

Subject Code: R16CC32OE05

III B.Tech II Semester Regular & Supple Examinations, November-2020
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) List the characteristics of (i) parallel circuits and (ii) series circuits.
 - (b) Mention the speed control methods of DC shunt motor
 - (c) What are the losses in a transformer and mention from which tests they are calculated?
 - (d) Define (i) Synchronous Speed (ii) Slip (iii) Slip Speed (iv) Rotor Frequency
 - (e) What is a P-N junction diode and draw its characteristics
 - (f) What are the terminals of a transistor and mention different configurations of the transistor
- [2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Write the mesh current equations in the circuit shown in fig.1 below and determine the currents.

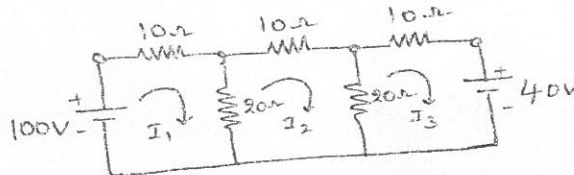


Fig.1

- (b) State and Explain Ohm's Law and mention the limitations of the Ohm's Law
3. (a) Derive the torque equation of a DC motor.
 - (b) A 6-pole DC Motor takes 60A armature current, the armature has wave connected 580 conductors. The flux per pole is 10mWb. Calculate the torque developed by the armature of the DC motor.
 4. (a) Derive the EMF equation of a transformer
 - (b) A 100KV, 400/200V, 1-phase transformer is having 50 turns on Primary winding. What is number of turns in secondary winding?
 5. Derive the torque equation of a three phase induction motor and also draw its torque slip characteristics
 6. (a) Explain working of P-N junction diode in forward and reverse bias condition and draw their V-I characteristics
 - (b) Explain half wave rectifiers and sketch the input and output wave forms
 7. Explain the working of NPN and PNP transistors with the help of relevant diagrams.



Subject Code: R16CC32OE10

III B.Tech II Semester Regular & Supple Examinations, November-2020

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) List the HTML4 Text Formatted Tags.
- (b) What is CSS Box Model?
- (c) Explain Java Script objects.
- (d) What jQuery can do?
- (e) What is Enumerating Arrays?
- (f) What are different types of Web Services?

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

PART-B

4 X 12 = 48

2. (a) Explain the frames and table tags of HTML with suitable examples.
- (b) Explain HTML Forms and Form objects with examples.
3. Explain in detail styling text, color, links and menus using Cascading Style Sheets.
4. (a) Explain about regular expressions in java script.
- (b) Explain Pattern matching using regular expressions.
5. What is JQuery Events? Explain various Event wrapper methods. Explain how persistent Event handlers can be attached?
6. (a) Develop the jQuery program to make the list sortable.
- (b) Develop the jQuery program to implement the Date picker.
7. (a) What is XML AJAX? Explain AJAX XMLHttpRequest.
- (b) Explain with an example how to send AJAX request to a Server and get AJAX response from it.



Subject Code: R16CC32OE14

III B.Tech II Semester Regular & Supple Examinations, November-2020
WORK STUDY (OPEN ELECTIVE-II)
(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 work measurement.
- (b) What is therbligs?
- (c) Difference between method study and work measurement.
- (d) How is a job selected for time study?
- (e) What is PMTS?
- (f) What do you understand by Maxi MOST.

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

PART-B

4 X 12 = 48

2. (a) How are industrial engineering and productivity related? Define the various types of productivity.
- (b) Write in brief scope and purpose of work study. Discuss various steps to carry out work study project.
3. (a) Write merits and demerits of travel charts over string diagrams.
- (b) Discuss principles of motion economy applicable to use of Human Body.
4. (a) State the objectives and applications of Method Study? Compare with time study.
- (b) What is operation process chart and flow process chart? Discuss about them.
5. In a time study for a job done by a worker whose rating is 90, the data recorded is as follows:
Observed time = 20 min., personal needs allowances = 4% of basic time, Fatigue allowance = 2.5 % of basic time, contingency work allowance = 2% of basic time, contingency delay allowance = 1% of basic time. Find (i) Basic time (ii) work content and (iii) standard time
6. (a) How will you estimate standard time by work sampling? Explain.
- (b) Discuss about different forms of PMTS.
7. (a) Discuss the importance of MOST Work Measurement Technique.
- (b) Enumerate the Parameters of Basic MOST General Move Sequence Model.



Subject Code: R16CC32OE18

III B.Tech II Semester Regular & Supple Examinations, November-2020

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) What is baffle? What is the need of baffle?
- (b) Define the concept of Hi-Fi and stereo?
- (c) List different types of scanning?
- (d) List out the merits and demerits of colour TV standards?
- (e) Write short notes on DTH TV?
- (f) What is the working principle of washing machine?

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

PART-B

4 X 12 = 48

2. (a) Explain the construction and working of Crystal Microphone?
- (b) Explain the constructional features and principle of operation of PMMC loudspeaker? [6+6]
3. (a) State the principle of optical disc recording?
- (b) Write the short notes on noise reduction in audio system? [6+6]
4. (a) Explain in detail about interlaced scanning?
- (b) Briefly explain about positive and negative modulation? [6+6]
5. (a) Write a short note on sound signal transmission in colour TV?
- (b) Briefly explain the phenomenon of colour mixing and luminance signal? [6+6]
6. (a) Draw the block diagram of CATV and explain each block in detail?
- (b) Explain in detail about video recording and reproduction using magnetic tape? [6+6]
7. (a) Briefly explain the working principle of Microwave oven?
- (b) Construct the block diagram of fax machine and explain its operation? [6+6]



Subject Code: R16CC32OE19

III B.Tech II Semester Regular & Supple Examinations, November-2020

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 vision of IoT?
- (b)Brief the application development in IoT?
- (c) Differentiate sensor and actuator?
- (d) Explain the role of Raspberry Pi in embedded systems?
- (e) What is cloud storage?
- (f) List out the few application areas of IoT?

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

PART-B

4 X 12 = 48

2. (a) What is Internet of Things (IoT). What are components required to design IoT Device? [6M]
- (b) Explain IoT Levels and Deployment Templates? [6M]
3. (a) Describe Functional View Specification & Operational View specification of IoT design Methodology? [6M]
- (b) Explain Purpose & Requirement Specifications of IoT? [6M]
4. (a) Explain Embedded Computing Basics in IoT design? [6M]
- (b) Explain language and debugging process with an Arduino for IoT devices? [6M]
5. (a) Explain difference between raspberry pi and beagle bone black board? [6M]
- (b) Describe programming language and debugging with Raspberry PI? [6M]
6. Explain Cloud Storage Models & Communication APIs? [12M]
7. Discuss about the following applications with IoT setup:
 - (a) Home Automation [6M]
 - (b) Agriculture Applications [6M]



Subject Code: R16CC32OE23

III B.Tech II Semester Regular & Supple Examinations, November 2020
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) Define disaster management.
- (b) What is bio-terrorism?
- (c) Distinguish between risk and vulnerability.
- (d) What are the various steps in disaster management of bridges?
- (e) What is disaster resilience?
- (f) What are the various issues influencing the disaster management?

