

**FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2019 SCHEME]
EXAMINATION, NOVEMBER 2021**

B.Tech.

EN 19 501—ENGINEERING ECONOMICS AND PRINCIPLES OF MANAGEMENT

Time : Three Hours

Maximum : 100 Marks

Section I**PART A***Answer any four questions.**Each question carries 5 marks.*

1. Explain the law of diminishing marginal utility.
2. What are the assumptions of law of demand ?
3. Describe the factors which affect the price elasticity of demand for a commodity.
4. Explain the law of supply.
5. Write the significance of cash equivalents.
6. Is it possible for a cash balance to decrease when the company makes a net profit for any given period ? Explain.

*(4 × 5 = 20 marks)***PART B***Answer all questions.**Each question carries 10 marks.*

1. (a) Explain the various factors influencing Demand and Supply with example.

Or

- (b) Analyze the various types of elasticity of demand and their usefulness.

Turn over

2

2. (a) A person is planning a new business. The initial outlay and cash flow pattern for the new business are as listed below Table. The expected life of the business is five years. Find the rate of return for the new business :

Period	: 0	1	2	3	4	5
Cash flow Rs.	1,00,000	30,000	30,000	30,000	30,000	30,000

Or

- (b) A company is planning to purchase an advanced machine centre. Three original manufacturers have responded to its tender whose particulars are tabulated as follows :

Manufacturer	Down payment Rs.	Yearly equal installment Rs.	No. of installments
1	5,00,000	2,00,000	
2	4,00,000	3,00,000	15
3	6,00,000	1,50,000	15

(2 × 10 = 20 marks)

Section II

PART A

Answer any six questions.

Each question carries 5 marks.

1. Briefly describe the major contributions of Taylor in management principle policy.
2. What is meant by Delegation of Authority ?
3. Mention the various steps involved in process of controlling.
4. Illustrate the advantages and limitations of Planning.
5. Explain briefly the techniques useful while evaluating alternatives.
6. State the importance of engineering economics.
7. Why does the demand curve slope downwards ?
8. Describe briefly on time cost trade off in critical path method.
9. Define and describe the term, 'corporate social responsibility'.

(6 × 5 = 30 marks)

PART B

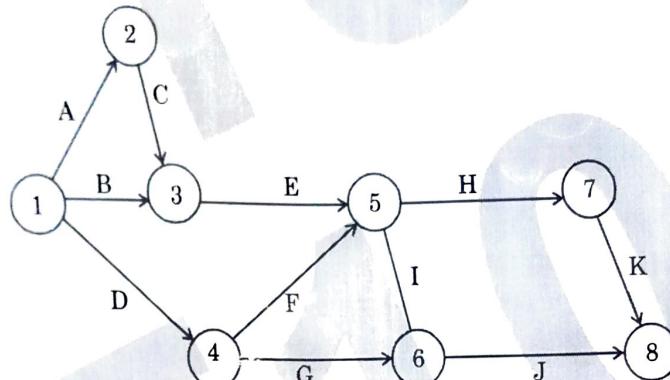
*Answer all questions.
Each question carries 10 marks.*

1. (a) What is Planning ? Discuss the various steps involved in Planning.

Or

- (b) Explain the Planning Premises in detail and how it could be effective ?

2. (a) For the project :



Task	A	B	C	D	E	F	G	H	I	J	K
Least time	4	5	8	2	4	6	8	5	3	5	6
Greatest time	8	10	12	7	10	15	16	9	7	11	13
Most likely time	5	7	11	3	7	9	12	6	5	8	9

Find the earliest and latest expected time to each event and also critical path in the network.

Or

- (b) A project has the following times schedule :

Activity	(1-2)	(1-3)	(2-4)	(3-4)
Time (weeks)	4	1	1	1
Activity	(4-9)	(5-6)	(5-7)	(6-8)
Time (weeks)	5	4	8	1
Activity	(8-9)	(8-10)	(9-10)	
Time (weeks)	1	8	7	

Construct the network and compute the TE and TL for each event, Float for each activity and Critical path and its duration ?

Turn over

3. (a) XYZ Ltd. is manufacturing and selling four types of products A, B, C and D. The fixed costs are Rs. 1,50,000 per month. Calculate break-even point. The sales mix and variable costs are as follows :

	A	B	C	D
Product Sales per month	2,00,000	1,50,000	1,00,000	2,50,000
Variable Cost Ratio	50 %	50 %	75 %	40 %

Or

- (b) A cost information computed by the cost accountant is as follows : Sales = 1,00,000 units
 Selling Price = Rs. 10 per unit Variable cost or out of pocket-costs = Rs. 6 per unit Fixed costs or burden = Rs. 60,000 per annum Compute the following :

- a) Break-even points in units and value
- b) Make a profit of Rs. 40,000
- c) Make a profit of Rs. 2 per unit
- d) Make a profit of 30 % on sales.

