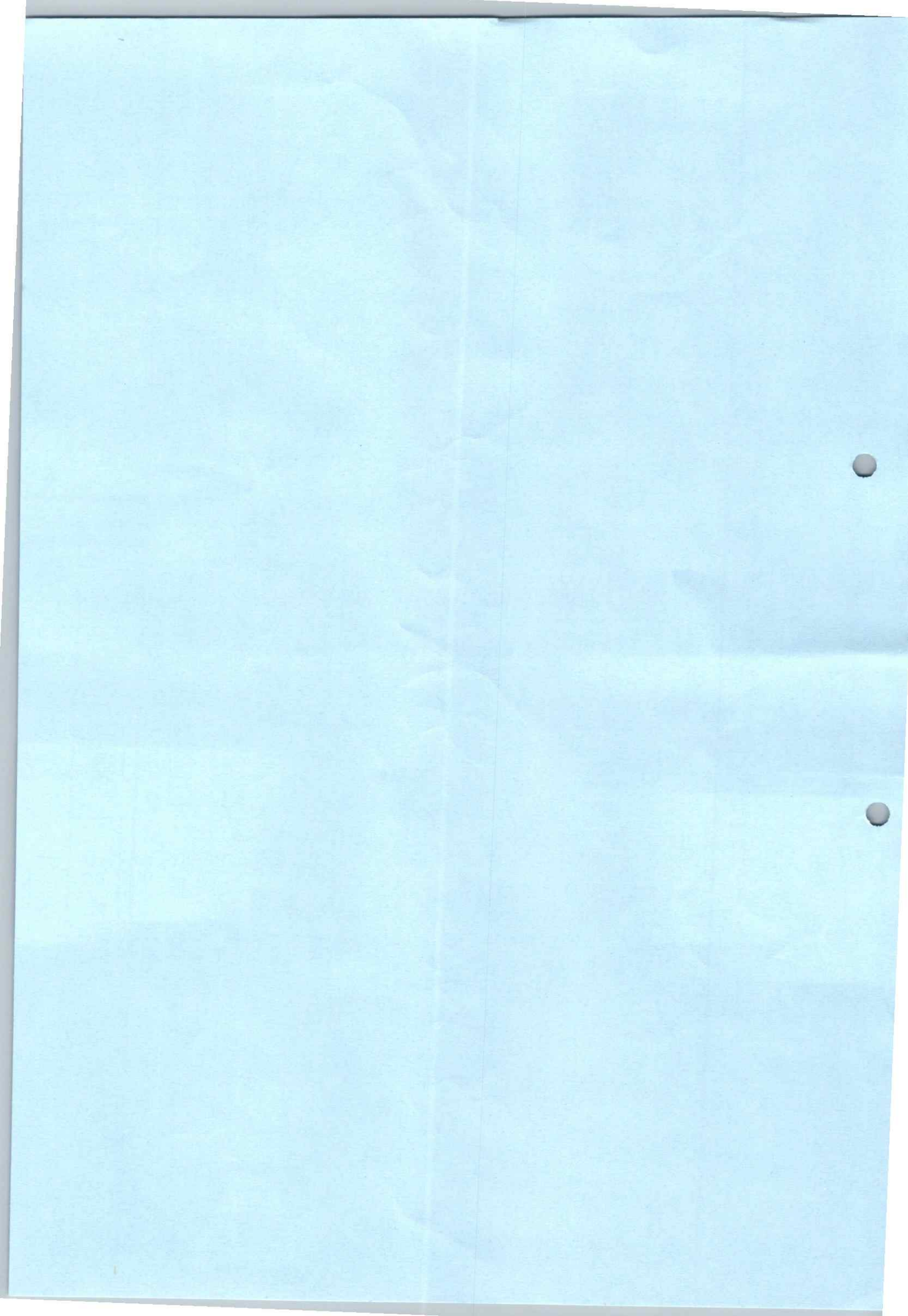


R16

III B.TECH II SEM

SUPPLEMENTARY EXAMINATIONS

OCTOBER 2023





Subject Code: R16CC32OE19

III B.Tech II Semester Supple Examinations, October-2023

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? [2M]
- b) What is device and component integration in IoT design methodology? [2M]
- c) Explain about actuators. [2M]
- d) Explain programming with raspberry pi? [2M]
- e) What is meant by cloud storage model? [2M]
- f) List some applications of IoT. [2M]

PART -B

2. a) Define IoT and Explain characteristics and applications of IoT. [6M]
- b) Explain the physical design of IoT. [6M]
3. a) Make use of case study (Home automation), Explain about Purpose & requirements, process specification, domain model, information model specification? [6M]
- b) Make use of case study (Home automation), Explain about Service, IoT level, functional view, operational view specification, device and component integration and application development? [6M]
4. a) Explain about embedded computing devices. [6M]
- b) Briefly Demonstrate about Arduino and developing on Arduino. [6M]
5. a) Demonstrate any application (LED blinking) with Raspberry Pi? [6M]
- b) Explain different cases and extension board (Beagle Bone Black) in prototyping with Raspberry Pi. [6M]
6. a) Explain cloud storage models and communication API's. [6M]
- b) Explain about Xively Cloud for IoT. [6M]
7. Design smart city applications in IOT. [12M]



Narasaraopeta Engineering College (Autonomous)

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

Subject Code: R16CE3201

III B.Tech II Semester Supple Examinations, October-2023

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.

IS Codes:

1) IS:800 – 2007 2) IS: 875(Part-3) 3) Steel Tables.