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

PART-B

4 × 12 M = 48 M

2. (a) Explain in detail the disaster management cycle. (6 M)
- (b) Explain the post Tsunami hazard along the Indian coast. (6 M)
3. Explain the various man-made disasters and their management. (12 M)
4. (a) Explain the role of building codes and land use planning in disaster management. (6 M)
- (b) Explain the vulnerability profile of Andhra Pradesh. (6 M)
5. (a) Explain the importance of multimedia technology in disaster risk management. (6 M)
- (b) Explain the various earthquakes mitigation programmes. (6 M)
6. (a) Explain the role of public education in disaster risk reduction. (6 M)
- (b) Explain the various factors to be considered for community preparedness in disaster management. (6 M)
7. (a) Explain the impact of disaster on poverty and deprivation. (6 M)
- (b) Explain the role of various institutions in disaster management. (6 M)

Subject Code: R16CE3201

III B.Tech II Semester Regular & Supple Examinations, November-2020
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) Define the shape factor and what is the shape factor of a rectangular section?
- (b) Distinguish between laterally supported and laterally unsupported beam.
- (c) What are the factors influencing the design of compression members?
- (d) What is the necessity of built-up compression members?
- (e) How do you find the planar dimensions of a slab base?
- (f) What are the different types of loads considered in the design of gantry girder?

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

PART-B

4 X 12 = 48

2. Design the welded bracket connection shown in Fig.1.

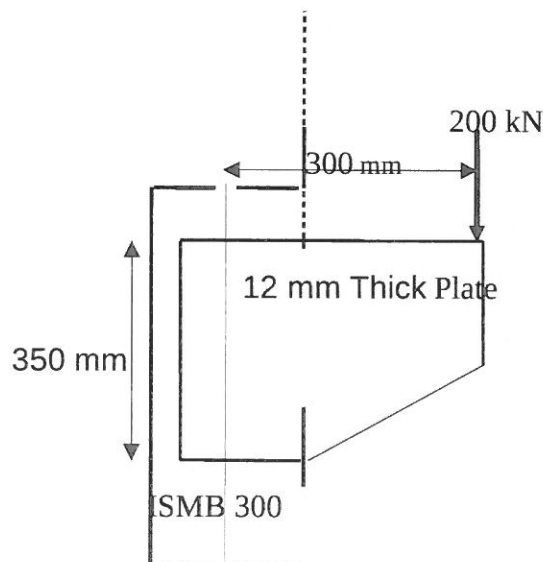


Fig.1.

3. Design a simply supported beam of span 4.5 m and subjected to a service load of 60 kN/m. Assume the beam is laterally supported. Also check for deflection.

4. Design the tubular purlins of a steel roof truss with design life of 50 years to be constructed in Vijayawada using the following data:

Terrain category	: 3
Size of the structure	: 12 m × 48 m
Roof covering	: G.I. sheeting
Spacing of roof trusses	: 4 m
Pitch of the roof truss	: 1/4
Permeability	: Medium
Height at eaves level	: 9 m
Topography	: Plain

5. Design a laced column subjected to an axial load of 1800 kN using two channels back to back. The length of the column is 9 m and is to be restrained against rotation and translation at both ends.

6. Design the gusset base of a column, section ISHB 400 @759 N/m, subjected to a factored axial load of 2000 kN. The column is to be supported on M 20 grade concrete pedestal.

7. Design a plate girder of span 32 m subjected to an imposed load of 40 kN/m using intermediate stiffeners. Draw the longitudinal and cross-sectional details of the plate girder. Adopt Steel of grade E250



Subject Code: R16CE3202

III B.Tech II Semester Regular & Supple Examinations, November-2020
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) Define per-capita demand.
- (b) Give any One method of leak detection in pipes.
- (c) What are the biological characteristics of water
- (d) On what factors does the dose of coagulants depend?
- (e) What are the advantages of chlorine as disinfectant?
- (f) List the various types of layout of distribution system

[2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) What are the various methods of population forecasts? Explain any two in detail
- (b) Water borne diseases and discuss the precautions to prevent them.
3. (a) What are the various types of joints used for the water mains? Sketch and explain any two types of joints.
- (b) Mention the differences between intermittent and continuous water supply system.
4. (a) Discuss about the following water quality parameters and the problems associated if they exceed the permissible limits
- (i) Hardness (ii) chlorides (iii) fluorides
5. (a) State the principles of working of a horizontal flow sedimentation tanks.
- (b) What should be the size of a rectangular sedimentation tank to treat 2.0 MLD with 3 hours detention and overflow rate less than 50,000 litres per day per sq.m. of the surface areas?
6. (a))Explain the ion exchange process of water softening
- (b) Explain about break point chlorination.
7. Enumerate and explain about the appurtenances required for the pipes of water distribution networks.



Subject Code: R16CE3203

III B.Tech-II Semester Regular & Supple Examinations, November-2020
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) What is the difference between sand and clay
- (b) State the different types of earth pressures
- (c) State the factors influencing the Slope stability
- (d) What is allowable bearing pressure?
- (e) Distinguish between friction pile and end bearing pile.
- (f) Why is less settlement allowed in sand than in clay?

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

PART-B

4 X 12 = 48

2. (a) Discuss the different methods of site exploration
- (b) Explain plate load test in detail
3. (a) State the assumptions in Rankine's theory. Derive an expression for Active and Passive pressure
- (b) A retaining wall 4 m high retains cohesion less backfill; the ground surface sloping at an angle of 10° (β) with the horizontal. The back of the wall is inclined to the vertical at a positive batter angle of 90° , $\gamma = 19 \text{ kN/m}^3$, $\phi = 30^\circ$ wall friction 120 . Determine the total active pressure by Coulomb's method.
4. (a) State the different types of retaining walls. Explain any one in detail
- (b) Describe the friction circle method
5. a) Explain the terzaghi's analysis for determining the safe bearing capacity of the soil with their assumptions
- b) Compute the safe bearing capacity of a continuous footing 1.6m wide, at a depth of 1.5m in a soil with $\gamma = 18 \text{ kN/m}^3$, $c = 18 \text{ kN/m}^3$, and $\phi = 25^\circ$. Terzaghi's factors are $N_c = 25$, $N_q = 12.5$ and $N_\gamma = 10$. What is the safe load per meter run if the factor of safety is 3?
6. (a) A square concrete pile (30cm side) 10 m long is driven into coarse sand having $\gamma = 18.5 \text{ KN/m}^3$ & $N = 20$. Determine the allowable load (F.S = 3.0)
- (b) Explain any two methods that are used to determining load carrying capacity of a pile
7. (a) What are different shapes of wells? Discuss the characteristics of each type
- (b) Discuss the sinking operation of wells



Subject Code: R16CE3204

III B.Tech II Semester Regular & Supple Examinations, November-2020
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

- (a) What is adzing of sleepers?
(b) Define grade compensation.
(c) Define the terms Turnout and crossings.
(d) What is meant by cross wind component?
(e) What is meant by minimum circling radius?
(f) Discuss the necessity of quay wall.

