

Subject Code: R16CE3201

III B.Tech II Semester Supple Examinations, April-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.

PART-A

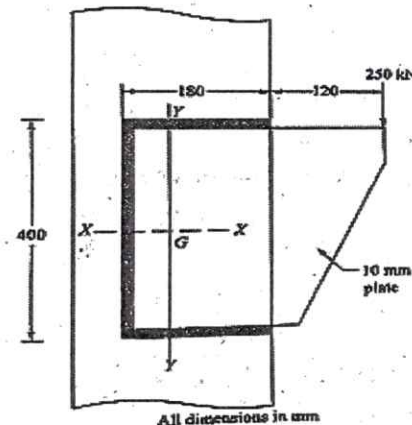
1. (a) Summarize the advantages and disadvantages of steel structures?
- (b) Explain the IS Specifications for calculating web crippling and web buckling strengths of a beam?
- (c) Explain the modes of failures in compression members
- (d) Explain the types of bases provided for connecting the column to the foundation?
- (e) Compute the design shear strength of an interior panel with vertical stiffener of 2500mm.
- (f) Difference between manual operated overhead travelling crane and electrically operated overhead travelling crane?

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

PART-B

4 X 12 = 48

2. (a) The 10mm thick bracket plate shown in figure is collected with flange of column ISHB300@ 577N/m. Find the size of the weld to transmit a factored load of 250kN



3. A simply supported beam MB400 @ 61.6 kg/m has an effective span of 5 m. Find (i) The design bending strength of the beam (ii) The design shear strength of the beam (iii) The intensity of UDL that the beam may carry under service condition (iv) the maximum deflection. Assume that the beam is laterally unsupported. The grade of the steel is E250. Assume that full torsional and warping restraints are provided at the supports. Also, assume that the load acts on the upper flange which will have a destabilizing effect.
4. Design a steel column of rolled steel I-section to carry an axial factored load of 500kN. The column is 4m long and is effectively held in position at both ends but restrained against direction at one end only. Take yield stress in steel as 250 Mpa.

5. A roof truss is proposed to be constructed in an industrial town in Chennai. The pitch of the roof is $1/2$. Span is 20m. The trusses are spaced at 4m c/c. Use A.C sheets. The height of the roof above the ground level is 15m. The maximum length of cladding length is about 25m. Determine the loads acting on the roof and design the purlin. Consider the permeability is normal. The topography of site is flat
6. A built-up column consists of ISHB 400@ 77.40 kg/m with one 300mmX12mm flange plate on each side. The column carries an axial load of 2600kN. Design a gusseted base, if the column is supported on concrete pedestal with a bearing pressure of 5N/mm^2
7. Design welded plate girder to carry a superimposed load of 50 kN/m & two concentrated loads of 200kN each at one-third points of the span. The effective span of the plate girder is 24m. Assume that the girder is laterally supported throughout its length. The yield of the steel (of both the flanges and the web) $f_y=250\text{MPa}$.



Subject Code: R16EE3201

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

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) List the advantages of per unit computations.
- (b) Why power flow analysis is made?
- (c) What is Z-Bus?
- (d) What is the reason for transients during short circuits?
- (e) Define synchronous reactance.
- (f) Write any three assumptions upon transient stability

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

PART-B

4 X 12 = 48

2. (a) Sketch the Impedance diagram of a power system and explain
- (b) explain the Formation of Y bus matrix by singular transformation
3. (a) With the help of a neat flow chart, explain the Newton-Raphson method of load flow solution when the system contains voltage controlled busses in addition to swing bus and load bus.
4. (a) Develop an Algorithm for the Modification of Z bus Matrix for addition element for the Addition of element from a new bus to reference
- (b) Outline about Partial network
5. (a) Explain the short circuit model of a synchronous machine under short circuit conditions.
- (b) Summarize the short circuit MVA calculations.
6. (a) Explain the symmetrical component transformation.
- (b) Identify the positive, negative and zero sequence networks of unloaded generator.
7. (a) Discuss the various factors affecting the transient stability of the system
- (b) Describe the equal area criterion for transient stability analysis of a system



Subject Code: R16EE3204

III B.Tech II Semester Supple Examinations, April-2023
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 meant by maximum demand? Write its units.
- (b) What are the possible ratings of distribution sub stations?
- (c) Write briefly about the regulation of the distribution line?
- (d) What is the role of line sectionalizer in the distribution system?
- (e) What is the function of the phase advancer in the distribution system?
- (f) What are the various effects of voltage fluctuations?