These codes and steel tables are permitted to use in the examinations.

PART-A

1. (a)What is shape factor
- (b)Write the difference between deflection and deformation
- (c) Define Slenderness ratio
- (d)Write the types of columns with end conditions
- (e)Mention the types of foundation
- (f)Write the purpose of Impact factors

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

PART-B

4 X 12 = 48

2. An ISLC 300 @ 331 N/m is used to transmit a force of 500 kN. The channel section is connected to a gusset plate of 8 mm thick. Design a fillet weld if the overlap is limited to 350 mm.
3. Explain the difference in performance of laterally unrestrained beams and restrained beams with neat diagrams. Explain design procedure.
4. A beam of span 8m carries a U D L of 20 Kn/m over the whole length. Design the beam assuming that the compression flange is laterally restrained throughout the length. Take $f_y=250\text{N/mm}^2$.
5. Design a column with single lacing system to carry a factored axial load of 1500 KN. The effective height of the column is 4.2 m. Use two channels placed toe to toe.
6. Design a suitable slab base for a section ISHB 400 @ 822 N/m. Supporting an axial load 500 KN. The base plate is to rest on a concrete pedestal of M20 grade concrete.
7. A reverted plate girder is simply supported over an effective span of 16m. It carries a UDL of 80KN/m in addition to this self-weight. And two point loads of 400KN each at 4m from their supports. Design the web and flanges.



Subject Code: R16ME3201

III B.Tech II Semester Supple Examinations, October-2023

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

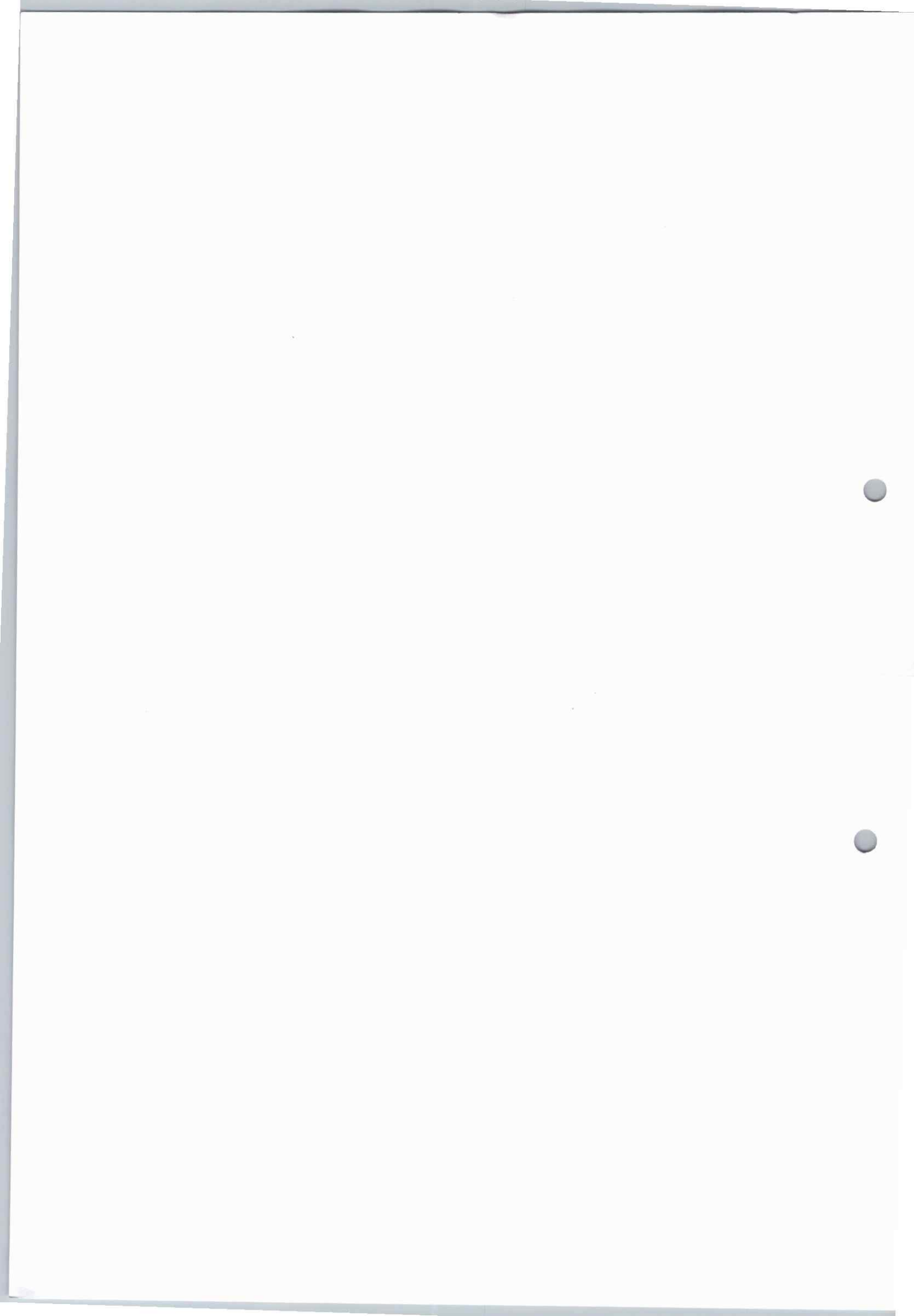
1. (a) List the factors which affect the accuracy of the measuring system.
- (b) What are the advantages of vernier calliper?
- (c) What are the uses of autocollimators?
- (d) Difference between Accuracy and Precision.
- (e) How are transducers specified?
- (f) What is thermistor dissipation factor?