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

PART-B

4 X 12 = 48

- (a) Write a comparative note on different types of sleepers. (6M)
(b) Define creep in rails and explains different theories related to creep. (6M)
- (a) Explain the procedure to calculate negative super elevation. (5M)
(b) Calculate the super elevation and maximum permissible speed for a 2° broad gauge transitioned curve on a high speed route with a maximum sanctioned speed of 110 KMPH. The speed for calculating the equilibrium super elevation as decided by the chief engineer is 80 KMPH and the booked speed of goods train is 50KMPH. (7M)
- What are the objectives of signals? Explain about different signaling systems in railways (12M)
- (a) Explain the procedure of orienting the runway. (6M)
(b) The runway length required for landing at sea level in standard atmospheric conditions is 3000m. Runway length required for take-off at a level site at sea level in standard atmospheric conditions is 2500m. Aerodrome reference temperature is 25°C and that of the standard atmosphere at aerodrome elevation of 150m is 14.025°C. If the effective runway gradient is 0.5%, determine the runway length to be provided. (6M)
- (a) What data is collected for the design of sub surface drainage system for an airport? (6M+6M)
(b) Discuss the different types of failures in Airfield pavements and their maintenance techniques
- (a) What is the tidal data? Explain about tidal data analysis. (6M)
(b) Write a short note on maintenance of Ports and Harbors. (6M)



Subject Code: R16CE3207

III B.Tech II Semester Regular & Supple Examinations, November-2020

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 is meant by ground improvement?
 - (b) What is vertical sand drain?
 - (c) Define dewatering?
 - (d) What are the various methods of soil stabilization?
 - (e) How does a soil nail wall work?
 - (f) What are the different types of grouts?

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

PART-B

4 X 12 = 48

2.
 - (a) Explain the classification of ground improvement techniques
 - (b) Explain the factors to be considered for ground improvement
3.
 - (a) What is stone Colum? Explain the method of installing a stone Colum?
 - (b) Explain the objectives of densification in cohesion less soils.
4.
 - (a) Describe the deep well drainage system
 - (b) With a neat sketch explain the Vacuum dewatering systems
5.
 - (a) Enumerate in detail the different methods of mechanical stabilization
 - (b) What do you understand by bituminous stabilization?
6.
 - (a) List out the applications of Geo textiles based on separation and reinforcement functions.
 - (b) Explain the design principles of reinforced earth walls and the factors influencing their design.
7.
 - (a) Explain in detail about the various methods of grouting with neat sketches
 - (b) What is grout? Explain in detail the applications of grouting

IOT ✓

DIP ✓

work study ✓

G.T.E-II.

H.S.E

DBMS-EC



Subject Code: R16EE3201

III B.Tech II Semester Regular/Supple Examinations, November-2020
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) What are the advantages of per unit system?
- (b) When the generator bus is treated as load bus?
- (c) What are the applications of Z-bus matrix?
- (d) How do short circuits occur in a power system?
- (e) Define doubling effect and DC off-set current.
- (f) State equal area criterion.

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

PART-B

4 X 12 = 48

2. Form Ybus matrix of the test system shown in figure using singular transformation method. The impedance data is given in Table 1. Take (1) as reference. [12]

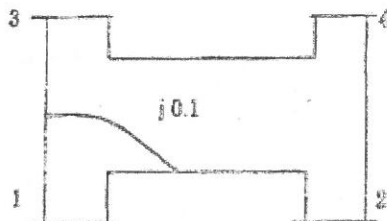


Table 1

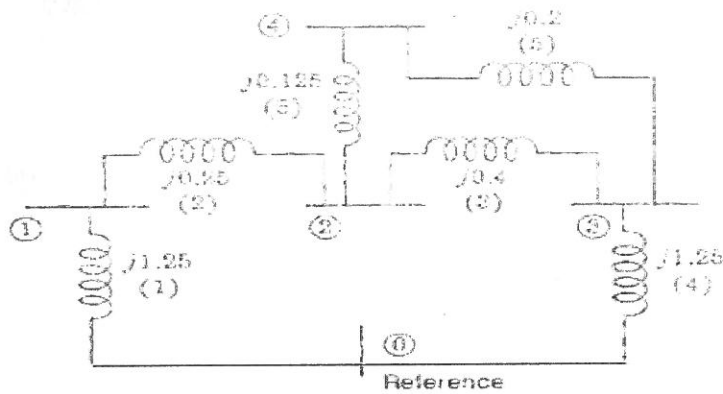
Element No	Self		Mutual	
	Bus code	Impedance	Bus code	Impedance
1	1-2	0.5	1-2	0.1
2	1-3	0.6		
3	3-4	0.4		
4	2-4	0.3		

3. The system data for a load flow problem are given in table. i) Compute Y bus. ii) Determine bus voltages at the end of first iteration by G-S method by taking $\alpha = 1.6$. [12]

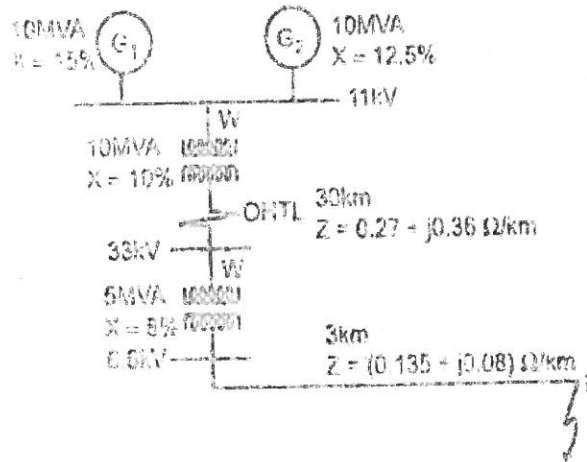
Line no	Bus code	Admittance in pu
1	1-2	$2-j8$
2	1-3	$1-j4$
3	2-3	$0.6-j2.6$

