DC servo motors. Also mention their applications. [6M]

3. (a) What is the need for rotor position sensor in the control of switched reluctance motor?   [6M]
   (b) List out the advantages and disadvantages of switched reluctance motor.   [6M]

4. (a) Explain the torque production in stepper motors and derive an expression for torque produced.
   (b) A stepper motor has a step angle of 1.8° and is driven at 400 rps. Determine (i) Resolution (ii) motor speed (iii) Number of pulses required to rotate the shaft through 54°.   [6M]

5. (a) What are the advantages and disadvantages of Permanent Magnet DC motors compared to conventional DC motors?   [6M]
   (b) Derive the equivalent circuit of a Permanent Magnet DC motor.   [6M]

6. (a) With a neat block diagram, explain the closed loop speed control of a BLDC motor.   [6M]
   (b) Explain the constructional details of BLDC motor with the help of neat sketch.   [6M]

7. (a) What are Linear Induction Motors? Explain the use of single sided linear induction motor for traction drives.   [6M]
   (b) Discuss the main characteristics of traction motor drives.   [6M]

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NEC

Subject Code: R16ME3201

III B.Tech II Semester Supple Examinations, March-2022
METROLOGY AND INSTRUMENTATION
(ME)

Time: 3 hours   Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) State the factors affecting the accuracy of the measuring system.
   (b) What are the considerations while manufacturing the slip gauges?
   (c) State the main uses of Tool Maker's microscope.
   (d) Explore the errors in measuring instruments.
   (e) State specifications of transducers.
   (f) State Peltier and Thomson Effect with an example.

                                                    [2+2+2+2+2+2]

PART-B

                                                    4 X 12 = 48

2. (a) How are end standards derived from line standard? Explain   [6M+6M]
   (b) With the help of neat sketches state the essential conditions for Clearance fit and Interference fit.

3. (a) How is a Vernier height gauge specified? Describe briefly the constructional requirements of different types of a Vernier height gauge?   [6M]
   (b) Why is sine bar not suitable for measuring angles above 45^0? Explain.   [6M]

4. (a) What is auto-collimator? Explain with the help of neat sketches, the principle and construction of an auto-collimator.   [6M]
   (b) Design a workshop gauge for a GO and NO GO gauges for components having $55H_8d_9$ fit. The basic size falls in the diameter range of 50 to 80 mm. The fundamental deviation for 'd' shaft is $-16D^{0.14}$ microns. The multipliers for 8 and 9 grades are 25 and 40 respectively. The wear allowance is 10% of gauge tolerance. Sketch the gauge with values.   [6M]

5. (a) List various types of measuring instruments and explain each one of them.   [6M]
   (b) Define "systematic errors" and explain the causes of those errors with suitable example.
                                                    [6M]

6. (a) Explain the procedure to calibrate the bourdon tube pressure gauge with help of dead weight pressure gauge tester. What precautions we have to take during calibration to minimize errors
   (b) Write short note on following: [6M+6M]
   i. Selection factors of Transducer   ii. Mass sensing elements

7. (a) Give a brief note on Stress measurement by variable Resistance Strain gauges in detail.   [6M]
   (b) Clearly state the laws of thermocouple with neat sketch and state its industrial applications.
                                                    [6M]

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Subject Code: R16ME3202

III B.Tech II Semester Supple Examinations, March-2022
DESIGN OF MECHANICAL COMPONENTS
(ME)

Time: 3 hours   Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Define "Sommerfeld Number".
   (b) What is the belt slip and creep?
   (c) What are "Translating" and "Leading" screw?
   (d) State important reasons why involute curves are preferable to cycloidal profile in general.
   (e) Why it is necessary to locate the oil hole in the centre of the section of connecting rod of large lengths?
   (f) Why is the piston pin usually made of hollow section?