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

PART-B

4 X 12 = 48

2. (a) Explain in detail the different types of fits with neat sketches.
- (b) Differentiate between unilateral and bilateral tolerance systems.
3. (a) With a neat sketch explain the constructional features and working of Differential Screw micrometre.
- (b) Construct a bevel protractor and explain how the angles measured by using it.
4. (a) Explain the Taylor's principles, and also design of GO and NO GO gauges with neat sketches.
- (b) With a neat sketch discuss about the working principle of Tools maker's microscope and mention its uses.
5. (a) What are the Static and dynamic characteristics of an instrument? Discuss.
- (b) Explain about the various types of errors in measurements.
6. (a) Explain the working principle of Piezoelectric transducer with neat sketch.
- (b) What are the factors to be considered while selecting a transducer?
7. (a) Discuss about the characteristics and applications of thermistors.
- (b) What is a strain gauge? Discuss about the Wheatstone bridge.





Subject Code: R16ME3202

III B.Tech II Semester Supple Examinations, October-2023

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) What is the significance of 'Bearing characteristic number' as applied to journal bearings.
- (b) List the various stresses induced in the connecting rod.
- (c) State the function of Piston rings and Piston pin for an internal combustion engine piston.
- (d) What are the assumptions made in derivation of stresses in a curved bar?
- (e) What are the advantages and disadvantages of V-belt drive over flat belt drive?
- (f) Differentiate between differential screw and compound screw.

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

PART-B

4 X 12 = 48

2. a) Define the following terms as applied to rolling contact bearings:

(i) Basic static load rating (ii) Dynamic equivalent load.

[4M+8M]

b). A rolling contact bearing is subjected to the following work cycle : (a) Radial load of 6000 N at 150 r.p.m. for 25% of the time; (b) Radial load of 7500 N at 600 r.p.m. for 20% of the time; and (c) Radial load of 2000 N at 300 r.p.m. for 55% of the time. The inner ring rotates and loads are steady. Select a bearing for an expected average life of 2500 hours.

3. a) What are the methods and materials used in the manufacture of crankshafts. [3M+9M]

b) Design a side crankshaft for a 500 mm × 600 mm gas engine. The weight of the flywheel is 80 kN and the explosion pressure is 2.5 N/mm². The gas pressure at maximum torque is 0.9 N/mm² when the crank angle. is 30°. The connecting rod is 4.5 times the crank radius. Any other data required for the design may be assumed.

4. Design a cast iron trunk type piston for a single acting four stroke engine developing 75 kW per cylinder when running at 600 r.p.m. The other available data is as follows: Maximum gas pressure = 4.8 N/mm²; Indicated mean effective pressure = 0.65 N/mm²; Mechanical efficiency = 95%; Radius of crank = 110 mm; Fuel consumption = 0.3 kg/BP/hr; Calorific value of fuel (higher) = 44 × 10³ kJ/kg; Difference of temperatures at the centre and edges of the piston head = 200°C; Allowable stress for the material of the piston = 33.5 MPa; Allowable stress for the material of the piston rings and gudgeon pin = 80 MPa; Allowable bearing pressure on the piston barrel = 0.4 N/mm² and allowable bearing pressure on the gudgeon pin = 17 N/mm².

5. Determine (i) location of neutral axis, (ii) maximum and minimum stresses when a curved beam of trapezoidal section of bottom width 30 mm, top width 20 mm and height 40 mm is subjected to pure bending moment of + 600 Nm. The bottom width is towards the centre of curvature. The radius of curvature is 50 mm and beam is curved in a plane parallel to depth. Also plot the variation of stresses across the section.

6. a) Write the design procedure for a chain drive.
b) Derive the relation for the ratio of driving tensions of a V-belt.

7. a) Explain the following terms used in helical gears : (i) Helix angle; and (ii) axial pitch. [4M]
b) A pair of helical gears are to transmit 15 kW. The teeth are 20° stub in diametral plane and have a helix angle of 45° . The pinion runs at 10 000 r.p.m. and has 80 mm pitch diameter. The gear has 320 mm pitch diameter. If the gears are made of cast steel having allowable static strength of 100 MPa; determine a suitable module and face width from static strength considerations and check the gears for wear, given $\sigma_{es} = 618$ MPa. [8M]



Subject Code: R16ME3203

III B.Tech II Semester Supple Examinations, October-2023

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) Define heat transfer.
- (b) Define Biot and Fourier Numbers.
- (c) List out the importance of Dimensional analysis.
- (d) List out the applications of heat exchangers.
- (e) Differentiate boiling with condensation
- (f) State Kirchhoff laws of radiation

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

PART-B

4 X 12 = 48

2. (a) Derive the 3-D conduction equation in cartesian coordinates [6M]
(b) A furnace wall is made of 20 cm fire brick, 25 cm common brick, 8 cm of magnesia and 6 mm of steel plate on the outside. The inside and the outside surface temperatures are 1000 °C and 120 °C respectively. Calculate the temperature between layers and rate of heat transfer. Assume the thermal conductivities of fire brick, common brick, Magnesia and steel are 1.3 W/m-K, 0.78 W/m-K, 0.09 W/m-K and 75 W/m-K respectively. [6M]
3. (a) Derive an expression for temperature distribution and heat loss from a cylindrical rod extending out of a heat source. Assume the end of the rod is perfectly insulated. [6M]

b) A long steel cylinder 16 cm in diameter and initially at 40°C is placed into a furnace at 800°C where the heat transfer coefficient, $h=145 \text{ W/m}^2\cdot\text{K}$. Calculate the time required for the axis temperature to reach 850°C. Calculate also,
(i) The corresponding temperature at a radius of 4.5 cm at that time.
(ii) The heat energy absorbed by the cylinder during this period, given that the thermal diffusivity, $\alpha = 6.15 \times 10^{-6} \text{ m}^2/\text{s}$ and the thermal conductivity, $k=28 \text{ W/m}$. [6M]
4. (a) Explain in brief about dimensional analysis using Buckingham Pi theorem [6M]
b) Show by dimensional analysis that data for free convection may be correlated by an equation of the form $Nu=f(Gr, Pr)$ [6M]