Bus code	Pd in p.u	Qd in p.u	V in p.u	Remarks
1	-----	-----	1.06	Slack
2	0.5	0.2	-----	PQ
3	0.4	0.3	-----	PQ

4. Find the bus impedance matrix using bus building algorithm for the given network. [12]



5. For the radial network shown, a 3 phase fault occurs at point F. Determine the fault current, short circuit MVA and the line voltage at 11 KV bus under faulted condition. [12]



6. (a) Write short notes on symmetrical components. [4]
 (b) Derive an expression for the fault current for a single line to ground fault as an unloaded generator and draw its equivalent circuit. [8]

7. (a) Define transient stability. [2]
 (b) Derive swing equation used for stability studies in power system. [10]



Subject Code: R16EE3202

III B.Tech II Semester Regular & Supple Examinations, November-2020

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 is load equalization?
- (b) Mark the four quadrant operations of the drive on speed-torque plane?
- (c) List the advantages of chopper control of dc motors over converter control of dc motors?
- (d) Draw the speed- torque characteristics of IM with variable voltage control?
- (e) Explain the principle of SER scheme?
- (f) List the differences between self and separate control of Synchronous motor?

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

PART-B

4 X 12 = 48

2. (a) Explain the principle of plugging with the help of speed-torque characteristics of separately excited motor and series motor?
- (b) A dc shunt motor has the armature resistance of 0.04Ω and the field winding resistance of 10Ω . Motor is coupled to an over hauling load with a torque of 400N-m . Following magnetization curve was measured at 600 rpm:

Field Current, A	2.5	5	7.5	10	12.5	15	17.5	20	22.5	25
Back emf, V	25	50	73.5	90	102.5	110	116	121	125	129
- Calculate the value of R_B when the motor is required to hold overhauling load at 1200rpm.
3. (a) Explain the operation of a separately excited dc motor using three phase fully controlled rectifier? Derive the relation between speed and torque and draw the corresponding characteristics?
- (b) What is a dual converter? Explain the principle of operation of a dual converter in circulating current mode. How the same is used for speed control of dc drive?
4. (a) Explain the operation of two quadrant chopper fed separately excited DC motor which gives forward motoring and forward braking operation and also draw current and voltage waveforms for continuous current operation? (8M)
- (b) A 220 V, 24 A, 1000 rpm separately excited dc motor having an armature resistance of 2Ω is controlled by a chopper. The chopping frequency is 500 Hz and the input voltage is 230 V. Calculate the duty ratio for a motor torque of 1.2 times rated torque at 500 rpm. (4M)
5. (a) Draw and explain the speed-torque curves with variable frequency control of IM for operation at constant (v/f) ratio?

(b) A 440V, 3 phase, 50 Hz 6 pole 945 RPM delta connected Induction Motor has the following parameter referred to the stator. $R_s = 2.0 \Omega$, $R_r = 2.0 \Omega$, $X_s = 3 \Omega$, $X_r = 4 \Omega$.
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 static rotor- resistance control. Mention the advantages and disadvantages of the above method of control

(b) A 3-phase, 400V, 50Hz, 4 pole, 1400rpm, star connected wound rotor induction motor has the following parameters referred to the stator $R_1 = 2 \Omega$, $R_2' = 3 \Omega$, $X_1 = X_2' = 3.5 \Omega$. The stator to rotor turns ratio is 2. The motor speed is controlled by static Scherbius drive. The inverter is directly connected to the source. Determine,

(i) The speed range of the drive when $\alpha_{\max} = 165^\circ$

(ii) The firing angle for 0.4 times the rated motor torque and speed of 1200 rpm.

7. Describe self-controlled and load-commutated inverter controlled synchronous motor drives in detail and compare them



Subject Code: R16EE3203

III B.Tech II Semester Regular & Supple Examinations, November-2020

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) Define abstract data type?
- (b) List any two sorting techniques?
- (c) Define a Stack?
- (d) Write any two advantages of linked list over arrays?
- (e) Define Binary Tree and give an example?
- (f) List any two representations of Graphs?

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

PART-B

4 X 12 = 48

2. (a) Write a recursive algorithm to find the GCD of the given two numbers? 6M
- (b) Explain the Operations on Data structures? 6M
3. (a) Write the Merge sort Algorithm?
- (b) List the advantages and limitations of binary search, linear search?
4. (a) Define a Queue? Explain the Queue operations? 6M
- (b) List any three applications of Queue? 3M
- (c) Explain the advantages of Circular Queues over Queue? 3M
5. (a) Define a single linked list? Explain the linked list operations? 8M
- (b) Explain the advantages of doubly linked list compared to single linked list? 4M
6. (a) Define Binary Search Tree? List the applications of Binary Search Tree? 6M
- (b) Construct the binary search tree for the following list of numbers
30, 10, 40, 20, 35, 70, 60, 15, 5, 22, 34, 79, 23, 39, 45, 43, 9
7. (a) Explain the Breadth- First Search Algorithm? 8M
- (b) Define directed graph? Explain the real time applications of directed graph? 4M



Subject Code: R16EE3204

III B.Tech II Semester Regular & Supple Examinations, November-2020
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) What is the significance of load factor?
(b) Differentiate the feeder and distributor in any two aspects.
(c) Explain why the voltage drop consideration is important in distribution systems?
(d) Explain the necessity for coordination of protective devices?
(e) Write the demerits of low power factor in the distribution system?
(f) What is a line drop compensator?

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

PART-B

4 X 12 = 48

2. (a) What is loss factor and how it is related to load factor also discuss its significance? 6M
(b) Explain the residential, industrial and commercial loads with their characteristics. 6M
3. (a) Discuss the design and operational aspects which affects the primary feeder voltage level. 4M
(b) How the ratings of distribution substation are decided and also differentiate the radial type and loop type primary feeders? 8M
4. (a) What are the power losses in distribution system? How is it estimated approximately? 6M
(b) In a three phase, 4-wire system, if $(5+j3) \Omega$, $(5+j2) \Omega$ and $(8+j6) \Omega$ are the loads connected and the supply voltage is 400V. Determine the line and phase currents as well as the current passing through neutral wire 6M
5. (a) Discuss in detail about the coordination among the Protective devices used in distribution system. 6M
(b) Discuss about the main objectives of distribution system protection. 6M
6. (a) Explain the practical procedure to determine the best capacitor location. 6M
(b) A synchronous motor having a power consumption of 40 KW is connected with a load of 150 KW, a lagging p.f of 0.8. If the combined load has a power factor of 0.9, what is the leading reactive KVA supplied by the motor and at what p.f is it working. 6M
7. (a) How an AVB can control voltage? With the aid of suitable diagram explain its function. 6M
(b) Discuss about the line drop compensation with the help of neat diagram. 6M



Subject Code: R16EE2206

II B.Tech II Semester Regular & Supple Examinations, November-2020
ANALOG ELECTRONICS

(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

- (a) What are the advantages and disadvantages of negative feedback in amplifiers?
(b) Mention the applications of low-pass and high-pass RC circuits.
(c) List out the characteristics of an ideal op-amp.
(d) Draw the pin diagram of IC 555.
(e) List out the merits and demerits of active filters over passive filters.
(f) How many resistors are required in a 12-bit weighted resistor DAC?