(3 x 10 = 30 marks)

(Pages : 2)

Name.....

Reg. No.....

**FIFTH SEMESTER B.TECH. (ENGINEERING) [2019 SCHEME]
DEGREE EXAMINATION, NOVEMBER 2021**

Electronics and Communication Engineering
EC 19 502—DIGITAL SIGNAL PROCESSING

Time : Three Hours

Maximum : 100 Marks

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

- Find the number of complex multiplications involved in the calculation of a 256 point DFT using (i) direct computation ; (ii) radix-2 FFT algorithm.
- Find the circular convolution of $x[n] = \{1, 2, 3, 4\}$ and $h[n] = \{2, 1, 2\}$.
- Compute the 3 point DFT of $x(n) = \{1, 2, 3, 4\}$.
- Write short note on limit cycle oscillations.
- Briefly explain round off effects in digital filters.
- Obtain the direct form-I realization of the system described by

$$y(n) = 0.5y(n-1) - 0.25y(n-2) + x(n) + 0.4x(n-1).$$

- Prove that, if z_1 is a zero of a linear phase FIR filter, then $1/z_1$ is also a zero.
- Determine the frequency response of FIR filter defined by

$$y(n) = 0.25x(n) + x(n-1) + 0.25x(n-2).$$

Calculate the phase delay and group delay.

- Compare the performance of FIR filter design using rectangular window and Hamming window.
- Apply bilinear transformation of $H(s) = 2/(s+1)(s+2)$ with $T = 1$ sec. and find $H(z)$.
- Using impulse invariance with $T = 1$ sec., determine $H(z)$ if $H(s) = \frac{1}{s^2 \sqrt{2}s - 1}$.
- What is meant by warping effect ?
- With a neat sketch, explain Harvard architecture.
- Explain the concept of pipelining.
- Explain the role of accumulator in computer architecture.

10 × 5 = 50 marks

Turn over

Part B

Answer one full question from each section.

Each question carries 10 marks.

16. a) Find the linear convolution of the following sequences using overlap add method :

$$x(n) = \{1, -2, 2, -1, 3, -4, 4, -3\}, h(n) = \{1, -1\}.$$

Or

- (b) Given $x(n) = \{1, 2, 3, 4, 4, 3, 2, 1\}$, find $X(K)$ using DITFFT algorithm.

17. a) Explain representation of numbers and errors due to rounding and truncation.

Or

- (b) Obtain the cascade and parallel realization of the system :

$$y(n) = -0.1y(n-1) + 0.2y(n-2) + 3x(n) + 3.6x(n-1) + 0.6x(n-2).$$

18. a) Design a low-pass filter with rectangular window by taking 9 samples of $w(n)$ and with cut-off frequency 1.2 rad/sec.

Or

- (b) Determine the coefficients of a linear phase FIR filter of length $N = 15$ which has symmetric unit sample response and the frequency response is given by :

$$\begin{aligned} H(2\pi/N) &= 1; & k &= 0, 1, 2, 3 \\ &= 0.4; & k &= 4 \\ &= 0; & k &= 5, 6, 7. \end{aligned}$$

19. a) Design a low-pass Butterworth filter to give a response of 3 dB or less for frequencies upto 2 kHz and an attenuation of 20 db or more beyond 4 kHz. Use bilinear transformation technique and obtain $H(z)$ of the filter.

Or

- b) Design a Butterworth digital filter using bilinear transformation. The specification of the desired low-pass filter is :

$$\begin{aligned} 0.9 &\leq |H(w)| \leq 1; & 0 \leq w \leq \frac{\pi}{2} \\ |H(w)| &\leq 0.2; & \frac{3\pi}{4} \leq w \leq \pi \end{aligned} \quad \text{with } T = 1 \text{ sec.}$$

20. a) Explain the architecture of ADSP 21XX processor with neat diagram.

Or

- b) Explain in detail about special instructions for DSP.

$(5 \times 10 = 50 \text{ marks})$

**FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE
[2019 SCHEME] EXAMINATION, NOVEMBER 2021**

Electrical and Electronics Engineering
EE 19 502—LINEAR CONTROL SYSTEMS

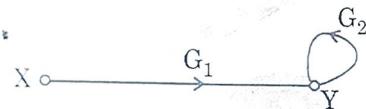
Time : Three Hours

Maximum : 100 Marks

Part A

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

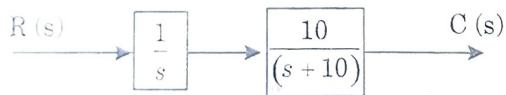
- 1 Compare Open loop and closed loop systems.
- 2 Define transfer function and mention its applicability in control system.
- 3 State D'Alembert's principle.
- 4 Obtain the gain Y/X for the signal flow graph shown below:



- 5 For a system described by :

$$\frac{C(S)}{R(S)} = \frac{16}{S^2 + 8S + 16}.$$

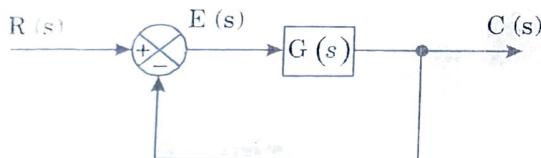
- Find the nature of the time response and justify.
- 6 List and explain the time domain specifications.
 - 7 Write short notes on pulse transfer function.
 - 8 A system is shown in fig. Find the rise time and settling time for this system :



- 9 Illustrate the Effect of poles and zeros and their location on the root locus.

Turn over

- 10 For unity feedback system shown in fig. If input is $30t^2$, find the steady state error :



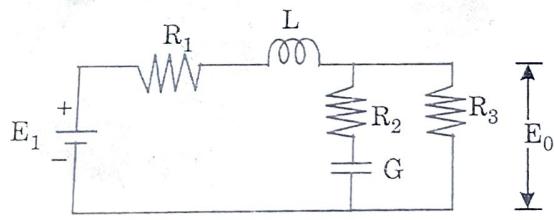
- 11 Explain, why frequency domain analysis is needed ?
- 12 Define corner frequency, gain crossover frequency and phase cross over frequency.
- 13 List and explain the advantages and disadvantages of phase lag network.
- 14 Outline Cascade Compensation.
- 15 Explain briefly the PD controller action with block diagram and obtain its transfer function model.

($10 \times 5 = 50$ marks)

Part B

*Answer any five questions
Each question carries 10 marks.*

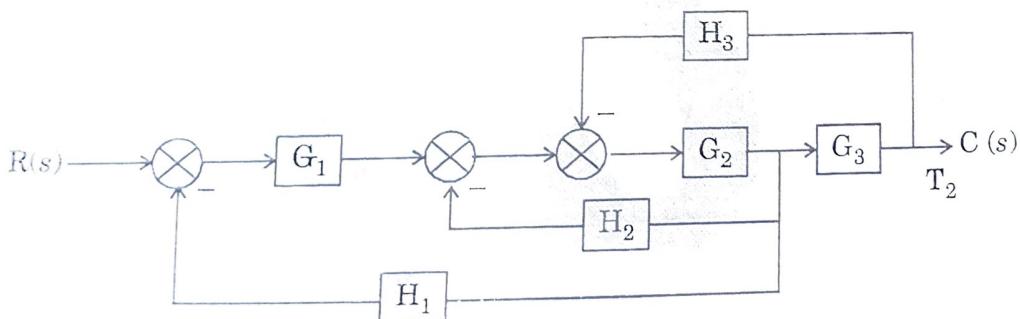
- II 1 Write the differential equations for the electric circuit shown in figure hence find $E_o(s)/E_1(s)$:



Or

- 2 Derive the transfer function of an armature controlled DC motor.

- 3 Reduce the block diagrams shown below :



Or

4. Evaluate the unit step response of the following system.

$$\frac{C(s)}{R(s)} = \frac{10}{s^2 + 2s + 10}$$

5. Consider the sixth order system with the characteristic equation.

$$s^6 + 2s^5 + 8s^4 + 12s^3 + 20s^2 + 16s + 16 = 0.$$

Use Routh-Hurwitz criterion to examine the stability of the system and comment on location of the roots of the characteristics equation.

6. A Unity feedback control system has an open loop transfer function $G(S) = K(S + 1.5) / S(S + 1)(S + 5)$. Sketch the root locus.
7. Construct the polar plot for the function $GH(S) = 2(S+1) / S^2$. Find Gain cross over Frequency, Phase cross over frequency, Gain margin and Phase margin.

Or

8. Plot the Bode diagram for the following transfer function and obtain the gain and phase cross over frequencies $G(S) = KS^2 / (1 + 0.2S)(1 + 0.02S)$. Determine the value of K for a gain cross over frequency of 20 rad/sec.
9. Design suitable lead compensators for a system unity feedback and having open Loop transfer function $G(S) = K / S(S + 1)$ to meet the specifications. (i) The phase margin of the system 45° ; (ii) Steady state error for a unit ramp input $1/15$; and (iii) The gain cross over frequency of the system must be less than 7.5 rad/sec.

Or

10. Explain the procedure for design of Lag compensator.

($5 \times 10 = 50$ marks)

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Name.....

