D 114650 **(Pages : 3)** **Name.....**

Reg. No.....

FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE (2019 SCHEME) EXAMINATION, NOVEMBER 2024

Electronics and Communication Engineering

EC 19 506 (A)—COMPUTING AND PROBLEM SOLVING

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **ten** *questions.*

Each question carries 5 *marks.*

1. Define variable. Summarize the rules and guide lines for naming variable.
2. Define constant. List the different types of C constants.
3. Write a C program to Evaluate the following expression A = 2 + 3*Y/6%2 – 2.
4. With an example Explain how to declare and initialize a single dimensional array.
5. Write a C program to compare two strings.
6. What is Recursion ? Write a C program to compute polynomial co-efficient ${}_nC_r$ using recursion
7. Differentiate between union and structure.
8. What are structure variables ? Explain how to declare and initialize structure variable.
9. Explain with example how to create a structure using 'typedef'.
10. Explain Pointer Arithmetic with suitable example.
11. Explain the declaration of pointers and pointer to pointer with examples.
12. Explain the concept of functions returning pointers with example.
13. Write a python code to illustrate try and except statements in Python.
14. Write a program to enter a number in Python and print its octal and hexadecimal equivalent.
15. Explain what is dictionary and how it is created in Python ?

(10 × 5 = 50 marks)

Turn over

Part B

Answer any **one** *question from each module.*
All questions carry equal marks.

16. Explain the following operators in C language with examples :

    (i) Relational.

    (ii) Logical.

    (iii) Conditional.

(10 marks)

Or

17. Explain nested for loop with general syntax and example. (10 marks)

18. Illustrate the declaration and initialization of two dimensional array. (10 marks)

Or

19. Write a C program to search an element using linear and binary techniques . (10 marks)

20. (a) How data elements are stored under unions, explain with example ? (5 marks)

    (b) Write a C program to illustrate the concept of structure within structure. (5 marks)

Or

21. (a) Explain the following : (i) Nested structures ; (ii) Array of structures. (5 marks)

    (b) Write a C program to read and display multiple strings using pointers. (5 marks)

22. (a) Write a C program to illustrate the use of indirection operator to access the value pointed by a pointer.

(5 marks)

    (b) Explain the concept of array of pointers with examples. (5 marks)

Or

23. (a) Write the syntax for opening a file with various modes and closing a file. (4 marks)

(b) Explain the following file handling functions :

(i) fseek(). (ii) ftell().

(iii) rewind(). (iv) feof().

(6 marks)

24. (i) Explain the basic List Operations in Python with necessary programs. (5 marks)

(ii) Write a Python program to multiply two Matrices. (5 marks)

Or

25. Write a program that uses insertion sort technique to sort an array of 10 Elements.

(10 marks)

[5 × 10 = 50 marks)

D 114651 **(Pages : 3)** **Name.....**

Reg. No.....

FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE (2019 SCHEME) EXAMINATION, NOVEMBER 2024

Electronics and Communication Engineering

EC 19 506(E)—ELECTRONIC INSTRUMENTATION

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **ten** *questions.*

1. Explain how measuring instruments are classified ?
2. What is meant by Linearity of measurements ? Explain with examples.
3. Explain the dynamic response of Zero order and first order instrument.
4. Explain the principle of AC potentiometer.
5. Explain the principle of Maxwell's bridge.
6. Derive the expression for current when Wheatstone bridge is balanced.
7. Give the principle of Bipolar DAC. What are its advantages?
8. What are the applications of Hall Effect transducer ? Explain.
9. Explain the operation of a capacitive transducer.
10. Explain the function of Time base circuit in a CRO with neat sketches.
11. Explain the operating principle of a strip chart recorder.
12. Draw the block diagram of Delay line circuit in a CRO and explain its working.
13. Elaborate the principle of operation of a Power-factor meter.
14. With a diagram, explain the operation of a True RMS meter.
15. With a diagram, explain the operation of a harmonic distortion analyzer.