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

PART-B

4 X 12 = 48

- (a) Discuss the effects of negative feedback with respect to closed loop gain, bandwidth and distortion on comparison
(b) Differentiate all feedbacks used in feedback amplifiers with respect to input resistance (R_i), output resistance (R_o), voltage gain (A_v), current gain (A_i).
- (a) Derive an expression for percentage tilt for square wave output of RC high-pass circuit.
(b) Design the positive series clipper circuit for the following specifications:
 $V_{pp} = 10$ volts Sinusoidal input, $V_{ref} = 3.3$ volts, cut-in voltage of diodes = 0.7 volts.
Represent the output response with transfer characteristics.
- (a) Derive the expression for CMRR for the first-stage differential amplifier.
(b) Explain the operation of Instrumentation amplifier.
- (a) Draw and explain Monostable multivibrator using 555 timer.
(b) Explain the operation of RC phase shift oscillator using op-amp.
- (a) Explain the operation of first-order active low-pass filter.
(b) Define pass-band and stop-band filters. Why are higher order filters used?
- (a) Explain R-2R ladder DAC and weighted-resistor DAC with neat sketches.
(b) Explain the operation of Successive approximation ADC.



Subject Code: R16EE3207

III B.Tech II Semester Supple Examinations, November-2020
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) Name the types of single phase induction motors.
- (b) Compare synchronous reluctance motor with Switched reluctance motor
- (c) Write down the equation for calculating step angle of stepper motor.
- (d) List the permanent magnet materials used in PMDC motor.
- (e) Describe the function of electronic commutator?
- (f) State the concept of current sheet.

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

PART-B

4 X 12 = 48

2. (a) Describe with suitable diagrams why the single phase induction motors are not self starting?
(b) Explain the construction and operation of DC servo motor.
3. (a) Why the stator pole arc angle is less than the rotor pole arc angle in switched reluctance motors? Explain.
(b) Discuss the advantages and disadvantages of Switched Reluctance Motors. Also list some of their applications.
4. (a) With a block diagram, explain the closed loop control of a stepper motor.
(b) For a three phase 12/8 VR stepper motor, calculate stator pole pitch, rotor pole pitch and full step angle
5. (a) With a constructional diagram, explain the working of permanent magnet DC motor.
(b) Explain the working of moving coil motors.
6. (a) What is the need for sensors in the control of BLDC motors? Explain
(b) Compare between sensorless control and sensor based control of BLDC motors
7. (a) Discuss the main characteristics of traction drives.
(b) Discuss the application of linear Induction motors for electric traction.



Subject Code: R16ME3201

III B.Tech II Semester Regular & Supple Examinations, November-2020

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) Differentiate between accuracy and precision.
- (b) What is the wringing of Slip Gauges?
- (c) List any two applications of autocollimators.
- (d) Name various types of errors in measurements.
- (e) What is a transducer? Give Classification of transducers.
- (f) What is a thermocouple? List various laws of thermocouples.

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

PART-B

4 X 12 = 48

2. (a) Define Interchangeability and discuss its importance. [5]
- (b) What is meant by the term 'fit'. Explain the various types of fits with a neat sketch. [7]
3. (a) Explain the construction and working of a micrometer. [6]
- (b) Explain the method of calibration of slip gauges. [6]
4. (a) State and explain Taylor's Principle of limit gauging. [6]
- (b) Describe in brief the construction and working of Tools maker's microscope. [6]
5. (a) Explain in detail about the following terms:
i) Measuring lag ii) Fidelity iii) Reproducibility iv) Drift [8]
- (b) Analyze the various sources of errors in measuring techniques. [4]
6. (a) How can you measure force with Proving ring? Explain in detail. [5]
- (b) Explain the working of different parts of Bourdon tube pressure gauge with generalized measuring system block diagram. [7]
7. (a) Differentiate between Radiation and Optical Pyrometers. [6]
- (b) What are the different arrangements of strain gauge rosettes? Explain them. [6]



Subject Code: R16ME3202

III B.Tech II Semester Regular & Supple Examinations, November-2020

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) Why liners are provided in the cylinder? How distortion of liner can be reduced?
 - (b) List any two advantages of rolling contact bearings over sliding contact bearings
 - (c) What is the function of cup shaped cavity in piston head?
 - (d) Write down the assumptions in derivation of Winkler Bach formula.
 - (e) Define pitch and offset of chain drives
 - (f) Different causes of gear tooth failures and suggest possible remedies to avoid such failures
- [2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. 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. Design a side or overhung crank shaft for a single cylinder petrol engine having following specifications Size = 500 mm by 600 mm, maximum pressure on piston = 2.1 N/mm^2 , $l/r = 4.5$, shaft material = 40C8 for crankpin bearing assume $l/d = 1$ and pressure should not exceed 10 N/mm^2 . For main bearing assume $l/d = 1$ and pressure should not exceed 9 N/mm^2 . The side crank carries a flywheel whose weight is 40 KN and is in between the two journal bearings which act as main bearing. The distance between the bearing may be taken as 600 mm. The cylinder of the engine is horizontal. The maximum torque on the crank occurs at an angle of 30° . The pressure at maximum torque is about half of the maximum pressure. Assume any other data.
4. Design a trunk type cast iron piston for a 4-stroke diesel engine with the following specifications: cylinder bore = 250 mm, stroke length = 375 mm, speed = 600 rpm, maximum gas pressure = 5 MPa, indicated mean effective pressure = 0.8 MPa, rate of fuel consumption = 0.3 Kg/BP/Hr, higher calorific value of fuel = 44 MJ/Kg, mechanical efficiency = 80%. State clearly the design decision taken.
5. a) Find the expression of R_N for rectangular cross-section.
b) Find the expression for bending stress produced in a curved bar which is subjected to bending moment.