5. (a) What is the criterion for transition from laminar to turbulent boundary layer in free convection on a vertical flat plate? Explain [6M]
(b) Explain velocity and temperature profile for a flat plate and vertical plate in forced convection [6M]
6. (a) Explain different condensation process? [6M]
(b) Explain the regimes of pool boiling [6M]
7. (a) Two large parallel plates having emissivity of 0.5 and 0.6 are maintained at 1000 K and 500 K respectively. A radiation shield having an emissivity of 0.03 on both sides is placed between the plates. Calculate: [6M]
(i) Heat transfer per unit area without shield.
(ii) Find out the temperature of the shield and heat transfer per unit area with shield
- (b) Assuming the sun to be a black body having a surface temperature of 5000 K. Calculate: [6M]
(i) the total emissive power
(ii) the wave length at which the maximum spectral intensity occurs,
(iii) the maximum value of E_b and
(iv) the total amount of radiant energy emitted by the sun per unit time if its diameter can be assumed to be 1.29×10^9 m



Subject Code: R16ME3204

III B.Tech II Semester Supple Examinations, October-2023

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) Why cooling system is essential in a automobile?
- (b) What are the factors affecting on carburetion?
- (c) What are the functions of a clutch?
- (d) What are the advantages of Hydraulic breaking system over other breaking systems?
- (e) What is the role of air bags?
- (f) Define the term pollutant give some suitable examples.

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

PART-B

4 X 12 = 48

2. (a) Explain the relative merits and demerits of mechanical type Oil pump. [6M]
- (b) Distinguish Water cooling and air cooling. [6M]
3. (a) Explain the construction and working of a Magneto ignition system with the help of suitable sketch. [8M]
- (b) Write short notes on spark plug.
4. (a) Explain the construction and working of a single plate clutch with the help of suitable sketch. [8M]
- (b) Write down the merits and demerits of Sliding mesh type gear box over other types. [4M]
5. (a) Explain Principle of steering. [4M]
- (b) What is the need of a braking system? Explain the Hydraulic braking system? [8M]
6. (a) What is the role of Battery in automobiles. [4M]
- (b) Write down the relative advantages, disadvantages and limitations of Hybrid Electric Vehicles [8M]
7. (a) What are the benefits of alternative fuels for emission control. [4M]
- (b) Write down the relative advantages, disadvantages, applications and limitations of Carbon fibre composites. [8M]



Subject Code: R16EC3201

III B.Tech II Semester Supple Examinations, October-2023

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) Define Moore's law
- (b) Write down the equations for I_{ds} of an n-channel enhancement MOSFET operating in Non-saturated region and saturated region.
- (c) Draw the stick diagram for CMOS Inverter.
- (d) What is the need of scaling in MOS circuits?
- (e) Explain the concept of VLSI Design issues
- (f) Explain synthesis process

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

PART-B

4 X 12 = 48

2. (a) Explain in detail the p-well process for CMOS fabrication indicating the masks used
- (b) Compare the relative merits of three different forms of pull-up for an inverter circuit. What is the best choice for realization in nMOS and CMOS technology?
3. (a) Derive the relation of *Pull-up to Pull-down Ratio* for NMOS inverter driven by another NMOS inverter
- (b) Draw the circuit diagram of Bi-CMOS Inverter and explain its operation
4. (a) What are the λ -based design rules? Give them for each layer
- (b) Design a stick diagram for nMOS logic $Y = (A+B+C)'$
5. (a) Explain the issues involved in driving large capacitor loads in VLSI circuit regions.
- (b) What is inverter delay? How delay is calculated for multiple stages? Explain
6. (a) Give the steps in FPGA design flow with flow diagram and briefly discuss about each step
- (b) Explain about the principle and operation of FPGAs. What are its applications?
7. (a) Briefly discuss about the different techniques for reduction of switching capacitance.
- (b) List out the various FPGA families. Explain how they are different from each other?



Subject Code: R16EC3202

III B.Tech II Semester Supple Examinations, October-2023

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) A rectangular waveguide operating at 20GHz, has a width of 22.86 mm and a height of 10.16mm. Find the guided wavelength of the dominant mode.
- (b) Differentiate Isolator and Gyrator.
- (c) List out the methods to measure VSWR.
- (d) Which dopants are used to change the refractive index of glass fibers? Explain.
- (e) Justify how quaternary type LED materials overcome the limitations of ternary materials.
- (f) Calculate the long wavelength cut off of a photo diode constructed of GaAs, which has a band gap energy of 1.43 eV at 300K.