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) A 15 kW, 720 rpm motor has a 200 mm diameter pulley with 150 mm face width. Design a leather belt and a cast iron pulley for the driven shaft which is to run at 180 rpm. The pulley is mounted on its shaft such that the center line of the pulley is at distance of 200 mm from the center line of the bearing. Assume maximum allowable tension of 20 N per mm width of the belt and belt slip is 4%. Take coefficient of friction = 0.45, allowable share stress in the shaft is 55 N/mm² and tensile stress of C.I. pulley is 20 N/mm². Neglect centrifugal tension.   [10M]
   (b) What is the effect of short center distance of the pulleys on the drive?   [02M]

3. (a) Why hydrodynamic journal bearing is called self-acting bearing and hydrostatic bearing is called externally pressurized bearing?   [05M]
   (b) Design a bearing and journal support a load of 4500 N at 600 rev/min using a hardened steel journal and a bronze backed Babbitt bearing. The bearing is lubricated by oil rings. Take room temperature as 21°C and the oil temperature as 80°C.   [07M]

4. Two helical gears are used in speed reducer that is to be driven by an internal combustion engine. The rated power of the speed reducer is 75 kW at a pinion speed of 1200 rev/min. The speed ratio is 3 to 1. Assume medium shock conditions and 24 hour operation. Determine the module, face, number of teeth in each gear, and the material and heat treatment if the teeth are 20° full depth in the normal plane. Suitable data may be assumed as per requirement.   [12M]

5. Design a crane hook with the useful load lifting capacity of the crane as 50 kN. The weight of the hook with grabbing tongs is 10 kN. [12M]

6. (a) Design a connecting rod for a single cylinder four stroke diesel engine with following specifications:

Power = 7.5 kW; Mechanical efficiency = 80%;

Weight of reciprocating parts = 20 N; Length of connecting rod = 0.30 m;

Speed = 1500 rev/min with a possible over speed to 2500 rev/min.

Assume suitable missing date. [06M]

(b) What are the methods and materials used in manufacturing crank shafts? What may cause heavy bending stresses in crank shafts? [06M]

7. A four stroke diesel engine has the following specifications: Brake power = 6.5 kW; Speed = 1800 r.p.m. ; Indicated mean effective pressure = 0.35 N / mm^2 ;Mechanical efficiency = 75%. Determine: (a). bore and length of the cylinder; (b) thickness of the cylinder head; and (c) size of studs for the cylinder head.

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Subject Code: R16ME3203
III B.Tech II Semester Supple Examinations, March-2022
HEAT TRANSFER
(ME)

Time: 3 hours   Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.
Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) State Fourier law of heat conduction
   (b) Write the significance of Biot number and Fourier number in transient heat conduction.
   (c) Write various non dimensional numbers used in forced and free convection
   (d) Define hydraulic diameter for internal forced convection
   (e) Explain briefly drop wise and film wise condensation.
   (f) State emissivity and radiosity.

                                                                    [2+2+2+2+2+2]

PART-B

                                                                    4 X 12 = 48

2. (a) Explain different types of Boundary conditions with example.   [4]
   (b) A cold storage room has walls made of 220 mm of brick on the outside, 90 mm of plastic foam, and fully 16 mm of wood on the inside. The outside and inside air temperatures are 25°C and -3°C respectively. If the inside and outside heat transfer coefficients are 30 W/m²°C and 11 W/m²°C respectively, and thermal conductivities of brick, foam and wood are 0.99, 0.022, and 0.17 W/m°C. Determine (i) Rate of heat removal by refrigeration if the total wall area is 85 m² (ii) Temperature of inside surface of brick.   [8]

3. (a) Derive the temperature distribution within the fin while the fin end is insulated. State assumptions clearly.   [6]
   (b) A large slab of aluminum has thickness of 10 cm and is initially uniform in temperature at 400°C. It is then suddenly exposed to convection environment at 90°C with h=1400w/m^2 K. How long does it take the centre to cool to 180 °C.   [6]

4. (a) State Bucking hum pi Theorem. Derive the expression for Nusselt number in terms of Prandtl number and Reynolds number. List all the relevant dependent variables for the derivation of Nusselt number expression.   [8]
   (b) Define thermal boundary layer for a fluid flow over flat plate.   [4]