6. The following data are given for a V-belt drive: design power = 20 kW, diameter of driving pulley = 200mm, speed of smaller pulley = 1120 rpm, velocity ratio = 3, groove angle = 38° , centrifugal force = 125 N, permissible tension in the belt = 550 N, coefficient of friction = 0.3, angle of contact at smaller pulley = 156° , centre distance = 2m. Determine the number of belts and the life of the belt. The belt is to be used for 8 hours per day.
7. A gear drive is required to transmit a maximum power of 22.5 kW. The velocity ratio is 1:2 and r.p.m. of the pinion is 200. The approximate centre distance between the shafts may be taken as 600 mm. The teeth has 20° stub involute profiles. The static stress for the gear material (which is cast iron) may be taken as 60 MPa and face width as 10 times the module. Find the module, face width and number of teeth on each gear. Check the design for dynamic and wear loads. The deformation or dynamic factor in the Buckingham equation may be taken as 80 and the material combination factor for the wear as 1.4.



Subject Code: R16ME3203

III B.Tech II Semester Regular & Supple Examinations, November-2020

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) What is heat flux? How is it related to the heat transfer rate?
- (b) Under what conditions can a plane wall be treated as a semi-infinite medium?
- (c) What is forced convection? How does it differ from natural convection?
- (d) Give any two examples for free convection.
- (e) What is excess temperature in boiling?
- (f) What is meant by Kirchhoff's law?

[2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Derive conduction equation in cylindrical coordinates?
- (b) Describe different types of boundary conditions apply to heat conduction problem?
3. (a) Derive the expression for heat transfer under transient mode.
- (b) Explain how Biot number help in transient conduction problem.
4. (a) Distinguish between free and forced convection giving examples.
- b) A steam pipe 10 cm OD runs horizontally in a room at 23° C. Take outside temperature of pipe as 165 ° C. Determine the heat loss per unit length of the pipe. Pipe surface temperature reduces to 80° C with 1.5 cm insulation. What is the reduction in heat loss?
5. a) Compare LMTD and NTU method of heat exchanger analysis.
- b) Hot exhaust gases which enters a finned tube cross flow heat exchanger at 300°C and leave at 100°C, are used to heat pressurized water at a flow rate of 1 kg/s from 35 to 125°C. The exhaust gas specific heat is approximately 1000 J/kg.K, and the overall heat transfer co-efficient based on the gas side surface area is $U_h = 100\text{W/m}^2\text{K}$. Determine the required gas side surface area A_h using the NTU method. Take C_p at $T_c = 80^\circ\text{C}$ is 4197 J/kg.K and $C_{p,h} = 1000\text{ J/kg.K}$.
6. a) Discuss the various regimes of pool boiling heat transfer.
- b) Dry saturated steam at a pressure of 2.45 bar condenses on the surface of a vertical tube of height 1 m. The tube surface temperature is kept at 117°C. Estimate the thickness of the condensate film and the local heat transfer coefficient at a distance of 0.2m from the upper end of the tube.
7. a) Discuss how the radiation from gases differs from that of solids.
- b) Two very large parallel plates with emissivity 0.5 exchange heat. Determine the percentage reduction in the heat transfer rate if a polished aluminium radiation shield of $\epsilon = 0.04$ is placed in between the plates.



Subject Code: R16ME3204

III B.Tech II Semester Regular & Supple Examinations, November-2020

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) How are automobiles classified?
- (b) Define MPFI system?
- (c) What is the function of a propeller shaft?
- (d) Why the shock absorbers are used in automobile?
- (e) Write about cut out relay.
- (f) What are the effects of carbon monoxide emissions from an automobile?

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

PART-B

4 X 12 = 48

2. (a) Explain briefly the constructional features of the various parts of a car body
- (b) What is the Purpose of Cooling system? Explain with sketch about any water cooling system
3. (a) Briefly explain the working of the battery-ignition system with the help of a circuit diagram.
- (b) What is the function of Fuel-injection holder? Explain the different types of nozzles with neat sketches
4. (a) Explain the two types of clutch operating mechanisms.
- (b) With the help of a neat sketch, explain the construction and operation of a Constant mesh gearbox.
5. (a) Discuss about the Davis steering mechanism in the automobiles.
- (b) Explain hydraulic brake system with neat sketch
6. (a) What are various Comfort and safety systems adopted for automobiles? Explain them in detail
- (b) Explain the working principle of ABS anti-lock braking system with sketch
7. (a) Write about the International Pollution standards.
- (b) Explain the techniques of pollution control.



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). Compare Mc Gregor's Theory X and Y.
(b). List the objectives of HRM
(c). Differentiate between Wage and Incentive.
(d). List out any three reasons for conducting estimation.
(e). Write the formula for finding the volume of i) Frustum of cone ii) Circular ring
(f). List out various forging operations. [2+2+2+2+2]

PART-B

4 X 12 = 48

- (a). Differentiate between Job Production, Batch Production and Mass Production.
(b). What are the principles of Modern Management given by Henry Fayol?
- (a). What are the different methods of Recruitment and Selection used by the organizations in the Present era?
(b). Explain Job Description and Job Specification.
- (a). Explain in detail about the incentive plans?
(b). What are the Objectives Of Incentive Plans? Discuss the limitations of Incentives Compensation
- (a). Explain the functions of estimating.
(b). Differentiate between depreciation and obsolescence
- (a). Briefly explain the step-by-step procedure to calculate the weight of material for a given component.
(b). What do you understand by the term overhead expenses. Give any four examples of overhead expenses in a factory.
- Estimate the welding cost for a cylindrical boiler drum 2.5 m × 1m dia, which is to be made from 15 mm thick mild steel plates. Both ends are closed by arc welding of circular plates to the drum and it is single side welding. Cylindrical portion is welded along the longitudinal seam and welding is done both in inner and outer side.