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**FIFTH SEMESTER B.TECH. (ENGINEERING) [2019 SCHEME]
DEGREE EXAMINATION, NOVEMBER 2021**

Mechanical Engineering

ME 19 502—MANUFACTURING PROCESS-II

Three Hours

Maximum : 100 Marks

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

- 1 Explain in detail about the grain flow pattern in forging.
- 2 Explain the difference between Extrusion and drawing with a line diagram.
- 3 What are the various dies used in press working ?
- 4 Differentiate between forging and extrusion.
- 5 Explain flash less forging. What is the role of flash ?
- 6 Distinguish between hot forging and cold forging.
- 7 Express the important characteristics expected from a cutting tool material.
- 8 With the aid of a sketch, describe the resultant forces acting on the single point cutting tool in orthogonal cutting.
- 9 With the aid of a sketch, describe the temperature distribution in flank of a single point cutting tool when it is used for machining a component.
- 10 Distinguish between Up milling and Down milling.
- 11 Give a simple sketch of a broaching tool and explain various elements.
- 12 Discuss the desirable properties of cutting tool materials.
- 13 Suggest five ways to reduce the friction between chip and tool during cutting process.
- 14 Briefly explain the steps involved in chemical machining.
- 15 Explain the distinction between Conventional and Non-Traditional Manufacturing Processes.

 $(10 \times 5 = 50 \text{ marks})$ **Part B***Answer all questions.**Each question carries 10 marks.*

- 16 Explain in detail about selection of cutting fluid based on work materials.

Or

Turn over

17. Explain in detail about any five machining operations that can be performed using lathe with a neat sketch.
18. Explain the crank and slotted link mechanism used in shaper with neat sketch.

Or

19. Briefly explain sensitive drilling machine with neat sketch and list out its advantages and disadvantages.
20. Discuss the material removal mechanism in plasma arc machining. Explain the working of air plasma torch giving a neat sketch.

Or

21. Explain in detail about the operating principle and applications of water jet machining.
22. Explain the process characteristics of sheet metal forming process.

Or

23. Explain the construction and operations of combination and progressive dies with a neat sketch.
24. Briefly explain open die forging and closed die forging and also state the advantages and disadvantages.

Or

25. Figuratively explain in detail about electromagnetic forming.

($5 \times 10 = 50$ marks)

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(Pages : 2)

Name.....

Reg. No.....

**FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE
[2019 SCHEME] EXAMINATION, NOVEMBER 2021**

Printing Technology

PT 19 502—PACKAGING TECHNOLOGY

Time : Three Hours

Maximum : 100 Marks

Part A

Answer any ten questions.

Each question carries 5 marks.

1. Explain the tests done to determine the climatic hazards on package.
2. Explain the importance of colors in a package design with 2 examples.
3. Discuss various markings on package with neat sketches.
4. With neat sketches, explain different styles of cartons.
5. What are the advantages and applications of expanded polystyrene.
6. Discuss the function, types and applications of dessicants.
7. Discuss the features, advantages and applications of shrink packaging.
8. With neat sketch, explain the working principle of aerosol packaging.
9. Discuss the features, advantages and applications of strip packaging.
10. With neat sketch, explain the parts of a vertical form-fill-seal machine.
11. Discuss different ways of preserving wood.
12. Discuss the advantages, properties and applications of PVC and PET plastic substrates.
13. Discuss 5 different tests done on plastic substrates.
14. Describe closure. Explain its purposes and 2 types.
15. What are the advancements in food packaging ? Explain.

($10 \times 5 = 50$ marks)

Turn over

206207

Part B

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

16. (a) Discuss various functions of a package.

Or

- (b) Discuss various elements of package design.

17. (a) Discuss various methods of preventing corrosion.

Or

- (b) Explain various functions and properties of cushioning materials.

18. (a) With neat diagram, explain the working of extrusion blow molding.

Or

- (b) Explain different methods of vacuum forming with neat sketches.

19. (a) With neat diagram, explain the process of manufacturing glass.

Or

- (b) Discuss different types of boards.

20. (a) Explain different types of labels.

Or

- (b) Explain the designing of cans and metal tubes with neat sketches.

$(5 \times 10 = 50 \text{ marks})$

206221

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(Pages : 4)

Name.....

Reg. No.....

FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE
[2019 SCHEME] EXAMINATION, NOVEMBER 2021

Information Technology

IT 19 502—SIGNALS AND SYSTEMS

Time Three Hours

Maximum : 100 Marks

Part A

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

- 1 Explain Continuous and Discrete time signals with suitable diagram.
- 2 Explain the Properties of Convolution-Summation.
- 3 Explain about the impulse response in Continuous Signals.
- 4 Explain about the basics of Trigonometric Form of Fourier Series of a periodic signal $x(t)$, with period T.
- 5 Illustrate the concept of Odd symmetry.
- 6 Explain the concept of Frequency Spectrum of Periodic Continuous Time Signals.
- 7 Define Laplace transform. Explain the concept of Bilateral Laplace transform.
- 8 Explain about the Region of Convergence (ROC) for a Right sided (casual) signal.
- 9 Determine the Laplace transform of continuous time signal $x(t) = A u(t)$ and fid its ROC.
- 10 Explain about Fourier Series of Discrete Time Signals.
- 11 State the Difference Between Continuous Time and Discrete Time Fourier Series.
- 12 Illustrate the concept of Frequency Spectrum of Periodic Discrete Time Signals.
- 13 Define Z Transform. Also, Explain about One sided Z-Transform.
- 14 State and Explain Final value theorem in Z-Transform.
- 15 Explain the Time Shifting property of DTFT.

($10 \times 5 = 50$ marks)

Turn over

206221

Part B

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

16. (a) Explain in detail about :

- (i) Periodic and Aperiodic Signals.
- (ii) Energy and Power Signals.
- (iii) Even- and Odd-symmetric Signals.

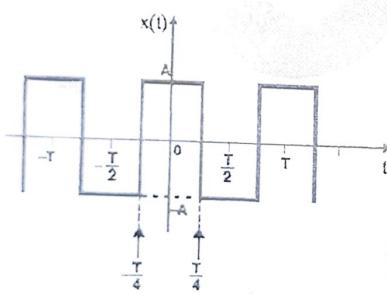
Or

(b) Given the differential equation of a system, with output $y(t)$ and input $x(t)$, determine whether the system is linear. Assume that the initial condition $y(0)$ is :

$$y(t) = x(t) + t \frac{dy(t)}{dt}$$

$$y(t) = x(t) + \left(\frac{dy(t)}{dt} \right)^2$$

17. (a) Determine the trigonometric form of Fourier series of the wave form shown in figure :



Or

- (b) Determine the Fourier transform of following continuous time domain signals :

$$x(t) = 1 - t^2 ; \text{ for } |t| < 1 \\ = 0 ; \text{ for } |t| > 1.$$

18. (a) Determine Laplace transform of periodic square wave shown in Figure :

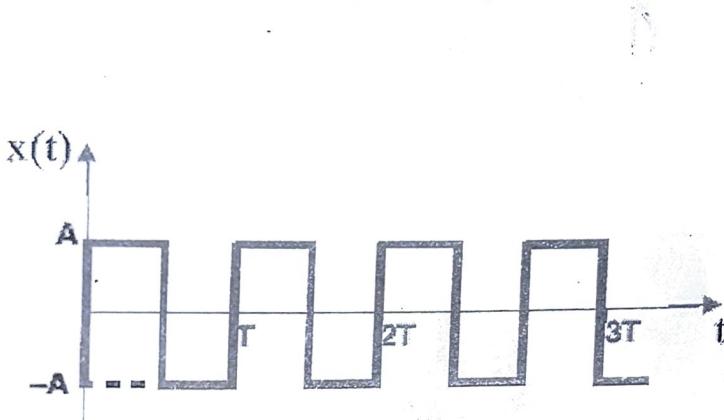


Figure 4

Or

- (b) Determine the poles and zeros of the rational function of s given below. Also sketch the pole-zero plot.

$$X(s) = \frac{(s+1)(s^2 + 10s + 41)}{(s+4)(s^2 + 4s + 13)}$$

19. (a) Determine the Fourier series representation of the following discrete time signal and sketch the frequency spectrum. $X(n) = \{ \dots, 1, 2, -1, 1, 2, -1, 1, 2, -1, \dots \}$

Or

- (b) Determine the Nyquist sampling frequency and Nyquist interval for the signal,

$$x(t) = \left(\frac{\sin 200 \pi t}{\pi t} \right)^2$$

Turn over

20. (a) Determine the inverse Z-transform of the function, $X(z) = \frac{3 + 2Z^{-1} + Z^{-2}}{1 - 3Z^{-1} + 2Z^{-2}}$ by Residue Method.

Or

- (b) Determine the Z-transform and their ROC of the Signal $x(n) = u(n)$

(5 × 10 = 50 marks)

**FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2019 SCHEME]
EXAMINATION, NOVEMBER 2021**

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. Elaborate the characteristics of database approach in detail.
2. Explain the categories of data models.
3. Specify the two main processes for defining superclass/subclass hierarchies.
4. State the concept of domain, attributes, tuples and relations.
5. Differentiate tuple and domain relational calculus.
6. Express a query to fetch maximum salary of Employee and minimum salary of Employee together from Employee table.
7. Explain the significance inclusion dependencies on relations.
8. State the inference rules for functional dependencies.
9. Explain the relationship between five normal forms.
10. Enumerate the reasons for transaction failures during execution.
11. Explain lock and unlock operations for binary locks.
12. Outline the two techniques for database recovery.
13. What are the issues addressed by database security ? Explain.
14. Mention the factors that can cause sensitivity to data.
15. List the characteristics of data warehouses.