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

PART-B

4 X 12 = 48

2. (a) What are the objectives and differences between load curves and load duration curves?
- (b) Find the number of units supplied annually, diversity factor and the demand factor of a generating station which supplies the loads as; 22000kW, 11000kW, 6600kW, 5500kW and 440kW. The generating station has a maximum demand of 24000kW and the annual load factor of 57%?
3. (a) Write the benefits derived from the optimal location of the distribution substation?
- (b) Explain in detail about the design considerations of loop type distribution feeders?
4. (a) Derive the power loss and voltage drop of the non uniformly distributed radial feeder?
- (b) A load impedance of $(8+j6)$ ohms each is connected in star and a supply voltage of 400V, 50Hz is applied to the load. Find the power factor, the line current, the power, the reactive volt amperes and the apparent power?
5. (a) Explain the need of co-ordination between protection devices?
- (b) Draw and explain the operation of the Residual current circuit breaker with neat sketch?
6. (a) Write the economic justification of the reactive power compensation?
- (b) A power system load consists of both induction motor of rating 22kVA at 0.6 power factor and a heater load which is operating at unity power factor. Find the rating of the heater when the overall power factor becomes 0.9?
7. (a) Draw the phasor diagram and explain the effect of capacitor connected in series with the distribution line?
- (b) Draw the diagram and elaborate the effect of AVR in the distribution network?



Subject Code: R16EE3207

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

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) Why single-phase induction motor is not self-starting? Justify.
- (b) List some applications of switched reluctance motor?
- (c) What is meant by slewing of stepper motor?
- (d) List the magnetic materials used in PMDC motors.
- (e) What are the main advantages of BLDC motors?
- (f) Differentiate AC and DC traction motors.

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

PART-B

4 X 12 = 48

2. (a) How to make the single-phase induction motor as self-starting, explain with neat sketches.
And, list the various types of self-starting single-phase induction motors.
- (b) List the requirements of a good servomotor. Also, explain the principle of operation of an AC Servo motor with neat sketches.
3. (a) Explain the principle of operation of a Switched Reluctance Motor (SRM) with neat sketches.
- (b) List the various power converters used to control the switched reluctance motor control and explain any one power converter controller circuit.
4. (a) Explain the constructional features and operation of Permanent Magnet Stepper Motor.
- (b) Explain the principle of operation of Hybrid stepper motor with neat sketches.
5. (a) Explain the working principle of moving coil motor with neat sketches.
- (b) Develop the equivalent circuit of a permanent magnet dc motor from its basic equations.
6. (a) Sketch the structure of power controller for a Permanent Magnet Brushless DC (PMBLDC) motor and explain the functions of various blocks.
- (b) Derive the emf and torque equations of a PMBLDC motor.
7. (a) Explain the operation and use of Double-sided linear induction motor for traction drives?
- (b) Discuss the main characteristics of traction drives.



Subject Code: R16ME3201

III B.Tech II Semester Supple Examinations, April-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) What is the difference between Precision and Accuracy?
- (b) What are the limitations of sine bar?
- (c) State the working principle of Tool maker's microscope?
- (d) Define reliability and repeatability.
- (e) What do you mean by transducers?
- (f) List two applications of Thermistors.

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

PART-B

4 X 12 = 48

2. (a) What is interchangeability concept? Discuss with an example
- (b) Tolerance for the hole is 0.002, tolerance for the shaft is 0.03 allowance is 0.02, and basic dimension is 50.00. Determine i) the limits of the shaft and ii) the limits of the hole. Use basic hole system
3. (a) Explain the construction and working principle of Micrometres
- (b) Explain the working of universal bevel protractor with a neat sketch,
4. (a) Discuss the working principle of Tools maker's microscope and their uses.
- (b) Explain about the working principle and uses of optical projector with neat sketch.
5. (a) Discuss about the sources of errors and types of errors in measuring instruments.
- (b) Write a short note on sensitivity, calibration and hysteresis.
6. (a) Explain the working principle of Piezoelectric transducer with neat sketch and also list out its Applications.
- (b) Define Transducers and mention the factors which are considered for the selection of the transducers.
7. (a) What is a thermistor, discuss about the electrical resistance, thermistor.
- (b) Explain about the stress measurement by variable Resistance Strain gauges.