Assume the following data :

Rate of welding = 2m/hour on inner side and 2.5 m/hour on outer

Side Length of electrodes required = 1.5m/meter of weld length,

Cost of electrode = Rs. 0.60/meter ,

Power charges = 4 kWh/meter of weld

Power charges = Rs. 2/kWh, Labour charges = Rs. 40/hour

Other overheads = 200% of prime cost, Discarded electrodes = 5%

Fatigue and setting up time = 6% of welding time

Subject Code: R16EC3201

III B.Tech II Semester Regular & Supple Examinations, November-2020

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) Write the equations for I_{ds} of an n-channel enhancement MOSFET operating in linear region and saturation region?
- (b) Draw the nMOS inverter circuit diagram
- (c) What is the need of stick diagrams and layout diagram
- (d) List out the limitations of scaling.
- (e) What is gate logic
- (f) Draw basic FPGA design architecture

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

PART-B

4 X 12 = 48

2. (a) What are the steps involved in the nMOS fabrication? Explain with neat sketches. [6M]
- (b) Explain the steps involved in BiCMOS technology. [6M]
3. (a) Derive the pull up to pull down ratio for an NMOS inverter [6M]
- (b) Draw the CMOS inverter circuit and explain its operation [6M]
4. (a) Explain the various symbols used in stick diagram representation? Draw the stick diagram of CMOS inverter? [6M]
- (b) Outline a stick diagram for two input nMOS NOR Gate. [6M]
5. (a) What are the issues involved in driving large capacitor loads in VLSI circuit regions? Explain. [6M]
- (b) Why scaling is required? Write the scaling factors for different types of device parameters? [6M]
6. (a) Explain the architectural issues of subsystem design. [4M]
- (b) Discuss the general arrangement of a 4-bit arithmetic process. [8M]
7. (a) Explain the design flow using FPGA. [6M]
- (b) Write a short note on mixed signal design? [6M]



Subject Code: R16EC3202

III B.Tech II Semester Regular & Supple Examinations, November-2020
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) What are the advantages and disadvantages of microwaves?
- (b) Explain a Circulator and an Isolator?
- (c) What are low VSWR and high VSWR?
- (d) Explain different types of optical fibers.
- (e) Draw the frequency response of Semiconductor lasers
- (f) Give a typical structure for PIN photodiode and its field distribution.

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

PART-B

4 X 12 = 48

2. (a) For what purpose we are using waveguide resonators? What are the various types of resonators? [6 M]
- (b) Find E_x , E_y , E_z and H_x , H_y , H_z components of a wave propagating in z direction of rectangular wave guide for TE mode. [6 M]
3. (a) With suitable block diagram, explain the working of Magnetron operation. [6 M]
- (b) Explain the operation of a two cavity klystron amplifier. Derive expressions for bunched beam current and efficiency. [6 M]
4. (a) Write down RWH theory of Gunn diode and Explain the various modes of operation of Gun diode. [6 M]
- (b) The specification of a three port circulator are given as isolation = 30 dB, insertion loss = 2.5 dB and VSWR = 1.2. characterize the circulator by its S-parameters. [6 M]
5. (a) Write about Scattering losses in an optical fiber? [6 M]
- (b) A graded index fiber has a core with parabolic refractive index profile which has a diameter of 50 μm . The fiber has a numerical aperture of 0.2. Estimate the total number of guided modes propagating in the fiber when it is operating at a wave length of 1 μm . [6 M]
6. (a) What is the pumping mechanism in a laser diode? Compare spectral characteristics of a LED and LASER diode. [6 M]
- (b) Define internal quantum efficiency in LEDs and Discuss the four basic causes of optical loss in an LED, briefly. [6 M]
7. (a) Explain the working principle of APD (Avalanche Photo Diode) and what are their advantages and limitations? [6 M]
- (b) What are the various characteristics of an optical detector? [6 M]



Subject Code: R16EC3203

III B.Tech II Semester Regular & Supple Examinations, November-2020
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

- (a) Write time shifting and frequency shifting property of DTFT.
(b) How many multiplications are required for direct computation of DFT?
(c) What is relationship between Fourier transform and Z-Transform.
(d) Explain linear phase FIR structure.
(e) Difference between Butterworth and Chebyshev filters.
(f) What is the advantage of Kaiser window.

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

PART-B

4 X 12 = 48

- (a) Determine magnitude and phase responses of the system given by
 $y(n) = x(n) + 0.9x(n-2) - 0.4y(n-2)$ [6 M]
(b) Explain and give examples for casual, non-causal, stable and unstable systems. [6 M]
- (a) Compute the 8-point DFT of the sequence $x(n) = \{1, 0, 1, 0, 1, 0, 1, 0\}$ Using the radix-2 decimation-in-frequency algorithm. [8 M]
(b) Obtain the linear convolution of the following sequences $x(n) = \{1, 2, 1, 3, 2\}$;
 $h(n) = \{1, 0, 2\}$ using circular convolution. [4 M]

- Realize the following IIR system using direct form -II structure. $H(z) = \frac{1 + 2z^{-1} + 2z^{-2} + z^{-3}}{1 + \frac{13}{14}z^{-1} + \frac{5}{8}z^{-2} + \frac{1}{3}z^{-3}}$

- Explain in detail with example, polyphase realization of FIR filter. [12 M]
- Determine the system function $H(z)$ of the Butterworth low pass digital Filter with the specifications [12M]

- $\alpha_p = 2$ dB ripple in the pass band $0 \leq \omega \leq 0.3\pi$
- $\alpha_s = 15$ dB ripple in the stop band $0.4\pi \leq \omega \leq \pi$.

Using bilinear transformation (assume $T = 1.5$ sec).

- Design an ideal high pass filter with a frequency response

$$H_d(e^{j\omega}) = 1 \quad \pi/4 \leq |\omega| \leq \pi$$

$$= 0 \quad |\omega| < \pi/4$$

Find the values of $h(n)$ for $N=11$. Find $H(z)$. Plot magnitude response. [12 M]



Subject Code: R16EC3204

III B.Tech II Semester Regular & Supple Examinations, November-2020

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) Define the terms Sensitivity and Precision
- (b) Explain the importance of Thermocouples with one example
- (c) List out the different Limitations of Wheat stone's Bridge in detail
- (d) Explain the different digital voltmeters used in measuring an instrument
- (e) Explain the concept of testing a radio amplifier in detail
- (f) List out the different applications of CRO

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

PART-B

4 X 12 = 48

2. (a) List out the different types of Errors presented in measuring instruments [6+6]
- (b) Explain the terms of average deviation and standard deviation of a measuring instrument
3. (a) Draw the circuit diagram of LVDT and explain the operation of it in detail [6+6]
- (b) List out different types of Strain Gauges used Transducer and explains any one in detail
4. (a) Explain the operation of Capacitance Comparison Bridge and derive the condition for balance of a Bridge [6+6]
- (b) Draw the circuit diagram of Hay's bridge and explain its operation in detail
5. (a) Draw the circuit diagram of Sweep generator and explain its operation in detail
- (b) Draw the Ramp type Digital voltmeter and explain its operation in detail [6+6]
6. (a) Explain the following measurement of physical parameters in detail [3X2=6]
- (i) Force (ii) pressure (iii) velocity,
- (b) Write short notes on D to A and A to D converters [6]
7. (a) Draw the block diagram of Dual beam CRO and explain the operation of each block in detail
- (b) Write short notes on vertical deflection system of CRO with circuit diagram [6+6]