5. (a) A 6 m long section of an 8 cm diameter horizontal hot water pipe shown in Figure below passes through a large room of temperature is 20°C. If the outer surface temperature of the pipe is 70°C, determine the rate of heat loss from the pipe by natural convection. Assume steady operating conditions exist, Air is an ideal gas and the local atmospheric pressure is 1 atm.   [8]
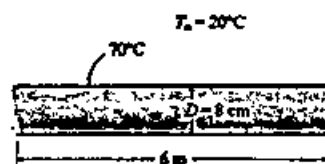
   (b) What is the physical significance of the number of transfer units NTU = hA/mCp? What do small and large NTU values tell about a heat transfer system?   [4]

6. (a) Why the drop wise condensation is preferred to the film wise condensation? [4]

(b) What are the factors influencing the heat transfer in nucleate boiling? [2]

(c) Saturated, air free, steam at 80°C condenses on the outer surface of a 1.2 m long, 0.1 m diameter vertical tube which is maintained at uniform temperature 40°C. Calculate [6]

i) Average heat transfer coefficient

ii) Mass of condensate collected

7. (a) Derive a relation for heat transferred between two non black bodies exchanging heat due to radiation and draw the radiation network. [6]

(b) Emissivity's of two large parallel plates maintained at 800°C and 300°C respectively. Find the net radiant heat exchange per square meter of the plates. If a polished aluminium shield (ε=0.05) is placed between them, find the percentage reduction in heat transfer. The emissivity of plates is 0.5 [6]

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Subject Code: R16ME3204

III B.Tech II Semester Supple Examinations, March-2022
AUTOMOBILE ENGINEERING
(ME)

Time: 3 hours   Max Marks: 60

Question Paper Consists of Part-A and Part-B.
Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Mention two applications of piston rings of a SI engine.
   (b) Cite two limitations of carburettor system in comparison with fuel injection system.
   (c) Cite two differences between constant mesh and synchromesh gear box in the transmission system of an automobile.
   (d) Explain toe in and toe out in an automobile wheel alignment system.
   (e) Explain HVAC system in an automobile system
   (f) Cite differences between BS4 and BS6 emission norms of an automobile system.

   [2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. Discuss briefly inspection and repair procedures for engine crank shafts in automobiles.

3. (a) Explain the magneto ignition system with a suitable diagram.
   (b) What are the various fuel injection system available for automobile systems? Explain any one with suitable diagram.

4. (a) Explain with a simple sketch, construction and working of differential in an automobile.
   (b) Draw a schematic diagram and explain the working of a torque convertor.

5. (a) Explain the working of drum brake with suitable diagram.
   (b) Why suspension system is required in an automobile? Explain the independent suspension system of an automobile and cite one example of its application.

6. (a) Draw a schematic representation of electric systems used in automobile and explain the application of the various components used in the system.
   (b) What is ECU in automobile system? Mention few applications and advantages of ECU in automobile.

7. (a) What are the causes of emission from an automobile? Suggest few approaches that can be adopted for controlling the emission from an automobile.
   (b) What are various safety systems adopted for automobiles? Explain wind shield and speed control in detail.

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Subject Code: R16ME3208

III B.Tech II Semester Supplementary Examinations, March 2022
INDUSTRIAL ENGINEERING AND COST ESTIMATION
(ME)