(10 × 5 = 50 marks)

Turn over

Part B

Answer any **one** *from each module.*

Module 1

16. (a) (i) Define the term resolution, sensitivity, accuracy, precision & error. (5 marks)

(ii) Explain systematic error in detail. How can it be minimized ? (5 marks)

Or

(b) (i) Explain the dynamic response of Zero order, first order, second order instrument. (7 marks)

(ii) What is meant by Hysteresis ? Explain. (3 marks)

Module 2

17 (a) With neat circuit diagram and phasor diagram explain the working of Carry Foster Slide wire bridge. (10 marks)

Or

(b) (i) Describe the operation of the Wien bridge. (5 marks)

(ii) Derive the Balance equation of a Wien Bridge (5 marks)

Module 3

18. (a) With neat diagrams and equation, explain the working of Successive Approximation ADC. Give its performance characteristics. (10 marks)

Or

(b) With necessary diagrams and equations, explain the principle of Capacitive Transducer. List out its applications. (10 marks)

Module 4

19. (a) Draw the block diagram of a CRO and explain its working. (10 marks)

Or

(b) With a block diagram, explain the working of a Frequency Synthesizer. (10 marks)

Module 5

20. (a) With help of circuit diagrams, explain how an Electronic multi meter functions as a ohm meter, ammeter and voltmeter.

(10 marks)

Or

(b) (i) Explain the operation of Watt hour meter, with a neat sketch. (6 marks)

(ii) What are the applications of a Q Meter ? (4 marks)

(10 × 5 = 50 marks)

D 114652 **(Pages : 2)** **Name.....**

Reg. No.....

FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE (2019 SCHEME) EXAMINATION, NOVEMBER 2024

Electronics and Communication Engineering

EC 19 506 (F)—DATA ANALYSIS

Time : Three Hours Maximum : 100 Marks

Part A

Answer **all** *questions.*

1. Summarize on the term Big data.
2. Write a short on business intelligence.
3. Outline on the term data wrangling.
4. Give an account on "Exploring data".
5. What are the different methods for collecting huge amount of data ?
6. What is an API? What are its uses ?
7. With necessary sketches, explain SVM.
8. Differentiate supervised learning and unsupervised learning.
9. What is meant by linear regression ?
10. Explain the uses of data visualisation.
11. List and explain various methods of data encoding for data visualisation.
12. Explain any one method of mapping variables to encoding.
13. How can data science help business managers ?
14. What are the skill sets required by a data scientist ?
15. How is data science useful in search engine optimizations ?

(10 × 5 = 50 marks)

Part B

Answer any **one** *question from each module.*

16. (a) Detail on the various sectors that uses Data Science.

Or

(b) Explain the various types of data in data science.

Turn over

17. (a) Explain the various methods by which huge volumes of data are managed ?

Or

(b) Give a detailed account on different methods of data storage.

18. (a) Define the following terms. Also, give examples.

(i) mean. (ii) median.

(iii) variance. (iv) percentile.

Or

(b) Detail on any four types of data distributions.

19. (a) In detail, explain about retinal variables.

Or

(b) Explain any 5 types of data visualisation methods.

20. (a) How will data science be useful in banking sector and social media platforms ?

Or

(b) Explain how data science could be a major issue related with privacy and security of data.

(5 × 10 = 50 marks)

D 114647 **(Pages : 3)** **Name.....**

Reg. No.....

FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE (2019 SCHEME) EXAMINATION, NOVEMBER 2024

Electronics and Communication Engineering

EC 19 503—DIGITAL COMMUNICATION

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **ten** *questions.*

Each question carries 5 *marks.*

1. What is natural sampling and flat-top sampling ? Explain.
2. What do you mean by DM and PCM ? Compare their performance.
3. Derive the quantization noise in PCM.
4. Substantiate the statement "ISI cannot be avoided".
5. What is the information provided in eye diagram ? Explain.
6. Explain Scrambling process in digital communication system.
7. State and explain mathematical expression for probability of errors in AWGN channel.
8. Illustrate decision procedure in a correlation receiver.
9. With a diagram, explain the working of detector part of matched filter receiver.
10. Explain the detection process in BPSK.
11. Discuss in brief about Non-coherent detection of binary FSK.
12. Draw the block diagram of coherent binary PSK receiver.
13. Explain PN sequence and its properties.