Subject Code: R16ME3202

III B.Tech II Semester Supple Examinations, April-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 Bearing Characteristic Number and Bearing Modulus.
- (b) State the function of the following i) compression rings ii) oil rings.
- (c) What are the factors affects the amount of power transmission in belt drive.
- (d) What are the desirable properties of materials used to make crane hook.
- (e) What are the materials used for spur gear and helical gears.
- (f) Differentiate between differential screw and compound screw.

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

PART-B

4 X 12 = 48

2. Design a journal bearing for a centrifugal pump with the following data: Diameter of the journal=150mm, Load on bearing=40KN, Speed of journal=900 rpm [12]

3. Design a connecting rod of I cross section for an automobile diesel engine of the [12]
following specifications.

Diameter of cylinder=100mm

Stroke length =125mm

Maximum combustion pressure =2.8MPa

Maximum engine speed=2000rpm

Weight of the reciprocating parts =1.1kg

Length of connecting rod between centers=31.5cm

Assume an allowable crushing stress =3000kg/cm²

4. (a) Design a CI piston for a single acting four stroke petrol engine of the following [12]
specifications :

Cylinder bore = 100mm

Stroke Length =120mm

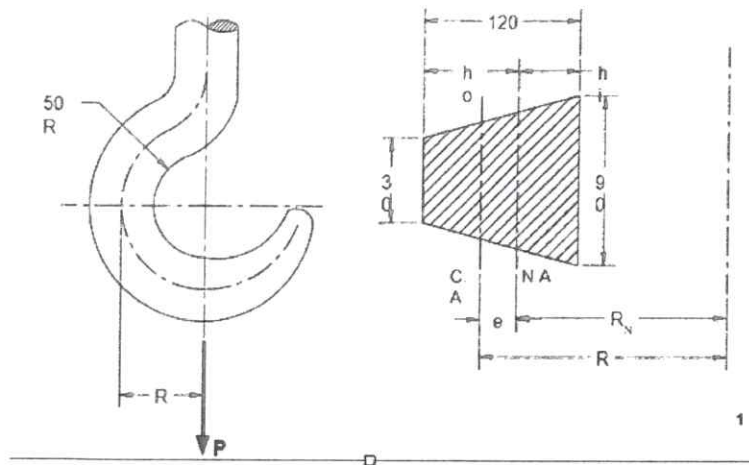
Maximum gas pressure = 5MPa

Break mean effective Pressure =0.65MPa

Fuel Consumption = 0.17kg/bhp/min

Speed =220rpm

5. A crane hook having an approximate trapezoidal cross-section is shown in figure. [12]
 It is made of plain carbon steel 45C8 ($S_{ut}=380 \text{ N/mm}^2$) and the factor of safety is 3.5.
 Determine the load carrying capacity of the hook.



6. An open belt 100 mm wide connects two pulleys mounted on parallel shafts with their centres 2.4 m apart. The diameter of the larger pulley is 450 mm and that of the smaller pulley 300 mm. The coefficient of friction between the belt and the pulley is 0.3 and the maximum stress in the belt is limited to 14 N/mm width. If the larger pulley rotates at 120 r.p.m., find the maximum power that can be transmitted. [12]
7. What should be the module, face width and number of teeth on each gear of a pair of spur [12] gears, a C45 steel pinion driving a cast iron gear, if they are to transmit 18.75 kW at 700 rev/min of the 0.18m pinion in continuous service? The velocity ratio is 3, the teeth are 200 full depth and the load is smooth. Determine the outside and root diameters.