($10 \times 5 = 50$ marks)

Turn over

Part B

Answer one full section from each question.

Each question carries 10 marks.

16. (a) With a neat sketch, explain three schema architecture for database systems.

Or

- (b) Compare traditional file processing with Database Management Systems.

17. (a) Consider the table :

Student (Student ID, Stu_Name, Stu_Subject_ID, Stu_Marks, Stu_Age)

- (i) Write a query to access the last record from the table.
- (ii) Write a query in SQL to retrieve only even rows from the table.
- (iii) Write a query in SQL to create a new table with the same data and structure as an existing table.
- (iv) Write a query in SQL to show the record of the three highest marks from the Student table.
- (v) Write a query in SQL to show all the record of those students whose marks is greater than 82 and age is 22.

Or

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

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

Or

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

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 about shadow paging and ARIES recovery algorithm.

20. (a) Give a brief overview on distributed databases.

Or

- (b) Elaborate object oriented and object relational databases in detail.

$(5 \times 10 = 50 \text{ marks})$

**FIFTH SEMESTER B.TECH. (ENGINEERING) [2019 SCHEME]
DEGREE EXAMINATION, NOVEMBER 2021**

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 heat transfer and give its significance.
2. State Fourier's law of heat conduction and its significance.
3. Brief on critical thickness of insulation.
4. Describe Newton's law of cooling.
5. Differentiate between Film wise and Drop wise condensation.
6. Define dimensionless numbers and list any three dimensionless numbers involved in heat transfer.
7. Describe briefly about Stephan Boltzmann law.
8. Explain shape factor and its significance.
9. Define the following terms : absorptivity, reflectivity and transmissivity.
10. Outline the classification of heat exchangers.
11. Briefly explain fouling and scaling of heat exchangers.
12. What is LMTD and give its significance ?
13. Describe briefly Fick's law of diffusion.
14. Explain about any two dimensionless numbers relating mass transfer principles.
15. Brief on steady-state unimolecular diffusion in liquids and gases.

(10 × 5 = 50 marks)

Turn over

Part B*Answer all questions.**Each question carries 10 marks.*

16. The root of an electrically heated home is 6 m. long, 8 m. wide, and 0.25 m. thick, and is made of a flat layer of concrete whose thermal conductivity is $k = 0.8 \text{ W/m.K}$. The temperatures of the inner and the outer surfaces of the roof one night are measured to be 15° C. and 4° C., respectively, for a period of 10 hours. Determine (a) The rate of heat loss through the root that night ; and (b) the cost of that heat loss to the home owner if the cost of electricity is Rs.4.kWh.

Or

17. A furnace wall is composed of 220 mm. of fire brick, 150 mm. of common brick, 50 mm. of 85 % magnesia and 3 mm. of steel plate on the outside. If the inside surface temperature is 90° C., estimate the temperature between layers and calculate the heat loss in kJ/h.m.² assume k (for fire brick) = 4 kJ/m.h.C, k (for common brick) = 2.8 kJ/m.h.C, k (for 85 % magnesia) = 0.24 kJ/m.h.C and k (steel) = 240 kJ/m.h.C.
18. Water is heated while flowing through a 1.5 cm. × 3.5 cm. rectangular tube at a velocity of 1.2 m/s. the entering water temperature is 40° C. and tube wall is maintained at 85° C. Determine the length of the tube required to raise the temperature of water by 35° C. Use the properties of water as follows : Density = 985.5 kg/m.³ ; $k = 0.653 \text{ W/m.K}$, Dynamic viscosity = $0.517 \times 10^{-6} \text{ m.}^2/\text{s}$; Specific heat = 4.19 kJ/kg.K.

Or

19. A vertical cylinder 1.5 m. high and 180 mm. in diameter is maintained in 100° C. in an atmosphere environment of 20° C. Calculate heat loss by free convection from the surface of the cylinder. Assume properties of air at mean temperature as , density = 1.06 kg./m.³, $\nu = 18.97 \times 10^{-6} \text{ m.}^2/\text{s}$, $C_p = 1.004 \text{ kJ/kg.C}$ and $k = 0.1042 \text{ kJ/m.h.C}$.
20. Discuss on the different laws of radiation in heat transfer and its significance.

Or

21. The effective temperature of the body having an area of 0.12 m.² is 527° C. Calculate the following (i) the total area of energy emission ; (ii) the intensity of normal radiation ; (iii) the wavelength of maximum monochromatic emissive power.