Time: 3 hours　　　　　　　　　　　　　　　　　　　　Max Marks: 60

Question Paper Consists of Part-A and Part-B.
Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1.	a)	Differentiate the theory X and theory Y in human resource management.
	b)	What is the merit rating?
	c)	What are the principal methods of wages payments?
	d)	Write any two objectives of cost estimation.
	e)	How to calculate weight of the Sphere.
	f)	List the various losses in forging.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2	a)	Explain the different types of production with example.	[6M]
	b)	Describe the principles of Taylor in management.	[6M]
3.	a)	Explain the different methods of Job evaluation in detailed.	[6M]
	b)	Describe the objectives of human resource management.	[6M]
4.		Calculate the earnings of a worker from the following information. i) Time rate method　ii) Piece rate method　iii) Halsey plan　iv) Rowan plan. Information given: Standard time: 30 hours, Time taken: 20 hours. Hourly rate of wages is Rs. 1 per hour plus a dearness allowance @ 50 paise per hour worked.	[12M]
5.		A small firm is producing 100pens per day. The direct material cost is found to be Rs.160 direct labour cost Rs.200 and factory overheads chargeable to it Rs. 250. If the selling cost is 40% of the factory cost, what must be the selling price of each pen to realize a profit of 14.6% of the selling price?	[12M]
6.	a)	Write the formula for finding volume of i) Circular ring　ii) Frustum of pyramid	[6M]
	b)	What are the principles of dividing the component drawing into smaller configurations? Explain.	[6M]
7.		A container of size 2m X 1m X 0.5m height is to be fabricated from 6mm thick plates. The plate metal density is 8grams/CC. The top of the container is open and the joints are to be welded. Calculate the cost of container. Assume the following data. i) Cost of plate= Rs. 10/kg　ii) Metal scrap = 5% of metal　iii) Cost of labour = Rs. 10% material cost　iv) Cost of welding material = Rs. 5/ meter weld.	[12M]

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Subject Code: R16EC3201

III B.Tech II Semester Supple Examinations, March-2022
VLSI DESIGN
(ECE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of Part-A and Part-B.
Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Analyze the nMOS transistor operation when
       i)$Vgs =0$, $Vds=0$ ii)$Vgs =0$, $Vds \neq 0$
   (b) Draw the Transfer Characteristics of CMOS inverter.

   (c) Why design rules important for layout? Explain.
   (d) Investigate inverter delay concept with equation.
   (e) Compare switch and gate logic.
   (f) What are different Fault Simulation Techniques?

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Identify and discuss the relationship between Ids and Vds for nMOS transistor in different regions.
   (b) Demonstrate the CMOS fabrication process with neat sketches.

3. (a) Determine the pull up to pull down ratio of an nMOS inverter when driven through one or more pass transistors.
   (b) Expalin BICMOS inverter and BiCMOS Latch-up Susceptibility.

4. (a) Draw and explain the stick and layout diagrams of NAND Gate and NOR Gate.
   (b) Compare different Design rules.

5. (a) Discuss how the scaling is useful for VLSI circuits.
   (b) What are the limitations of scaling?

6. (a) Illustrate the adder with generate, propagate, and kill expressions.
   (b) Design booth's multiplier.

7. (a) Explain internal architecture of FPGA.
   (b) Differentiate FPGA, ASIC and CPLD.

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Subject Code: R16EC3202

III B.Tech II Semester Supple Examinations, March-2022
MICROWAVE AND OPTICAL COMMUNICATIONS
(ECE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Define degenerate mode.

   (b) What is ferrite and give its properties?

   (c) Give the expression that relates guide wavelengths, cut-off wavelength and free apace wavelength?

   (d) Define the normalized frequency for an optical fiber and give its significance.

   (e) Compare radiation pattern and spectral response of SLED and ELED.

   (f) A photo diode is constructed of GaAs, which has a band gap energy of 1.43eV at 300K.Then find the cut off wave length.

                                                            [2+2+2+2+2+2]

PART-B

                                                            4 X 12 = 48

2. (a) Differentiate rectangular and Circular waveguides.
   (b) Discuss the electromagnetic spectrum with its applications.
3. (a) What is scattering matrix? Explain its significance. Also Write short notes on properties of S - matrix.
   (b) Derive the expression for output power & Efficiency of a Reflex Klystron.