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

PART-B

4 X 12 = 48

2. (a) Derive all the field components of a rectangular waveguide when TM modes are propagating in it. [8M]
- (b) A rectangular waveguide has a width $a = 12.95$ mm and height $b = 6.48$ mm. Calculate the cut-off wavelength of the first four modes. [4M]
3. (a) Differentiate Resistive Card and Rotary Vane type attenuators.
- (b) A typical two-cavity klystron amplifier has the following parameters: $V_0 = 1.2$ kV, $R_0 = 48$ k Ω , $I_0 = 25$ mA, $f = 3$ GHz, gap spacing = 1mm, spacing between the two cavities = 4.5cm and $R_{sh} = 20$ k Ω . Find the
 - i) input gap voltage to give maximum voltage V_2 ,
 - ii) Voltage Gain, neglecting beam loading in the output cavity.
4. (a) Analyse the operating modes of a Gunn diode.
- (b) Illustrate the microwave power measurement using Bolometer Method.
5. (a) Compare meridional light rays and skew rays. Also derive the expression for skew ray acceptance angle.
- (b) Consider a fiber with 25 μ m core radius, a core index 1.48 and relative refractive index difference 0.01. Then determine
 - i) the maximum number of modes propagate in the fiber at $\lambda = 1320$ nm.
 - ii) The percentage of optical power flows in cladding.

6. (a) Explain in detail about Edge emitting LED.
- (b) A GaAs injection layer has an optical cavity of length $400\mu\text{m}$ and width $100\mu\text{m}$. At normal operating temperature, the gain factor is $40 \times 10^{-3} \text{ A/cm}^3$ and the loss coefficient is 15. Determine the threshold current density and hence the threshold current for the device. It may be assumed that the cleaved mirrors are uncoated and that the current is restricted to the optical cavity. The refractive index of GaAs may be taken as 3.0.
7. (a) Explain the characteristics of photo detectors. Also derive the relation between Responsivity and Quantum Efficiency of a pin photo diode.
- (b) Analyse the effect of temperature on the avalanche gain of APD.



Subject Code: R16EC3203

III B.Tech II Semester Supple Examinations, October-2023

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) Discriminate the linearity and nonlinearity of the system?
- (b) Write the Transform kernel equation of DFT?
- (c) What is the ROC of Z-transform? How this transform is differed from S-Transform?
- (d) Explain importance of FIR filter in digital filter realization?
- (e) Draw the filter characteristics of chebyshev and butterwoth filter?
- (f) List out the types of windowing techniques?

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

PART-B

4 X 12 = 48

2. (a) Define the following terms as referred to discrete time system:

- i. Stability
- ii. Causality

[4M]

- (b) Determine the Fourier series coefficients for the following periodic discrete time signals.

$$x[n] = \cos\left(\frac{2\pi n}{3}\right) + \sin\left(\frac{2\pi n}{7}\right)$$

[8M]

3. (a) Perform the Linear Convolution of the following Sequence

$$x(n) = \{1,1,2,1\}$$

$$h(n) = \{1,2,3,4\} \text{ using DFT Method.}$$

[6M]

- (b) Find DFT of sequence using DIT – FFT, the sequence is $x(n) = \{1,1,1,1,1,1,1,1\}$

[6M]

4. (a) Obtain direct form I for the system described by

$$y(n) = -0.1 y(n-1) + 0.72 y(n-2) + 0.7 x(n) - 0.252 x(n-2)$$

[8M]

- (b) Find the Z-Transform and ROC of $x(n) = (2)^n u(-n - 3)$

[4M]

5. (a) Explain the process of Conversion from direct form to Lattice structure using an example

[8M]

- (b) List out the various types of FIR Realization

[4M]

6. (a) Compare Butterworth and Chebyshev Filters.

[4M]

- (b) Design an Analog Butterworth filter that has a -2dB Pass band attenuation at a frequency of 20 rad/sec and atleast -10dB stop band attenuation at 30 rad/sec

[8M]

7. (a) Design a linear phase FIR low pass filter using rectangular window by taking 7 samples of window sequence and with a cutoff frequency, $\omega_c = 0.2\pi$ rad/samples.

[12M]

Subject Code: R16EC3204

III B.Tech II Semester Supple Examinations, October-2023

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

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

1.	(a)	What is the function of manipulation element in a measurement system?	2M
	(b)	Mention some advantages of electrical transducers.	2M
	(c)	Give the application and limitations of Wheat stone bridge.	2M
	(d)	What is the sweeper in oscilloscope?	2M
	(e)	Define Humidity and give a classification.	2M
	(f)	Draw the circuit diagram of delay line circuit.	2M

PART-B

4 X 12 = 48

2.	(a)	How do we determine the performance characteristics (static & dynamic) of an instrument?	6M
	(b)	Describe in detail the different types of dynamic errors in a measurement system.	6M
3.	(a)	What is Piezo-electric effect? Explain the operation of Piezo-electric transducer.	6M
	(b)	A capacitive Transducer has a plate separation of 0.01mm. It's capacitance under static condition is 10pF.If the change in capacitance as displacement Transducer is accurately measured to be +1pF, Evaluate the displacement.	6M
4.	(a)	Describe the construction and working of PMMC instrument. Derive the equation for deflection if the instruments are spring controlled.	6M
	(b)	How the unknown frequency is measured using Wein's bridge method?	6M
5.	(a)	Explain the operation of Harmonic Distortion Analyzer.	6M
	(b)	List out different AC voltmeters and explain the working of any one voltmeter in detail.	6M
6	(a)	What is distortion in an audio amplifier, and how can it be measured?	
	(b)	What is a data acquisition system, and how is it used in a computer-controlled test system?	6M
7.	(a)	Draw the circuit diagram of Dual Trace oscilloscope and explain its operation in detail.	6M
	(b)	Explain the principle and working of a storage oscilloscope.	6M