Subject Code: R16EC3209

III B.Tech II Semester Regular & Supple Examinations, November-2020

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) List fundamental steps involved in the digital image processing.
- (b) Consider the continuous function $f(t) = \sin(2\pi nt)$. What is the period of $f(t)$?
- (c) What is projection? And give its classification.
- (d) write a short note on CMY to RGB conversion
- (e) Provide the formula for total number of pixels required in a P+1 level pyramid of $P > 0$.
- (f) Define Segmentation

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

PART-B

4 X 12 = 48

2. (a) What is pixel and explain all basic relationships between pixels. [6 M]
(b) Write image transform advantages and disadvantages, also compare Walsh and Hadamard transform. [6M]
3. (a) Prove that the 2-D continuous Fourier transform is linear Operation. [4 M]
(b) Give a single intensity transformation function for spreading the intensities of an image so the lowest intensity is 0 and the highest is L-1. [4 M]
(c) What would be the effect on the histogram if we set to zero the higher-order bit planes instead? [4 M]
4. (a) Explain some important noise models and show their response curves. [8M]
(b) What is inverse filtering and explain its concept clearly. [4M]
5. (a) With formulation explain color transformation techniques. [6M]
(b) Provide details of color image compression concept. [6M]
6. (a) Obtain the Haar transformation matrix for $N = 8$. [6M]
(b) Write the analysis of fast wavelet transform. [6M]
7. (a) Explain dilation and erosion operations in morphological image processing [6M]
(b) Describe point, line and edge detection in image segmentation. [6M]



Subject Code: R16CS3201

III B.Tech II Semester Regular & Supple Examinations, November-2020
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) Compare stream cipher with block cipher.
- b) What are the advantages and disadvantages of DES?
- c) What is meant by relative prime? Give an example.
- d) Distinguish between direct and arbitrated digital signature?
- e) Why E-mail compatibility function in PGP needed?
- f) List the design goals of firewalls?

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

PART-B

4 X 12 = 48

2. a) List the different types of security attacks and explain in detail [6M]
- b) What is SQL Injection? Illustrate how is it performed with an example. [6M]
3. a) Give the structure of AES and explain the key generation in AES algorithm. [6M]
- b) Explain the block cipher modes of operation. [6M]
4. a) How does the man in the middle attack work in Diffie-Hellman? Explain. [6M]
- b) Illustrate ElGamal Encryption and decryption algorithm [6M]
5. a) Explain SHA-512 algorithm with a neat sketch. [8M]
- b) Write about HMAC algorithm. [4M]
6. a) What are the different servers used in Kerberos? Explain the role of each one. [6M]
- b) What are the content types provided by S/MIME? Explain. [6M]
7. Explain the four protocols defined by Secure Socket Layer. [12 M]



Subject Code: R16CS3202

III B.Tech II Semester Regular & Supple Examinations, November-2020

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) What are the different types of attributes used in Data mining?
- (b) What is data preprocessing?
- (c) List the key features of Data warehouse.
- (d) Write bayes theorem.
- (e) What is Support and Confidence of an association rule?
- (f) Illustrate the meaning of cluster analysis.

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

PART-B

4 X 12 = 48

2. (a) What is data mining? What are the origins of data mining? 6M
- (b) What are the various types of data sets used in data mining? 6M
3. (a) Write detailed notes on discretization and binarization in data preprocessing. 6M
- (b) Suppose that the data for analysis includes the attribute age. The age values for the data tuples are (in increasing order) 13, 15, 16, 16, 19, 20, 20, 21, 22, 22, 25, 25,25, 25, 30, 33, 33, 35, 35, 35, 35, 36, 40, 45, 46, 52,70.
Compute the following:
i) Mean and Median of the data ii) Mode of the data iii) Midrange of the data 6M
4. (a) Explain with an example the different schemas for multidimensional databases. 6M
- (b) Explain OLAP operations in the Multidimensional Data Model. 6M
5. (a) Illustrate the general approach to solve the classification problem. 6M
- (b) What is Bayesian classifiers? Briefly outline the major ideas of Naïve Bayesian classification. 6M
6. (a) Define the terms frequent item sets, maximal frequent item sets, closed item sets and association rule. 6M
- (b) Discuss the FP-growth algorithm. Explain with an example 6M
7. (a) Briefly explain K-means clustering with an example. Write its advantages and disadvantages. 6M
- (b) Describe different types of hierarchical clustering methods. 6M



Subject Code: R16CS3203

III B.Tech II Semester Regular & Supple Examinations, November-2020
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) Define Web server and Servlet?
(b) Differentiate Servlet and JSP
(c) Explain Error Handling in JSP?
(d) Use of Prepared Statement?
(e) Discuss Arrays in PHP?
(f) How to connect to a database using PHP?

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

PART-B

4 X 12 = 48

2. (a) Explain Lifecycle of a Servlet with an example? [6M]
(b) Develop a web application which demonstrates Cookies in Servlet? [6M]
3. (a) Explain directive Elements in JSP [6M]
(b) Explain JSP application design with MVC [6M]
4. (a) Illustrate JSP Implicit Objects? [6M]
(b) How to pass data between JSP Pages using session object? [6M]
5. (a) Explain JDBC driver types? [6M]
(b) Discuss how to access database from JSP page? [6M]
6. (a) How to create and run a PHP script explain with an example? [6M]
(b) Elaborate operators in PHP? [6M]
7. (a) Construct a PHP script to retrieve the data from a table student (stuid, stuname, stubranch) present in MySQL database. [6M]
(b) Write a PHP code to validate the form consisting of a username, password and email? [6M]



Subject Code: R16CS3207

III B.Tech II Semester Regular & Supple Examinations, November-2020
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) Distinguish between wired networks and wireless networks?
(b) What are the limitations of mobile devices?
(c) What is SDMA?
(d) What is home agent(HA) in GSM?
(e) What are the limitations of traditional TCP in wireless environment?
(f) What are the characteristics of MANET ?

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

PART-B

4 X 12 = 48

2. (a) Explain generations of wireless networks . (8M)
(b) What are the features of mesh networks? (4M)
3. (a) What are the applications of Mobile computing. (4M)
(b) Draw and explain GSM architecture. (8M)
4. (a) Explain the concept of TDMA over FDMA . (8M)
(b) Explain CDMA methodology. (4M)
5. (a) Explain packet routing in Mobile IP. Illustrate with example. (8M)
(b) Explain DHCP protocol. (4M)
6. Explain Snooping TCP and Indirect TCP. (12M)
7. (a) Distinguish proactive routing and reactive routing algorithms. (4M)
(b) Explain any two of the following routing algorithms:
 - a) DSR
 - b) DSDV
 - c) AODV