4. (a) Discuss in brief about RWH theory?   [4M]
   (b) A GaAs Gunn device has an active region length of 10^{-3}cm. If the drift velocity of electrons is 2×10^7cm/s, find natural frequency and critical voltage. The critical electric field is 3.2 Kv/cm.
                                                            [4M]
   (c) How do you measure the high VSWR? Explain.   [4M]
5. (a) Derive the expressions the critical angle, maximum entrance angle and numerical aperture for the step index fiber. Calculate the number of allowed modes in a multimode step index fiber, if the core radius = 100 μm, core refractive index of 1.468 and a cladding refractive index of 1.447 at the wavelength of 850nm.
   (b) Explain working mechanism of step index fiber and graded index fiber with relevant diagrams of refractive index profile.
6. (a) Derive an expression for the quantum efficiency of a double-hetero structure LED.
   (b) Describe the operation of a Fabry perot laser? The radiative and non radiative recombination life times of minority carriers in the active region of a double hetero junction LED are 60ns & 90ns respectively. Determine the total carrier recombination life time and optical power?
7. (a) What are the necessary features of Photo detector. Compare the performance of APD with PIN diode and also derive relation between Responsivity and quantum efficiency.
   (b) What are the different types of noise encountered in photo detector receiver? An InGaAs pin photodiode has dark current I_D= 10 nA, quantum efficiency = 80%, load resistance R_L=2KΩ and negligible surface current at 1300nm wavelength. The incident optical power is -36dBm and the receiver bandwidth is 40MHz. Find the various noise components of this receiver.

Narasaraopeta Engineering College (Autonomous)

NEC Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16EC3203

III B.Tech II Semester Supple Examinations, March-2022
DIGITAL SIGNAL PROCESSING
(ECE)

Time: 3 hours
Max Marks: 60

Question Paper Consists of Part-A and Part-B.
Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Define energy signal and power signal.
   (b) State any two properties of DFT.
   (c) Determine the ROC of the sequence {1, 2, 3, 4}
   (d) What are the conditions that an FIR filter exhibits linear phase?
   (e) What is warping effect?
   (f) List the features of Hanning window.

$$[2+2+2+2+2+2]$$

PART-B

$$4 \times 12 = 48$$

2. (a) Check the causality and stability of the system.   [6+6]
   $$y(n)=x(-n)+x(n-2)+x(2n-1)$$
   (b) Check the system for linearity and time variance.
   $$y(n)=(n-1)x^2(n)+c$$

3. (a) Determine the convolution sum of the following two sequences.   [4+8]
   $$x(n) = \{1, 2, 4, 1\} \text{ and } h(n) = \{3, 1, 2, 1\}$$
   (b) Determine the eight – point DFT of the sequence $x(n) = \{1, 1, 1, 1, 1, 1, 0, 0\}$. Plot $|X(k)|$ and $\angle X(k)$.

4. (a) Obtain Direct form – I, Direct form – II and Parallel form realization of the system   [12]
   $$y(n)=-0.1\,y(n-1)+0.2\,y(n-2)+3x(n)+3.6x(n-1)+0.6x(n-2)$$

5. (a) Develop the realization structure for the casual linear phase FIR system function   [6+6]
   $$H(z)=\frac{2}{3}+z^{-1}+\frac{2}{3}z^{-2}$$
   (b) What are the basic structures of FIR filter? Explain.

6. (a) Convert the analog filter to digital filter by using bilinear transformation whose system   [12]
   function is
   $$H(s)=\frac{1}{(s+2)^2+(s+1)}$$

7. (a) Design an FIR low pass filter using rectangular window by taking 9 samples and with a cut-off frequency of 1.2 rad/sec.
   (b) What are the characteristics of FIR digital filters?   [10+2]

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Page 1 of 1

Narasaraopeta Engineering College (Autonomous)

NEC   Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16EC3204

III B.Tech II Semester Supple Examinations, March-2022
ELECTRONIC MEASUREMENTS AND INSTRUMENTATION
(ECE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.
Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) What are the main static characteristics of electronic measurement system?

    (b) Give the principle of capacitive transducers.

    (c) Draw the Maxwell's bridge for inductance measurement.

    (d) Justify the multimeter and voltmeter are same or not?

    (e) Explain the concept of Data acquisition systems

    (f) What are the features of a Dual beam oscilloscope?