Subject Code: R16ME3203**III B.Tech II Semester Supple Examinations, April-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) Describe the Mechanism of Radiation Heat Transfer?
- (b) Define Biot and Fourier Numbers and mention their significance.
- (c) Define Buckingham Theorem.
- (d) How heat exchangers are classified? Outline the salient characters of any two of them.
- (e) Mention any four differences between pool boiling and film boiling.
- (f) Write a short note on electrical analogy for radiation networks

[2+2+2+2+2+2]**PART-B****4 X 12 = 48**

2. (a) Derive three dimensional conduction equation in Cylindrical coordinates?
(b) An Exterior wall of a house may be approximated by a 12 cm layer of common brick [$k = 0.7 \text{ W/mK}$] followed by a 4.0 cm layer of gypsum plaster [$k = 0.48 \text{ W/mK}$]. What thickness of loosely packed rock-wool insulation [$k=0.065 \text{ W/mK}$] should be added to reduce the heat loss (or Gain) through the wall by 75 percent?
3. (a) Derive an expression for temperature distribution and heat dissipation in a straight fin of rectangular profile insulated at the tip and not insulated at the tip.
(b) A fuel channel in a natural uranium reactor of 5 m length has a heat release of 0.25 MW. If the thermal conductivity of uranium is $33 \text{ W/m}^0 \text{ C}$, what is the temperature difference between the surface and Centre of the uranium element, assuming that the heat release is uniform along the rod?
4. (a) Show by dimensional analysis that for natural convection heat transfer, Nusselt number is a function of Grashoff Number and Prandtl Number.
(b) Derive and energy equation for thermal boundary layer over a flat plate.
5. (a) Derive Expression for effectiveness by NTU (Number of Transfer Units) method for counterflow Heat Exchangers.
(b) A hot plate 1.1 m wide, 300 mm high and at 120^0 C is exposed to the ambient still air at 20^0 C . Calculate: (1) Maximum velocity boundary layer thickness and local heat transfer coefficient at 150 mm from the leading edge of the plate, (2) Total mass flow through the boundary, (3) Heat loss from the plate and (4) Rise in temperature of the air passing through the boundary.
6. (a) A wire of 1 mm diameter and 150 mm length is submerged horizontally in water at 7 bar. The wire carries a current of 131.5 A with an applied voltage of 2.15 V. If the surface of the wire is maintained at 180^0 C . Calculate: (1) The heat flux, and (2) The boiling heat transfer coefficient.
(b) Differentiate between the mechanism of Filmwise and dropwise condensation.

7. (a) Derive and Expression for the shape factor in case of radiation exchange between two surfaces.

(b) A 60 mm thick plate with a circular hole of 30 mm diameter along the thickness is maintained at uniform temperature of 277°C . Find the loss of energy to the surroundings at 20°C , assuming that the two ends of the hole to be as parallel discs and the metallic surfaces and surroundings have black body characteristics.



Subject Code: R16ME3204

III B.Tech II Semester Supple Examinations, April-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 an automobile?
- (b) What are the factors affecting carburation?
- (c) Write any six differences between sliding mesh and constant mesh gear box.
- (d) Write a short note on Anti-lock braking system.
- (e) What is the need for Air Conditioning system in an automobile system.
- (f) What is a catalytic converter. What are its functions?

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

PART-B

4 X 12 = 48

2. (a) What are the different types of cooling systems used in an automobile? Mention any six differences between Air cooling and water-cooling systems.
- (b) With the help of a neat sketch explain Splash Lubrication system? Also discuss its advantages and disadvantages?
3. (a) Write a short note on the working of a magneto ignition system with the help of a neat sketch.
- (b) What is MPFI? what are its advantages and disadvantages over a conventional fuel injection system?
4. (a) What is a clutch ? Write the any six differences between Cone clutch and Multi-plate clutch.
- (b) What are the different types of differentials? Write a short note on Limited slip differential and mention its advantages and disadvantages.
5. (a) Explain the term "Backlash" in Steering Gear. Write the common procedure adopted to adjust the backlash in steering gear.
- (b) Explain with a schematic diagram, working of rigid axle front wheel suspension system.
6. (a) Explain the need for an automotive air conditioning. Explain the working of an automotive air conditioning system with a neat sketch
- (b) Explain with relevant sketches, working of electric windows in an automobile
7. (a) Write about service details of valves and valve mechanism?
- (b) What is a catalytic Converter, explain the working of a Three way catalytic converter.

Subject Code: R16EC3202

III B.Tech II Semester Supple Examinations, April-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) Designate various microwave frequency bands.
- (b) Differentiate two port Network parameters to the S-parameters?
- (c) What are the different materials that exhibit Gunn Effect?
- (d) The core of an optical fiber is made of glass of Refractive index 1.55 and in clad with another glass of refractive index 1.0. Determine: ii) Acceptance Angle iii) Critical Angle.
- (e) How much power is radiated by a LED if its quantum efficiency is 3% and the peak wavelength is 670nm ? And typical values of I for LED range from 50mA to 150mA.
- (f) Explain atleast four difference between avalanche and pin photodiode.