Subject Code: R16CS3201

III B.Tech II Semester Supple Examinations, October-2023

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

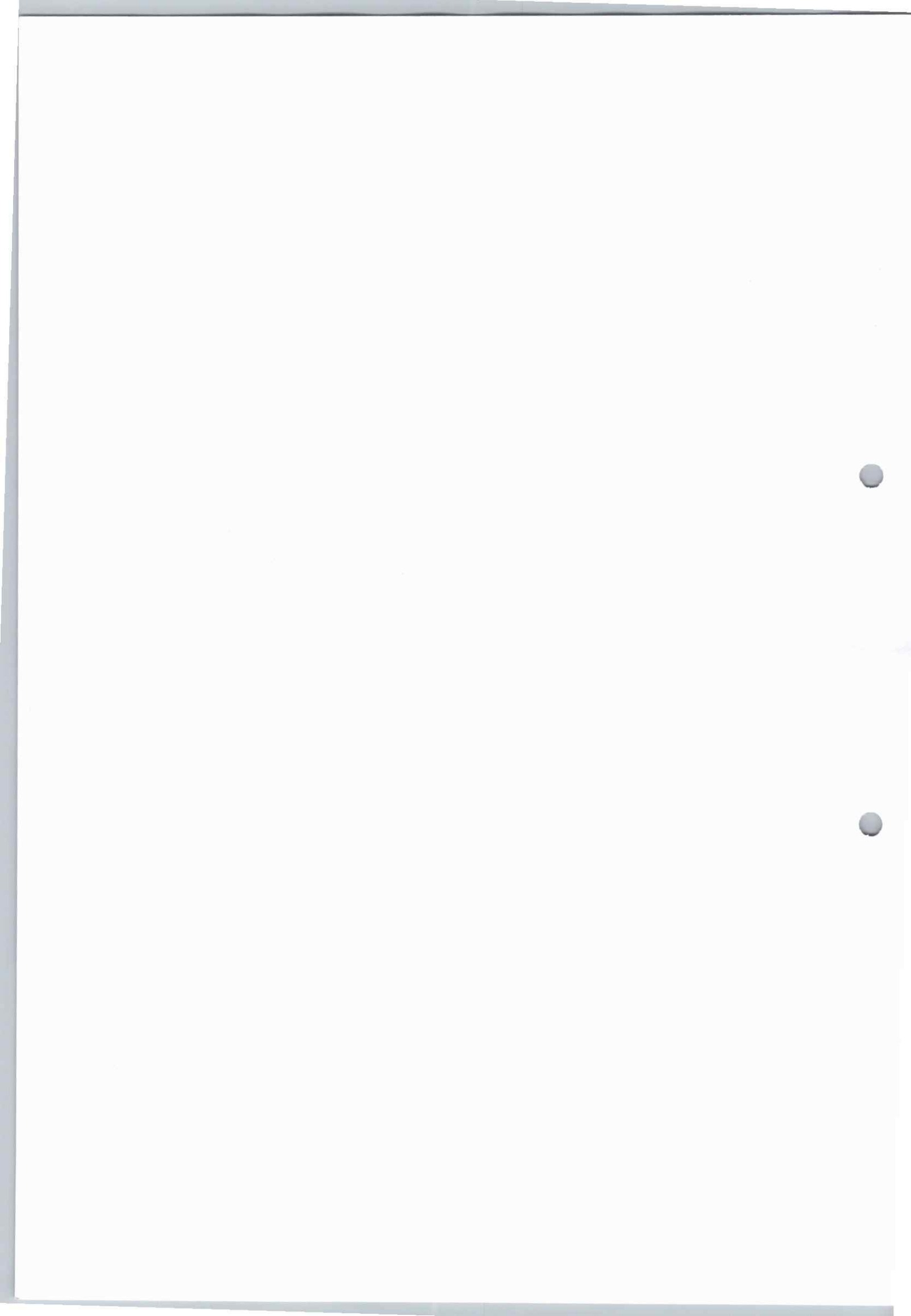
1. (a) What is meant by Fabrication
- (b) What are the weaknesses of DES?
- (c) Solve the congruence $x^2 \equiv 7 \pmod{13}$
- (d) What is meant by one-way property in hash function?
- (e) What is e-mail security?
- (f) What is the purpose of alert protocol?

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

PART-B

4 X 12 = 48

2. (a) Explain the various active attacks? What security mechanisms are suggested to counter attack active attacks?
- (b) What is SQL Injection? Illustrate how is it performed with an example
3. (a) What are the various block cipher design principles? Explain how different cryptographic algorithms use Feistel Cipher Structure?
4. (a) Let $q=353$ and $\alpha=3$. $X_a=97$, $X_b=233$. Use Diffie Hellman Key exchange algorithm to find Y_a , Y_b and Secret key K
- (b) What are the attacks that are possible on RSA?
5. (a) Briefly explain the different message authentication functions with neat diagram
6. (a) Explain the PGP services.
- (b) What are the content types provided by S/MIME? Explain
7. (a) Explain the firewall characteristics
- (b) Explain Secure Electronic transaction with neat diagram



Subject Code: R16CS3202

III B.Tech II Semester Supple Examinations, October-2023
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) Define data warehouse.
- (b) List out Proximity Measures.
- (c) Compare ROLAP vs. MOLAP vs. HOLAP.
- (d) What is noise?
- (e) State Apriori principle.
- (f) What is Cluster Analysis?