22. Derive an expression for LM TD for single pass parallel flow heat exchanger.

Or

23. A counter flow heat exchanger is employed to cool 0.55 kg./s ($C_p = 2.45 \text{ kJ/kg.C}$) of oil from 115° C. to 40° C. by the use of water. The inlet and outlet temperature of the cooling water are 15° C. and 75° C. respectively. The overall heat transfer coefficient is expected to be 1450 W/m.² °C. Using NTU method, calculate the following (i) mass flow rate of water ; (ii) effectiveness of heat exchanger ; (iii) surface area required.
24. Derive an expression for steady-state diffusion through a cylindrical shell and write its assumptions.

Or

25. Derive an expression for steady-state unimolecular diffusion and equimolar counter diffusion in liquids.

(5 × 10 = 50 marks)

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Name.....

Reg. No.....

**FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2019 SCHEME]
EXAMINATION, NOVEMBER 2021**

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. Describe how memory is organised for 8086 μ P ?
2. Although 8086 is a 16-bit μ P, it deals with 8-bit memory. Why ?
3. List the features of 8086 microprocessor.
4. Tabulate the Minimum mode signals and also mention their functions and types of 8086 microprocessor.
5. Discuss logical address, base segment address and physical address of 8086.
6. Mention the address capability of 8086 and show its memory map.
7. Draw the Isolated I/O memory and I/O address space.
8. What kind of I/O is used for IN and OUT instructions ?
9. What is the difference between Microprocessor and Microcontroller ?
10. Explain the Flags and the Program Status Word of a 8051 microcontroller
11. Explain the External Memory Timing of a 8051 microcontroller.
12. Bring out the differences between direct I/O instructions and variable I/O instructions.
13. Write an 8051-assembly program to find GCD of two numbers.
14. Explain the Programs for Keyboards of a 8051 microcontroller.
15. Explain the Stack and the Stack Pointer of a 8051 microcontroller.

(10 \times 5 = 50 marks)**Turn over**

Part B

Answer one full question from each section..

Each question carries 10 marks.

16. A) Explain the architecture of 8086 microprocessor, with a neat diagram, along with functions of each block and register.

Or

- B) Draw and discuss the architecture of 8086. Mention the jobs performed by EU (Execution Unit).

17. A) List the different subtraction arithmetic instructions of 8086 μ P. Also list the allowed operands for (a) SUB and SBB ; (b) DEC ; and (c) NEG instructions.

Or

- B) Explain (a) Register Addressing mode ; and (b) Immediate Addressing mode of 8086 μ P with examples.

18. A) Discuss the priority of interrupts of 8086.

Or

- B) Draw the schemes of (a) Min ; and (b) Max mode 8086 system external hardware interrupt interface and explain.

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

Or

- B) Explain the Timer modes of Operation of a 8051 microcontroller.

20. A) Write an 8051-assembly program to convert two digits BCD number to hexadecimal number

Or

- B) Explain how an intelligent LCD display of two lines, 20 characters per line, that is used to be interfaced to the 8051.

($5 \times 10 = 50$ marks)

**FIFTH SEMESTER B.TECH. (ENGINEERING) [2019 SCHEME]
DEGREE EXAMINATION, NOVEMBER 2021**

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 Explain the advantages of salient pole type construction used for synchronous machines.
- 2 Differentiate single layer and double layer winding.
- 3 What is the necessity of chording in the armature winding of a synchronous machine ?
- 4 Write the concept of transient and sub-transient reactances.
- 5 Explain the causes of voltage drop in an alternator when loaded.
- 6 What is meant by synchronizing ? State the conditions for paralleling alternator with infinite busbars.
- 7 Point out why synchronous motor is not a self-starting motor.
- 8 Discuss about 'Torque angle'.
- 9 Explain the role of synchronous condenser.
- 10 Why are the slots on the cage rotor of induction motor usually skewed ?
- 11 Describe wny an induction motor is called a 'rotating transformer'.
- 12 Identify the condition of maximum torque developed in three phase induction motor.
- 13 Draw the torque-slip characteristics of double-cage induction motor.
- 14 Develop the speed torque characteristics of single-phase induction motor.
- 15 Distinguish the terms rotating and pulsating magnetic fields.

(10 × 5 = 50 marks)

Part B*Answer any five questions.**Each question carries 10 marks.*

- II. 1 The stator of a 3-phase, 16 pole alternator has 144 slots and there are 4 conductors per slot connected in two layers and the conductors of each phase are connected in series. If the speed of the alternator is 375 r.p.m., calculate the e.m.f. induced per phase. Resultant flux in the air-gap is 0.05 webers per pole sinusoidally distributed. Assume the coil span as 1500 electrical.

Or

Turn over

- 2 Explain with the phasor diagram of synchronous machine under loaded condition.
- 3 Describe how the direct and quadrature-axis reactances of a salient pole synchronous machine can be estimated by means of slip test.