[2+2+2+2+2+2]**PART-B****4 X 12 = 48**

2. (a) Describe the applications of Microwaves.
- (b) Brief out the details of TE mode analysis in rectangular waveguides.
3. (a) Derive the S-matrix of Directional coupler?
- (b) A travelling-wave tube (TWT) operates under the following parameters:
Beam voltage : $V_0=3$ kV
Beam current: $I_0=30$ mA
Characteristic Impedance of helix: $Z_0=10 \Omega$
Circuit Length: $N=50$
Frequency: $f =10$ GHz
Determine: (a) the gain parameter C; (b) the output power gain A_p in decibels
4. (a) Describe Ridley-Watkins-Hilsum (RWH) theory with reference to the Gunn diode operation?
- (b) Describe the slotted line method to measure the value of VSWR?
5. (a) Analyse the pros and cons of optical communication.
- (b) Explain the concept of electromagnetic modes in relation to a planar optical waveguide and explain the modification required in the theory to describe optical propagation in a cylindrical fiber.
6. (a) Describe the methods to modulate the optical sources?
- (b) A double heterojunction LED emitting at a peak wavelength of 1550 nm has radiative and non-radiative recombination times of 20 and 60 ns, respectively. The drive current is 25mA. Find the internal quantum efficiency and the internal power level. If the refractive index of the light source material is $n = 3.2$, find the power emitted from the device.
7. (a) Draw the block diagram of a fundamental optical receiver and explain each block.
- (b) The dark current of an INGaAs PIN photo diode is 15nA, Responsivity 0.68A/W at 1300nm. The received optical power is -27dBm. If it operates with a 8k bias resistor, calculate the thermal noise in a 1Hz bandwidth. If the detected optical power is 4 μ W, calculate the quantum shot noise.



Subject Code: R16EC3203

III B.Tech II Semester Supple Examinations, April-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) Identify $y(n)=2x(n)+\frac{1}{x(n-1)}$ system is linear or not.
 - (b) Perform the circular convolution of the signals $x(n)=\{1,2,3\}$, $h(n)=\{4,5\}$
 - (c) Why the direct form II structure is called as canonical structure?
 - (d) Explain the steps to convert from lattice structure to direct form structure.
 - (e) Write the frequency domain expressions from LPF to BPF.
 - (f) Write FIR filters design steps using frequency sampling technique for odd values of N.
- [2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Formulate the trigonometric Fourier series over the interval $(-1, 1)$ for the signal $x(n)=n^2$.
3. (a) Find the DFT of the sequence using Radix-2 Decimation in Time Algorithm for the sequence $\{1, 2, 3, 4, 4, 3, 2, 1\}$.
4. (a) Realize the following differential equation by Cascade and parallel structure.

$$H(z) = \frac{(1+\frac{1}{4}z^{-1})}{(1+\frac{1}{2}z^{-1})(1+\frac{1}{2}z^{-1}+\frac{1}{4}z^{-2})}$$

5. (a) Develop the realization structure for the causal linear phase FIR system function

$$H(z) = \frac{2}{3} + z^{-1} + \frac{2}{3}z^{-2}$$

- (b) Compute $H(z)$. by Impulse Invariant techniques to the following function with $T=1$ sec.

$$H(s) = \frac{2}{(s+1)(s+2)}$$

6. (a) Design a Chebyshev filter for the following specification using Bilinear transformation.

$$.8 \leq |H(e^{j\omega})| \leq 1; 0 \leq \omega \leq .2\pi$$
$$|H(e^{j\omega})| \leq 0.2; .6\pi \leq \omega \leq \pi$$

7. (a) Design a filter with desired frequency response using Hanning window for $N=7$.

$$H_d(e^{j\omega}) = e^{-j3\omega} \text{ for } -\frac{\pi}{4} \leq \omega \leq \frac{\pi}{4}$$
$$= 0 \text{ for } -\frac{\pi}{4} \leq \omega \leq \pi$$



Subject Code: R16EC3204

III B.Tech II Semester Supple Examinations, April-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