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

PART-B

4 X 12 = 48

2. (a) Explain different types of data and datasets.
- (b) Summarize data mining tasks with examples.

3. (a) Illustrate Similarity and Dissimilarity between Simple Attributes.
- (b) Explain in detail about Measures of Location and measure of spread.

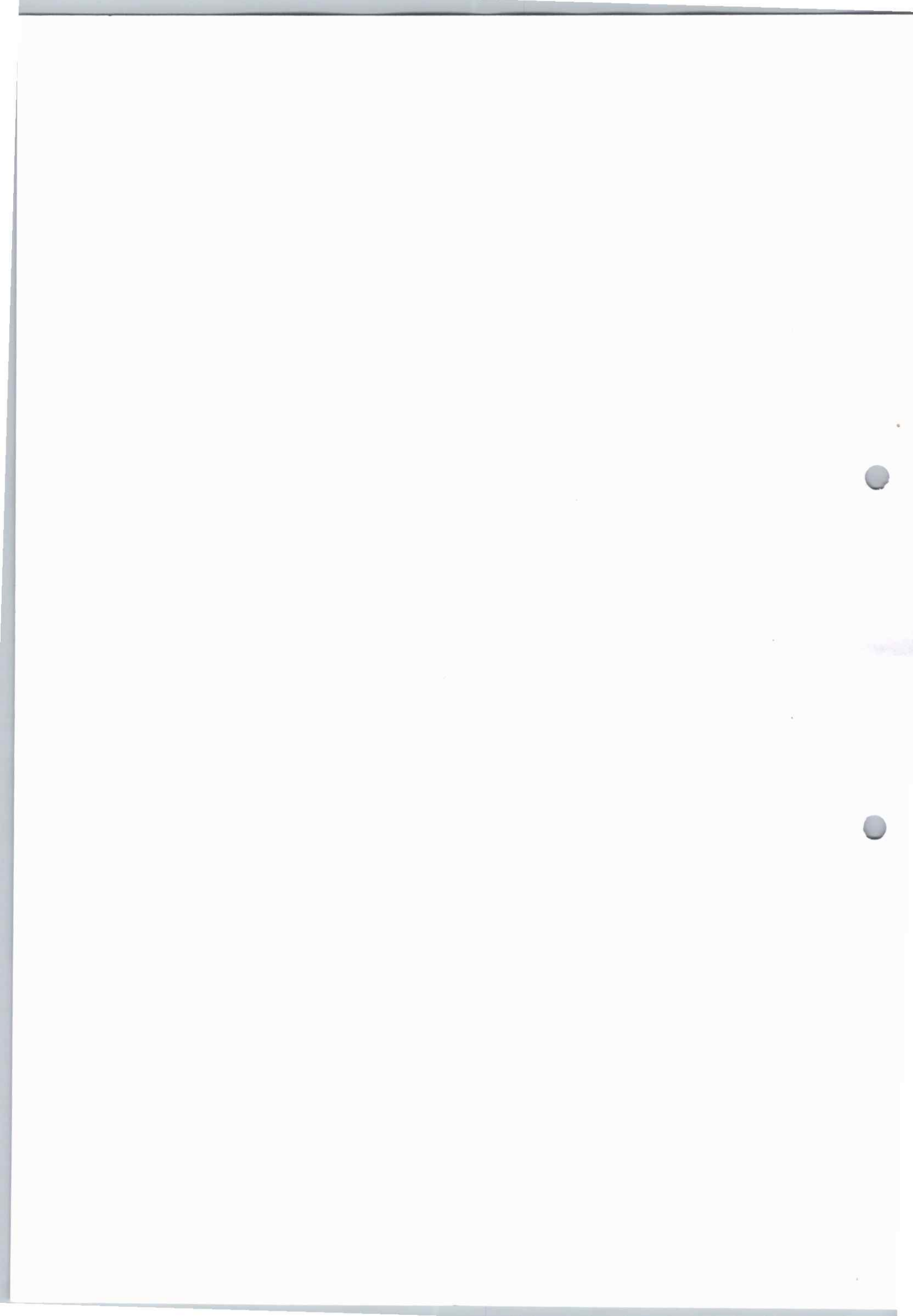
4. (a) Illustrate OLAP operations with examples.
- (b) Draw and explain the three-tier data warehouse architecture

5. (a) How to Build a Decision Tree? Explain the methods for Expressing Attribute Test Conditions.
- (b) Explain Naïve Bayesian classifier.

6. (a) Apply FP-Growth algorithm to the following transactional data to find frequent item sets. List all frequent item sets with their support count.

TID	List of Item IDs
1	I1,i3,i5,i7
2	I2,i4,i6,i8
3	I1,i3,i5,i7
4	I9,i7,i5,i1
5	I2,i4,i6,i7
6	I1,i2,i3,i4
7	I3,i4,i5,i6
8	I7,i8,i6,i1
9	I8,i5,i3,i2
10	I1,i3,i4,i6

7. (a) What is the main objective of clustering? Give the categorization of clustering approaches. Briefly discuss them.
- (b) Illustrate the process of DBSCAN algorithm with its strengths and weakness.





Subject Code: R16CS3203

III B.Tech II Semester Supple Examinations, October-2023

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) List the security issues raise in web servers and servlets.
- (b) List the action elements?
- (c) Mention important classes/interfaces in java.sql package
- (d) List various JDBC driver types.
- (e) List any five built in functions in PHP.
- (f) Differentiate between MySQL and Oracle.