Turn over

14. Explain how Gold codes are generated.

15. What is meant by Maximal length codes ? Explain.

(10 × 5 = 50 marks)

Part B

Answer any **one** *from each module.*

Module 1

16. (a) Consider an audio signal consisting of the sinusoidal term given as $x(t) = 3 \cos(500\pi t)$

(i) Determine the SNR when the signal is quantized using 10 bits PCM.

(ii) How many bits of quantization are needed to achieve a SNR of at least 40 dB ? Explain the underlying theory.

(10 marks)

Or

(b) (i) List and explain the properties of line codes. (5 marks)

(ii) Derive the power spectral density of Manchester code. (5 marks)

Module 2

17. (a) (i) List the different methods to remove ISI in a communication System. (5 marks)

(ii) State and prove Nyquist first criterion for Zero ISI. (5 marks)

Or

(b) (i) Illustrate the working of the simple duo-binary encoder without precoder. (5 marks)

(ii) Explain the frequency response of duo-binary encoding scheme. (5 marks)

Module 3

18. (a) What is meant by Optimum Threshold detection ? Explain with necessary sketches and equations.

(10 marks)

Or

(b) (i) Explain the working principle of Maximum a Posteriori detector. (5 marks)

(ii) Give the principle of optimum receiver for Colored Noise. (5 marks)

MODULE 4

19. (a) (i) Draw and explain the power spectrum of QPSK, DPSK ? (5 marks)

(ii) How will you differentiate binary PSK and MPSK, explain with block diagrams ? (5 marks)

Or

(b) Compare the performance of various coherent and non-coherent digital detection systems. (10 marks)

MODULE 5

20. (a) With neat sketches, explain the geometrical structure of signal space. (10 marks)

Or

(b) (i) Explain the concept of orthogonal basis function. (7 marks)

(ii) Give the condition for Orthogonality for basis function. (3 marks)

[5 × 10 = 50 marks]

D 114645 **(Pages : 2)** **Name.....**

Reg. No.....

FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE (2019 SCHEME) EXAMINATION, NOVEMBER 2024

Electrical and Electronics Engineering

EE 19 506(D)—ELECTRICAL MATERIAL SCIENCE

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **ten** *questions.*

I. 1 Identify materials for resistances.

2 Explain Curie-Wiess law

3 What is spontaneous magnetization

4 Define polarization and what are different polarization processes?

5 Explain the following dielectric parameters i) homogeneity ii) linearity

6 Compare non polar solid dielectrics and polar solids

7 Explain Townsend's criterion for spark breakdown

8 Show the growth of current in dielectric breakdown

9 Explain suspended particle theory

10 Explain the terms Thermal and discharge.

11 Write about Gaseous insulator using air as medium

12 Classify the insulators based on temperature.

13 Write about optical response of materials.

14 Explain optical band gap

15 State the solar cell parameters

(10 × 5 = 50 marks)

Turn over

Part B

*Answer any **five** questions.*

II. 1 i.Explain Weiss theory of ferromagnetism.

ii. Write about the following materials.

i. Lamp filaments ii.fuses and iii. solders.

Or

2 i. Illustrate the magnetic materials used in instruments and relays.

ii. Compare hard and soft magnetic materials.

3 i. Write about Internal fields in solids and liquids.

ii.What is Dielectric polarization under static fields ? Explain.

Or

4 i. Identify Ferroelectric materials and their properties.

ii.Explain any two types of dielectric materials with its application.

5 i. Explain streamer theory of breakdown in gases.

ii.Discuss the avalanche mechanism in the breakdown of dielectric.

Or

6. i. Explain a break down mechanism that leads breakdown in gaseous dielectric.

ii.Write short note on the breakdown due to liquid globules.

7. i. Describe in detail about any one Gaseous insulators.

ii. What is meant by aging of insulators.

Or

8 Explain suitable Organic materials for insulators and explain them.

9 Explain the need of coating for enhancing solar thermal energy collection and compare cold mirror coating and Heat mirror coating.

Or

10. i. Explain photo voltaic conversion in detail with its solar cell parameters.

ii. Write short notes on solar radiation.