1. (a) Explain the importance of dynamic characteristics of instruments
- (b) Differentiate Thermocouples and Thermistors
- (c) How measurement of capacitance is different from inductance
- (d) Mention the importance of random noise generator
- (e) Briefly discuss the objectives of DAS
- (f) Differentiate Analog CRO and Digital CRO

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

PART-B

4 X 12 = 48

- 2 (a) Explain the advantages of instrumentation systems [4]
- (b) Discuss the comparison between analog and digital instruments [4]
- (c) Explain the following terms [4]
(i) absolute error (ii) relative error (iii) fidelity (iv) Hysteresis
3. (a) Differentiate the performance of active and passive transducers [4]
- (b) Explain the effect of temperature on strain gauges [4]
- (c) Derive the expression for the gauge factor (K) of a bonded resistance wire strain gauge [4]
4. (a) Explain the main advantages and disadvantages of PMMC instruments? [6]
- (b) Describe the method used to measure the high impedance components using Q meter [6]
5. (a) With the help of a neat block diagram explain the principle of operation of a ramp type digital voltmeter. List out its advantages and disadvantages. [8]
- (b) What frequency ranges could be covered with a spectrum analyzer having a first IF of 2,050 MHz and an input of 0 to 1000 MHz using harmonic mixing upto the third harmonic. [4]
6. (a) Briefly explain the procedure for measurement of pressure and humidity [6]
- (b) Differentiate the procedure of testing an audio amplifier and radio amplifier [6]
7. (a) Explain the function of each of these CRO controls. i) Focus ii) Z-Axis Modulation
iii) Astigmatism iv) Trigger and Calibrator. [6]
- (b) Distinguish the operation of dual beam CRO and dual trace CRO [6]



Subject Code: R16CS3201

III B.Tech II Semester Supple Examinations, April-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 cryptography
- (b) What is the role of S-Box in DES
- (c) Define Fermat Theorem
- (d) What is Birthday Attack
- (e) List the transfer encodings used by S/MIME
- (f) Write the characteristics of firewalls

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

PART-B

4 X 12 = 48

2. (a) Write briefly the categories of attacks. What are the x.800 listed attacks
- (b) Construct a Playfair matrix with the key largest. encrypt this message: MEET ME AT THE TOGA PARTY
3. (a) Explain the round transformation of IDEA. Also explain the key scheduling of IDEA
4. (a) State the Chinese Remainder Theorem and find X for the given set of congruent equations $X \equiv 2 \pmod{3}$, $X \equiv 3 \pmod{5}$ and $X \equiv 2 \pmod{7}$.
- (b) Given $p=19$, $q=23$, and $e=3$ Use RSA algorithm to find n , $\phi(n)$ and d .
5. (a) Briefly explain the different message authentication functions with neat Diagrams
6. (a) Analyze the Cryptographic algorithms used in S/MIME and Explain S/MIME certification processing
- (b) Write about the usage of session keys, Public and Private keys in PGP
7. (a) What is transport mode and tunnel mode authentication in IP? Describe how ESP is applied to both these modes
- (b) Explain about SSL Handshake protocol



Subject Code: R16CS3202

III B.Tech II Semester Supple Examinations, April-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) List any four Types of Data Sets?
- (b) What is data preprocessing? Why it is necessary?
- (c) Differentiate between Fact Table and Dimension Table?
- (d) What is Model Overfitting?
- (e) State Apriori Principle?
- (f) "Is Bisecting K-Means is better than Basic K-Means" - Justify?

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

PART-B

4 X 12 = 48

2. (a) Describe the data mining tasks in detail?
- (b) What are the issues in measurement and data collection with respect to data quality?
3. (a) Explain various data pre-processing methods with appropriate examples.
- (b) For the following vectors, x and y, calculate the indicated similarity or distance measures.
 - (i) $x = (1, 1, 1, 1)$, $y = (2, 2, 2, 2)$ - Euclidean
 - (ii) $x = (0, 1, 0, 1)$, $y = (1, 0, 1, 0)$ - Jaccard
 - (iii) $x = (0, -1, 0, 1)$, $y = (1, 0, -1, 0)$ cosine
 - (iv) $x = (1, 1, 0, 1, 0, 1)$, $y = (1, 1, 1, 0, 0, 1)$ correlation
 - (v) $x = (2, -1, 0, 2, 0, -3)$, $y = (-1, 1, -1, 0, 0, -1)$ cosine, correlation
4. (a) What are the different OLAP operations on multidimensional data?
- (b) Suppose that a data warehouse consists of the four dimensions, date, spectator, location, and game, and the two measures, count and charge, where charge is the fare that a spectator pays when watching a game on a given date. Spectators may be students, adults, or seniors, with each category having its own charge rate. Draw a star schema diagram for the data warehouse?
5. (a) Explain methods commonly used to evaluate the performance of a classifier?
- (b) Explain Naive Bayes Classifier with the help of an example dataset?
6. (a) Describe how to measure the strength of an Association Rule with the help of example Market Basket Transaction data?
- (b) Explain Frequent Itemset Generation in FP-Growth Algorithm?
7. (a) What is clustering? Describe DBSCAN clustering algorithm?
- (b) Write the basic K-means algorithm and explain?