                                                                [2+2+2+2+2+2]

PART-B

                                                              4 X 12 = 48

2. (a) Explain the following terms in detail   [6M]
         (i) speed of response (ii) Fidelity (iii) Lag and Dynamic error.
    (b) What are the different types of errors in measurement? Explain. [6M]

3. (a) What is Piezo-electric effect? Explain the operation of Piezo-electric transducer. [8M]
    (b) Explain Primary and secondary Transducers.   [4M]

4. (a) Draw the Schearing's bridge and discuss the measurement of unknown capacitance. [6M]
    (b) Explain the operation of wheat stone bridge with derivations. [6M]

5. (a) Describe briefly about Harmonic distortion analyzer.   [6M]
    (b) What are the applications of a Spectrum analyzer?   [6M]

6. (a) Define Humidity and give a classification. Explain the procedure for the measurement of
         humidity.   [8M]
    (b) Briefly explain the working principles and measurement of force. [4M]

7. (a) Develop an expression for deflection D in CRO, which is the deflection of the electron
         beam.   [8M]
    (b) Describe the basic components of magnetic recorders.   [4M]

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NEC appakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16EC3209

III B.Tech II Semester Supplementary Examinations, March 2022
DIGITAL IMAGE PROCESSING
(ECE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What is a digital image? What are the various types of images?

(b) What is the significance of image enhancement?

(c) Explain any two-image interpolation techniques.

(d) Explain different types of edge detection methods.

(e) What is meant by image transformation?

(f) List any two properties of unitary transform.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain various components of an image processing system.

(b) Explain the need of image transformation with proper example.

3. (a) Discuss the concept of image enhancement in spatial domain.

(b) How the filters are directly generated in the frequency Domain? Explain with example.

4. (a) Explain the concept of periodic noise reduction by frequency domain filtering.

(b) How the image is reconstructed from projections? Explain.

5. (a) Explain the concept of colour image compression.

(b) Explain two techniques related to colour image segmentation.

6. (a) Explain the concept of wavelet transforms in one dimensions.

(b) What is Lossless compression? Explain Huffman coding with example.

7. (a) How the dilation and erosion are combined? Explain.

(b) What do you mean by thresholding? Discuss various types of thresholding.

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Subject Code: R16CS3201

III B.Tech II Semester Supple Examinations, March-2022
CRYPTOGRAPHY AND NETWORK SECURITY
(CSE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Differentiate active and passive attack.

(b) Define man in middle attack.

(c) What is Euler's Totient function?

(d) Specify the requirements of MAC and Hash function.

(e) What are the applications of Kerberos?

(f) Define hand shaking.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. a) Explain the model for network security.
   b) Explain the playfair cipher with example.

3. (a) Describe in detail the key generation in AES algorithm and its expansion format.
   (b) Explain the block cipher design principles.

4. (a) State Chinese Theorem and find X for the given set of congruent equations using CRT
   X= 2 (mod 3)
   X= 3 (mod 5)
   X= 5 (mod 7)

   (b) Perform encryption and decryption on the given data using RSA.
       p=7, q=11, e=17, M=8

5. (a) Explain in detail about Secure Hash Algorithm.
   (b) Describe digital signature algorithm and show how signing verification is done using DSS.

6. Explain in detail about S/MIME.
7. Explain the following
   (a) SSL   (b) Firewalls

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Subject Code: R16CS3202

III B.Tech II Semester Supple Examinations, March-2022
DATA WAREHOUSING AND DATA MINING
(CSE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of Part-A and Part-B.
Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Write a short notes about types of data

   (b) Write brief about aggregation.

   (c) Write a short notes about datacube.

   (d) Explain brief about how to build the decision tree.

   (e) Write briefly about frequent itemset

   (f) Explain the K-means additional issues.

                                                              [2+2+2+2+2+2]

PART-B

                                                              4 X 12 = 48

2 a) Explain about data mining tasks.
   b) Discuss in-detail about the challenges of data mining.

3. a) Explain in detail about Discretization and Binarization,
   b) Discuss about the Multivariate Summary Statistics.