(5 × 10 = 50 marks)

.

D 114642 **(Pages : 3)** **Name.....**

Reg. No.....

FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE (2019 SCHEME) EXAMINATION, NOVEMBER 2024

Electrical and Electronics Engineering

EE 19 503—ELECTRICAL MACHINES—II

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **ten** *questions.*

Each question carries 5 *marks.*

I. 1. What are the sources of harmonics in the generated EMF in case of alternator? How to minimize them ?

2. Why integral and fractional slot windings have been used ?

3. Describe the characteristics of an infinite bus.

4. What is air gap line ? Explain its significance with respect to magnetization characteristic of an alternator ?

5. Define Synchronizing power coefficient and also mention its units.

6. Compare MMF and synchronous impedance methods of estimating voltage regulation of synchronous alternator.

7. Explain the operation synchronous motor on infinite bus bars.

8. Discuss the applications of synchronous motor.

9. Develop an equivalent circuit of synchronous motor and explain.

10. Point out the effect of change in supply voltage on starting torque, torque and slip.

11. Distinguish between Synchronous motor and Induction motor.

12. Express the relationship between staring torque and full load torque of DOL Starter ?

13. Criticize "is speed control by changing the applied voltage is simpler".

Turn over

14. Summarize why single phase induction motor is not self-starting. What are the various methods available for making a single-phase motor self-starting

15. Write short note on applications on Induction generators.

(10 × 5 = 50 marks)

Part B

Answer any **five** *questions.*

Each question carries 10 *marks.*

II. 1. Explain in detail of the distributed and concentrated windings and how the performance of the machine can get affected by the windings construction.

Or

2. Explain the concept of armature reaction in synchronous machines.

3. Explain the two reaction theory and conduction of slip test for determining the voltage regulation of alternator.

Or

4. Explain the effect of increasing excitation of one of the alternators when two alternators are connected in parallel.

5. (i) Develop the torque and power relations of synchronous motor.

(ii) Illustrate the effect of load changes on synchronous motor.

Or

6. Explain the significance of V curves and inverted V-curves ?

7. A 100 kW, 330 V, 50 Hz, 3 phase, star connected induction motor has a synchronous speed of 500 r.p.m. The full load slip is 1.8 % and full load power factor 0.85. Stator copper loss is 2440 W, iron loss is 3500 W, and rotational loss is 1200 W. Calculate : (i) Rotor copper loss ; (ii) The line current ; and (iii) The full load efficiency.

Or

8. Describe why starters are necessary for starting 3-phase induction motors ? Name the different types of starters and explain DOL Starter.

9. Illustrate the rotor rheostat control of 3 phase slip ring induction motor.

Or

10. Describe the no-load test and blocked rotor test for obtaining the equivalent circuit parameters of a single phase induction motor

(5 × 10 = 50 marks)

D 114635 **(Pages : 2)** **Name.....**

Reg. No.....

FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE (2019 SCHEME) EXAMINATION, NOVEMBER 2024

Mechanical Engineering

ME 19 506 (A)—ENERGY ENGINEERING MANAGEMENT

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **ten** *questions.*
Each question carries 5 *marks.*

1. What are the main factors that determine the size and accessibility of fossil fuel reserves ?
2. What are the potential consequences of failing to address global warming ?
3. How does Life Cycle Costing help in comparing alternative designs or products ?
4. What is geothermal energy ?
5. Explain how geothermal energy is harnessed for electricity generation and heating purposes
6. Explain the basic process of nuclear fission and its role in generating electricity.
7. Discuss the role of energy management systems in industries.
8. What is an energy index ?
9. What factors are considered when calculating energy costs in a facility or industrial setting ?
10. What are the different types of fluidized bed boilers ?
11. Explain the concept of waste heat recovery.
12. Evaluate the potential of waste heat recovery in the context of industrial decarbonization.
13. How does a heat pump help in energy-efficient space heating ?
14. What is co-generation ?
15. How does co-generation combine heat and power generation to improve energy efficiency ?

(10 × 5 = 50 marks)

Turn over

Part B

Each questions carries 10 marks.