Subject Code: R16CS3203

III B.Tech II Semester Supple Examinations, April-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 out the security issues.
- (b) What is template text?
- (c) write a short note on passing the data between JSP pages.
- (d) How JDB works?
- (e) What is call back function?
- (f) List out various databases

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

PART-B

4 X 12 = 48

2. (a) Elaborate in detail about Lifecycle of a Servlet.
- (b) Describe the HttpServlet Request & HttpServlet Response interface.
3. (a) What are the problems with servlets? How JSP solves the problems?
- (b) What is MVC? Explain JSP application design with MVC.
4. (a) Explain in detail error handling and debugging in JSP pages.
- (b) Illustrate the process of error handling and debugging with an example.
5. (a) Design a sample PHP script to define and use the variables, constants, data types and operators in a PHP program.
- (b) Write about java.sql.* package in detail.
6. (a) Explain various types of control statements in PHP
- (b) Write a PHP Script to find the Fibonacci sequence upto a given number.
7. (a) Develop a PHP Program to Insert data into a MYSQL database
- (b) Explain in detail about creation of a form with the database Oracle.



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Subject Code: R16CS3207

III B.Tech II Semester Supple Examinations, April-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) Name any two limitations of Mobile devices
- (c) What are the Near and Far Terminals
- (d) Define Encapsulation
- (e) write any two important points of Traditional TCP
- (f) Write any two applications of MANET

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

PART-B

4 X 12 = 48

2. (a) Write the differences between 1G, 2G, 3G, 4G, Cellular Networks [6M]
- (b) Write a short notes on Vehicular Adhoc Networks along with its characteristics and challenges [6M]
- 3(a) Write and explain applications of Mobile Computing. [6M]
- (b) Explain architecture of GSM. [6M]
4. (a) Explain in detail about Medium Access Control (MAC) [6M]
- (b) Write the differences between SDMA, FDMA, TDMA, CDMA. [6M]
5. (a) Explain in detail about tunnelling and encapsulation [6M]
- (b) Write in detail about Dynamic Host Configuration Protocol (DHCP) [6M]
6. Write about
 - a) Snooping TCP.
 - b) Mobile TCP.
 - c) Transaction oriented TCP.[4M+4M+4M]
7. (a) Write about Characteristics, Applications and challenges of MANET [6M]
- (b) Write in detail the difference between Proactive, Reactive and Hybrid Routing Algorithms [6M]



Subject Code: R16CS3208

III B.Tech II Semester Supple Examinations, April-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). List the four major features of .NET Framework?
- b) What are sealed classes in C#?
- c) What are delegates?
- d) List the built-in objects in ASP.NET?
- e) Why Stored Procedure is used in ADO.NET?
- f) What are the advantages of MVC?

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

PART-B

4X12=48M

- 2) Explain .NET framework 4.5 Architecture in detail?
- 3) a) Explain the features of C#.NET?
b) Discuss about the different types of classes in C#?
- 4) a) How do you implement the indexer using C#. Explain with example.
b) Write short notes on implementing Exception handling in C#.
- 5) a) Explain about ASP.NET page life cycle.
b) What are the different Validation controls available in ASP.NET?
- 6) a) Explain ADO.NET Architecture in detail.
b) Write about the State Management in ASP.NET application.
- 7) a) Briefly explain the LINQ to Object in .NET.
b) Discuss about implementing a web service using ASP.NET.



Subject Code: R16CC32OE19

III B.Tech II Semester Supple Examinations, April-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]