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

PART-B

4 X 12 = 48

2. (a) Elaborate Lifecycle of a Servlet with a neat sketch.
- (b) Describe the connection process between HttpServlet Request & HttpServlet Response interfaces by considering any case study.
3. (a) Discuss the significance of MVC architecture in JSP application design.
- (b) List out the problems with servlet. Also discuss the Anatomy of a JSP Page.
4. (a) How does restrict page errors display in the JSP page and handling of run-time exceptions? Explain with examples.
- (b) Illustrate the process of passing control from one JSP page to another page.
5. (a) How JDBC Works? Illustrate JDBC Architecture with a neat sketch.
- (b) Create and explain the process of accessing database from JSP page
6. Design a sample PHP script to define and use the variables, constants, data types and operators in a PHP program.
7. Write a PHP script to retrieve the data from a table book (bookid, bookname, author) present in MySQL database.



Subject Code: R16CS3207

III B.Tech II Semester Supple Examinations, October-2023

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) Define wireless sensor network
- (b) What are the programming languages used in mobile computing architecture
- (c) Write the limitations of aloha
- (d) Write the purpose of DHCP
- (e) Define slow start
- (f) Write the application of MANET

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

PART-B

4 X 12 = 48

2. (a) Explain the differences wired networks and wireless networks
- (b) Explain about cellular networks
3. Explain the GSM architecture with neat sketch
4. (a) Explain the solution of hidden and exposed terminal problem
- (b) Compare TDMA, SDMA, FDMA and CDMA
5. Explain the different encapsulation mechanisms
6. Explain the following
 - (a) Mobile TCP
 - (b) Indirect TCP
7. Explain the DSR and AODV algorithms with neat sketch



Subject Code: R16CS3208

III B.Tech II Semester Supple Examinations, October-2023
.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). Write short notes on Common Language Runtime (CLR).
- b) What is sealed class? Why it is used?
- c) List out the features and advantages of generics in C#.
- d) What is the use of skin file in asp.net?
- e) What is DataReader object?
- f) What are the advantages of using Ajax controls in applications?

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

PART-B

4X12=48M

- 2) a) Explain features of Dot Net and describe architecture of Dot Net framework.
- b) What is ADO.NET? Write about its components.
- 3) a) What are the control structures in C#? Explain with examples.
- b) Write about inheritance and polymorphism in C#.
- 4) a) Write short notes on the following i) Interfaces ii) Namespaces iii) Assemblers.
- b) What is exception? How it is handled in C#?
- 5) a) Explain standard controls and data controls in ASP.NET.
- b) List and explain the validation controls in ASP.NET.
- 6) Demonstrate with an example how to retrieve data from a database by using ADO.NET technologies.
- 7) What are the different ways Lambda expressions can be used? List out its uses.



Subject Code: R16EC3209

III B.Tech II Semester Supple Examinations, October-2023

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 difference between digital image and binary image?
- (b) Define gray level resolution?
- (c) What is mean by edge in digital image?
- (d) What is mean by optimal thresholding?
- (e) What do you mean by erosion
- (f) Explain inverse filtering?

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

PART-B

4 X 12 = 48

2. (a) Explain the components of an image processing system?
- (b) Obtain the slant transformation matrix for $N=8$?
3. (a) Explain the Piecewise Linear transformations in detail?
- (b) Compare and contrast between frequency domain and spatial Filters
4. (a) What are the different ways to Estimation the degradation function? Explain.
- (b) Explain the different types of image restoration filtering?
5. (a) Explain HIS colour model and CMYK models in image processing?
- (b) Explain opening and closing operations with suitable diagram?
6. (a) With the help of neat block diagram explain transform coding system?
- (b) Explain the Sub-band coding (SBC) process with the help of diagram ?
7. (a) Explain the following morphological algorithms
 - i) Boundary extraction
 - ii) Hole filling
- (b) What is meant by edge linking? Explain edge linking using local processing



Subject Code: R16CC32OE05

III B.Tech II Semester Supple Examinations, October-2023
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

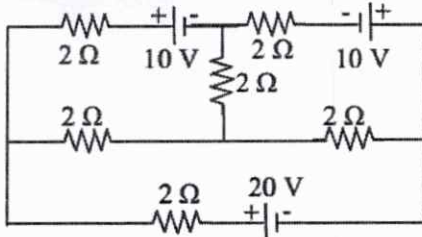
- (a) Classify Network elements and give their volt-ampere relations.
(b) What is the function of Commutator in the D.C machines.
(c) Write the principle of operation of transformer?
(d) What is the difference between slip-ring and squirrel cage induction motors?
(e) Write the differences between forward biased and reverse biased PN diode?
(f) What are the terminals of transistor? Explain.

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

PART-B

4 X 12 = 48

- (a) Derive necessary formulae for star-delta and delta-star transformations for a resistive network. 6M
(b) Determine the branch currents in the network shown in figure . 6M



- (a) Classify different types of DC machines and give their applications. 6M
(b) Derive the torque equation for a DC motor. 6M
- (a) Derive the emf equation of a single phase transformer . 6M
(b) Explain OC and SC tests of a transformer . 6M
- (a) Explain the construction of an alternator with the help of a neat sketch. 6M
(b) Describe the Torque- Slip characteristics of 3-phase induction motor. 6M
- (a) What are the different types of rectifiers with neat sketches? 6M
(b) Draw the circuit diagram of an integrator with the help of operational amplifiers and explain the operation. 6M
- (a) Explain how transistor works as an amplifier. 6M
(b) Draw the physical structure of a NPN transistor and explain the operation. 6M