16. Discuss the global energy consumption trends over the past century. How have technological advancements and economic development contributed to these trends ?

Or

17. What are the primary causes of global warming ? Discuss the contributions of human activities such as deforestation, industrialization, and fossil fuel consumption to the current global warming crisis.

18. Discuss the advantages and disadvantages of tidal energy as a renewable energy source.

Or

19. Explain the working principle of a tidal barrage and its role in energy generation.

20. Evaluate the environmental benefits of using non-conventional energy sources.

Or

21. Explain the concept of energy conservation in engineering.

22. Evaluate the advantages of fluidized bed combustion in terms of fuel flexibility.

Or

23. How does the temperature control in a fluidized bed combustion system affect combustion efficiency and pollutant formation ?

24. Explain the types of refrigerants used in modern refrigeration systems.

Or

25. What is the significance of the evaporator and condenser in the refrigeration cycle ?

(5 × 10 = 50 marks)

D 114632 **(Pages : 3)** **Name.....**

Reg. No.....

FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE (2019 SCHEME) EXAMINATION, NOVEMBER 2024

Mechanical Engineering

ME 19 503—HEAT AND MASS TRANSFER

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **ten** *questions.*

Each question carries 5 *marks.*

1. Define thermal diffusivity. Explain its importance in heat conduction problems.
2. Differentiate between steady and transient heat conduction.
3. Explain how fins can increase the rate of heat transfer. Give some practical examples of fins.
4. Distinguish between laminar and turbulent flow.
5. Sketch the boundary layer development of a flow over a flat plate and explain the significance of the boundary layer.
6. Describe the limitation of LMTD method. How is ε-NTU method superior to LMTD method ?
7. Explain emissive power and monochromatic emissivity.
8. Two large parallel plates are at temperatures T_1 = 500 K and T_2 = 300 K. The emissivity's are $\varepsilon_1 = 0.85$ and $\varepsilon_2 = 0.90$. What is the radiation flux between the plates ?
9. State and prove Kirchhoff's law of thermal radiation.
10. Explain the Overall heat transfer co-efficient and Fouling factor.
11. Compare the parallel flow and counter flow heat exchangers.
12. In a food processing plant, a brine solution is heated from – 12°C to – 65°C in a double pipe heat parallel flow heat exchanger by water entering at 35°C and leaving at 20.5°C at the rate of 9 kg./min. determine the heat exchanger area for overall heat transfer co-efficient of 860 W/m^2 K. For water, $C_p = 4.186 \times 10^3$ J/kg K.
13. Distinguish between diffusion mass transfer and convective mass transfer.

Turn over

14. Define Sherwood number and Schmidt number.

15. Compare the similarities between heat transfer and mass transfer.

(10 × 5 = 50 marks)

Part B

Answer **all** *questions.*

Each question carries 10 *marks.*

16. A wall of furnace is made up of inside layer of silica brick 120 mm. thick covered with a layer of magnetise brick 240 mm. thick. The temperatures at the inside surface of silica brick wall and outside surface of magnetise brick wall are 725°C and 110°C respectively. The contact thermal resistance between the two walls at the interface is 0.0035 °C/W per unit wall area. If thermal conductivities of silica and magnetise bricks are 1.7 W/m°C and 5.8 W/m°C, Calculate : (i) The rate of heat loss per unit area of walls ; and (ii) The temperature drops at the interface.

Or

17. A Pipe (k = 180 W/m. C) having inner and outer diameters 80 mm. and 100 mm. respectively is located in a space at 25°C. Hot gasses at temperature 160°C flow through the pipe. Neglecting surface heat transfer co-efficients, calculate : (i) The heat loss through the pipe per unit length ; (ii) The temperature at a point halfway between the inner and outer surfaces ; and (iii) The surface area normal to the direction of heat flow so that the heat transfer through the pipe can be determined by considering material of pipe as a plane wall of the same thickness.

18. Air at 20°C, at a pressure of 1 bar is flowing over a flat plate at a velocity of 3 m/s. if the plate maintained at 60°C, calculate the heat transfer per unit width of the plate. Assuming the length of the plate along the flow of air is 2 m.