4 a) Explain in-detail about the -Data Warehouse implementation
   b) Discuss in-detail about Star and snowflake schemas

5. a) How to Build a Decision Tree and how it Works? Explain with an example.
   b) Write about Naïve Bayesian classifier in-detail.

6. a) Explain in-detail about Apriori algorithm.
   b) Discuss in-detail about the handling Continuous Attributes.

7. a) Discuss in-detail about K-means clustering algorithm.
   b) Write about the DBSCAN algorithm.

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Subject Code: R16CS3203

III B.Tech II Semester Supple Examinations, March-2022
ADVANCED JAVA AND WEB TECHNOLOGIES
(CSE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What is Java Servlet?
   (b) Why we have to design JSP Application with MVC?
   (c) How data can be shared between JSP Pages?
   (d) What is ResultSet?
   (e) How to run PHP Script?
   (f) Write the need for developing database programming?

                                                              [2+2+2+2+2+2]

PART-B

                                                              4 X 12 = 48

2. (a) Explain how to work with initialization parameters using an example servlet program.
   (b) Describe HttpServlet Request & HttpServlet Response interfaces.

3. (a) Describe JSP Processing and JSP Application design with MVC.
   (b) In conditional Processing, How to display values using an expression to set an attribute?

4. (a) Design a JSP page to illustrate passing control between the pages.
   (b) Describe JSP Error Handling and Debugging.

5. (a) Illustrate with an example how to access Database from JSP page?
   (b) Describe the architecture of JDBC.

6. (a) Describe in detail the built-in functions and user-defined functions of PHP.
   (b) Illustrate with example recursive and callback functions in PHP.

7. (a) Construct a PHP script to retrieve the data from a table Sales (Salesid, ItemSaled, Price, Quantity) present in MySQL database.
   (b) Write a PHP code to validate the form consisting of a username, password and email fields.

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Subject Code: R16CS3207

III B.Tech II Semester Supple Examinations, March-2022
WIRELESS NETWORKS AND MOBILE COMPUTING
(CSE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B.**
Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) What is the purpose of sink node in WSN
   (b) List the supplementary services in GSM
   (c) What is CSMA
   (d) Define co located COA
   (e) Write the disadvantage of I-TCP
   (f) What is full dump in DSDV

                                                                 [2+2+2+2+2+2]

PART-B

                                                                 4 X 12 = 48

2. (a) Compare and Contrast MANETs and VANETs
   (b) Write the differences between 3G and 4G

3. Explain the following
   (a) Radio Interface
   (b) Handover

4. (a) Explain the solution of Hidden and Exposed terminal problem
   (b) Compare SDMA, FDMA, TDMA and CDMA

5. (a) Explain about IP in IP Encapsulation
   (b) Discuss about route optimization

6. Explain the following
   (a) Snooping TCP
   (b) M-TCP

7. (a) Explain the routing procedure in Proactive, reactive and hybrid routing algorithms
   (b) Explain about DSR protocol

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Subject Code: R16CS3208

III B.Tech II Semester Supple Examinations, March-2022
.NET Technologies (CSE)

Time: 3 hours   Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.
Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1) a).What are the features of ASP.NET?

   b) Write a short note on Abstract class?

   c) Explain the Name Spaces in C#?

   d) How does ASP.NET Works?

   e) What are the ADO.NET components?

   f) What is difference between Linq and lambda expression?

                                                                              [2+2+2+2+2+2]

PART-B

                                                                    4X12=48M

2) a) Describe the Architecture of .NET framework ?
   b) Write a short note on Common Language Runtime?

3) a) Explain about the Control Structures in C# ?
   b) Write a short note on Arrays in C#?

4) a) Briefly explain the Exception handling in C#?
   b) Explain the concept of Interfaces in C#?

5) a) How many types of controls are there in asp net? Explain in Brief.

   b) What are the advantages of master page?

6) Briefly explain about the following
        a) DataAdapter object
        b) DataReader object

7) a) What are lambda expressions in C#? Explain.
   b) Write a short note on AJAX Controls?

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