Or

19. A large vertical plate 4 m. height is maintained at 606°C and exposed to atmospheric air at 106°C. Calculate the heat transfer is the plate is 10 m. wide.

20. Two very large parallel planes with emissivities 0.3 and 0.8 exchange radiative energy. Determine the percentage reduction in radiative energy transfer when a polished aluminium radiation shield (ε = 0.04) is placed between them.

Or

21. An enclosure consists of a rectangular parallel piped 1 m. × 2 m. × 4 m. One of the 1 m. × 2 m. surface acts as a black surface at 475 K and the other acts as black surface at 375 K. If the other four surfaces of the enclosure act as reradiating surfaces, find the equilibrium temperature of the reradiating surface and the net radiative heat transfer between the two active surfaces. How would this heat exchange be affected if the 475 K rectangle is grey with emissivity = 0.6 and the 375 K rectangle is grey with emissivity 0.8 ? All other data remains the same.

22. A counter flow heat exchanger is employed to cool 0.55 kg/s (C_p = 2.45 kJ/kg°C) of oil from 115°Cto 40°C by the use of water. The inlet and outlet temperature of cooling water are 15°C and 75°C respectively. The overall heat transfer co-efficient is expected to be 1450 W/m^2°C.

Or

23. A heat exchanger is to be designed to condense 8 kg/s of an organic liquid (t_{sat} = 80°C, h_{fg} = 600 kJ/kg.) with cooling water available at 25°C and at a flow rate of 60 kg/s. The overall heat transfer coefficient is 480 W/m^2 deg. Calculate: (i) the number of tubes required. The tubes are to be of 25 mm outer diameter, 2 mm. thickness and 4.85 m. length ; (ii) The number of tube passes. The velocity of the cooling water is not to exceed 2 m/s.

24. The tire tube of a vehicle has a surface area 0.62 m^2 and wall thickness 12 mm. The tube has air filled in it at a pressure 2.4 × 10^5 N/m^2. The air pressure drops to 2.3 × 10^5 N/m^2 in 10 days. The volume of air in the tube is 0.034 m^3. Calculate the diffusion co-efficient of air in rubber at the temperature of 315 K. Gas constant value = 287. Solubility of air in rubber tube = 0.075 m^3 of air/m^3 of rubber tube at one atmosphere

Or

25. Water flows down on the surface of a vertical plate at a rate of 0.05 kg/s over a width of 1 m. The water film is exposed to pure carbon dioxide. The pressure is 1.013 bar and the temperature is 25°C. Water is essentially CO_2 free initially. Determine the rate of absorption of CO_2. The molal concentration at this condition for CO_2 in water at the surface is 0.0336 kgmol/m^3 of solution. D = 1.96 × 10^{-9} m^2/s, solution density = 998 kg/m^3, μ = 0.894 × 10^{-3} kg/m. s, G = 0.05 kg/m. s, L = 1 m. The notation for convective mass transfer coefficient is h_m.

(5 × 10 = 50 marks)

D 114657 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE (2019 SCHEME) EXAMINATION, NOVEMBER 2024

Information Technology

IT 19 506 (A)—WEB AND INTERNET TECHNOLOGY

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **ten** *questions.*

Each question carries 5 *marks.*

1. Explain about XML.
2. Illustrate the concept of unordered lists with suitable example.
3. Explain the syntactic differences between HTML and XHTML with respect to case sensitivity and closing tags.
4. Explicate while repetition statement in JavaScript with flowchart.
5. Write a JavaScript code to sum the even integers from 2 to 100 using for statement.
6. Summarize the global functions of JavaScript.
7. Explain any five PHP array functions.
8. Write a PHP program to swap two numbers without using temporary variable.
9. Enumerate the differences between PHP and JavaScript.
10. Illustrate client-server model of interaction with diagram.
11. Explain the two forms of email access in detail.
12. Give a brief note on Remote Procedure Call (RPC).
13. State the factors considered for defining security policy.
14. Explain the functions of Real-Time Transport Protocol (RTP).
15. List the algorithms related to traffic scheduling and management.

(10 × 5 = 50 marks)

Turn over

Part B

Answer **one full** *section from each question.*

Each question carries 10 *marks.*

16. (a) Explain in detail about the origins and evolution of HTML and XHTML.

Or

(b) Illustrate the steps and procedure in the Creation of a XML document with suitable Example.

17. (a) Demonstrate the handling of equality and relational operators in JavaScript.

Or

(b) Discuss briefly about the usage of various objects and methods in JavaScript with examples.

18. (a) List and explain superglobal arrays in PHP and elaborate PHP multidimensional arrays in detail.

Or

(b) Discuss the types and precedence of PHP operators in detail.

19. (a) Explain the components of VoIP system with the terminology and concepts of SIP and H.323.

Or

(b) Elaborate the characteristics of file transfer protocol and specify the interaction of FTP connections in a typical session with diagram.

20. (a) Discuss the process of streaming stored audio and video in multimedia networking and internet telephony in detail.

Or

(b) What is network security ? Explain the types of network security.

(5 × 10 = 50 marks)

D 114654 **(Pages : 3)** **Name.....**

Reg. No.....

FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE (2019 SCHEME) EXAMINATION, NOVEMBER 2024

Information Technology

IT 19 503—DATABASE MANAGEMENT SYSTEMS

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **ten** *questions.*
Each question carries 5 *marks.*

1. Highlight any *five* advantages of DBMS approach in detail.
2. Explain the two types of data independence.
3. Specify the structural constraints on relationships in ER model.
4. Define the binary operations for merging the elements of two relations R and S.
5. Explain tuple relational calculus in DBMS.
6. Elaborate the concept of view in SQL.
7. State the significance of normalization.
8. List the inference rules for functional dependencies.
9. Differentiate 3NF and Boyce-Codd Normal Form (BCNF).
10. Mention the properties of transactions.
11. Explain briefly about multi-version concurrency control techniques.
12. What is shadow paging ? Mention its advantages and disadvantages.
13. Explain the role of DBA in granting and revoking privileges to users.
14. Mention the applications of data mining.
15. Enumerate the advantages and functions of distributed databases.

(10 × 5 = 50 marks)

Turn over

Part B

Answer **one full** *section from each question.*
Each question carries 10 marks

16. (a) Consider a university database for the scheduling of classrooms for final exams. This database could be modelled as the single entity set 'exam' with attributes 'course-name', 'section-number', 'room-number' and 'time'. Alternatively, one or more additional entity sets could be defined, along with relationship sets to replace some of the attributes of the exam entity set, as :

- 'course' with attributes 'name', 'department' and 'c-number'.
- 'section' with attributes 's-number' and 'enrolment' and dependent as a weak entity set on course.
- 'room' with attributes 'r-number', 'capacity' and 'building'.

Show an ER diagram illustrating the use of all three additional entity sets listed.

Or

(b) Discuss the types of languages and interfaces provided by DBMS and the user categories targets by each interface.

17. (a) Consider the table :

Worker (Worker id, First_Name, Last_Name, Salary, Joining date, Department).

(i) Write an SQL query to print the first three characters of FIRST_NAME from Worker table.

(ii) Write an SQL query to print all Worker details from the Worker table order by FIRST_NAME Ascending and DEPARTMENT Descending.

(iii) Write an SQL query to print details of the Workers whose FIRST_ NAME contains 'a'.

(iv) Write an SQL query to print details of the Workers whose SALARY lies between 1,00,000 and 5,00,000.

(v) Write an SQL query to show only odd rows from a table.

Or

(b) Illustrate the steps involved in ER- to-relational mapping.

18. (a) Explain briefly about multi-valued and joined dependencies for relational databases.

Or

(b) Explain the algorithms for relational database schema design in detail.

19. (a) Describe the problems associated with the use of locks and show how these problems are handled in concurrency control protocols.

Or

(b) Discuss in detail the database recovery techniques based on deferred and immediate update.

20. (a) Summarize the salient features of web and logical databases in detail.

Or

(b) Enumerate the key differences between traditional databases and data warehouses and explain the importance of using data warehouses.

(5 × 10 = 50 marks)

D 114640 **(Pages : 2)** **Name.....**

Reg. No.....

FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE (2019 SCHEME) EXAMINATION, NOVEMBER 2024

Printing Technology

PT 19 506(D)—DESIGNING AND PLANNING FOR MEDIA PRODUCTION

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **ten** *questions.*
Each question carries 5 *marks.*

1. Write a short note on human interpretation of color pattern.
2. Explain the psychological influences of consistency.
3. With the help of examples, explain denotation & connotation.
4. Explain the visual ingredients of graphic design - Color, scale, balance, contrast, line.
5. Explain monogram & trademarks.
6. Explain the difference between raster & vector images.
7. Explain photography in terms of design element.
8. Explain the responsibilities of free-lance designers.
9. Explain the design strategies used for catalogues & cartons
10. Write a note on selection of ink in relation to design specification.
11. Write a short note on content creation.
12. Explain the various materials used in preparing layout.
13. Explain the term - Scratch with an example.
14. Explain how various departments of advertising agency co-ordinate.
15. Explain the term casting off.

(10 × 5 = 50 marks)

Turn over

Part B

Answer **one** *full question from each section. Each question carries 10 marks.*

16. a) Explain the workflow of producing radio jingles.

Or

b) Explain the relationship between designer, customer & printer.

17. a) Explain the role of computers in design process.

Or

b) Explain the types of originals.

18. a) Explain the structure of an advertising agency.

Or

b) Explain website hosting and maintenance.

19. a) Explain the production process of corporate films.

Or

b) Explain the limitations occurred in ancillary processes.

20. a) Explain the elements of design.

Or

b) With the help of examples, explain metaphor, synecdoche, allegory, simile.

(5 × 10 = 50 marks)

D 114637 **(Pages : 2)** **Name.....**

Reg. No.....

FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2019 SCHEME] EXAMINATION, NOVEMBER 2024

Printing Technology

PT 19 503—MICROPROCESSOR AND MICROCONTROLLER

Time : Three Hours Maximum : 100 Marks

Part A

Answer any **ten** *questions.*
Each question carries 5 *marks.*

1. Draw architecture of 8086 and label it.
2. Write short note on general purpose register of 8086.
3. Discuss briefly and how microprocessors have evolved with relevance to its capability, bit size and applications.
4. Which pins identify the segment registers used for 20-bit physical address generation ?
5. How is the physical address generated for the different memory addressing modes ?
6. Explain Direct program memory addressing of 8086 microprocessor.
7. Give one example each of (a) direct I/O ; and (b) variable I/O instruction.
8. Mention and tabulate the different types of interrupts that 8086 can implement.
9. Distinguish between the two hardware interrupts of 8086.
10. Explain the Programs for Keyboards of a 8051 microcontroller.
11. Explain the Internal ROM of a 8051 microcontroller.
12. Write short note on assembly language programming in 8051.
13. How DIP switch is interface with 8051.
14. Write a program to add two-bit 8bit numbers using 8051 microcontrollerlain the interrupt structure of 8051 microcontroller.
15. Explain the application of microcontrollers in printing industry.

(10 × 5 = 50 marks)

Turn over

Part B

Answer **one** *full question from each section.*
Each question carries 10 *marks.*

16. A) Explain the operations of instructions queue residing in BIU (Bus Interface unit).

Or

B) What are the roles of each element in the BIU of 8086 CPU ? Explain with a neat diagram.

17. A) Explain Indirect program memory addressing of 8086 microprocessor with an example.

Or

B) Differentiate between Direct program memory addressing, Relative program memory addressing and Indirect program memory addressing of 8086 microprocessor.

18. A) Draw a circuit that will terminate the INTR when interrupt request has been acknowledged.

Or

B) Discuss the following (a) Type 0 interrupt ; (b) Type 1 interrupt ; and (c) Type 2 interrupt.

19. A) Describe the different modes of operation of timers/counters in 8051 with its associated register.

Or

B) Explain the External Memory Timing of a 8051 microcontroller.

20. A) Draw the diagram to interface a stepper motor with 8051 microcontroller and explain.

Or

B) Write an 8051 assembly program segment to output a ramp signal through the DAC.

(5 × 10 = 50 marks)