Or

- 4 Illustrate the parallel operation of three-phase alternators with help of a neat diagram.
- 5 Explain briefly the features and principle of operation of three-phase synchronous motor with relevant diagrams.

Or

- 6 Discuss briefly the starting methods employed for the synchronous motors.
- 7 Describe the construction and working principle of 3-phase induction motor.

Or

- 8 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.
- 9 Explain the following methods of speed control scheme :

- (i) Cascaded connection ; (ii) V/f control.

Or

- 10 Explain why 1-phase induction motor is not self-starting. Also explain Double revolving field theory.

($5 \times 10 = 50$ marks)

**FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2019 SCHEME]
EXAMINATION, NOVEMBER 2021**

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 Aliasing ? How will you overcome it ?
2. Explain the limitations of Delta Modulation.
3. Determine the Nyquist rate and Nyquist sampling interval for the signal $g_1(t) = \sin c 100 t$.
4. State and explain Nyquist criteria for zero ISI.
5. What is eye pattern ? Explain the use of eye pattern.
6. A communication channel of bandwidth 75kHz is required to transmit binary data at the rate of 0.1 Mbps using raised cosine pulses. Determine the roll off factor.
7. Distinguish between ML rule and MAP rule.
8. Explain about Maximum Likelihood decoder.
9. Distinguish between Likelihood function and Log likelihood function.
10. Explain the block diagram for the generation and detection of BPSK with necessary equations.
11. Write a short note on Differential Phase Shift Keying.
12. Compare the performance of various digital modulation schemes.
13. Explain about synthesis equation and analysis equation in the context of signal space representation of signals.
14. Explain the properties of pseudo noise sequence.
15. Write a short note on Maximal Length code.

(10 × 5 = 50 marks)

Turn over

Part B

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

16. (a) State and prove sampling theorem ?
 (b) Explain the block diagram for PCM.
17. (a) Derive the impulse response and frequency response of matched filter.
 (b) Derive the frequency response and impulse response for duobinary encoder.
18. (a) Explain the block diagram for correlation receiver.
 (b) Write a short note on :
 (i) Gaussian Random Process ; and
 (ii) Properties of Gaussian Random Process.
19. (a) Derive an expression for probability of error for BPSK.
 (b) Explain the block diagram for the generation and detection of BFSK with necessary equations.
20. (a) Given the signals $s_1(t)$, $s_2(t)$, $s_3(t)$ and $s_4(t)$, shown in Figure Use the Gram-Schmidt orthogonalization procedure to find orthonormal basis functions for the set of signals.

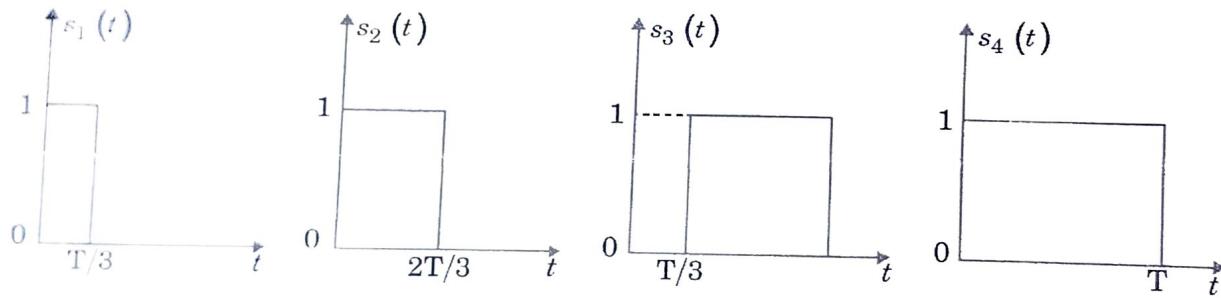


Figure 1 Signals $s_1(t)$, $s_2(t)$, $s_3(t)$ and $s_4(t)$.

- (b) Write a short note on :
 (i) Gold sequence ; and
 (ii) Frame synchronization techniques.

(5 × 10 = 50 marks)

**FIFTH SEMESTER B.TECH. (ENGINEERING) [2019 SCHEME]
DEGREE EXAMINATION, NOVEMBER 2021**

Electrical and Electronics Engineering

EE 19 504—POWER SYSTEM-I—GENERATION, TRANSMISSION AND DISTRIBUTION

Time : Three Hours

Maximum : 100 Marks

Part A

Answer any ten questions.

Each question carries 5 marks.

1. 1 State factors to be considered for selection and of site for the NPS.
- 2 Write a short note : (i) Cooling towers ; (ii) Condenser.
- 3 Draw the schematic diagram of Solar pond and explain its working.
- 4 Outline the significance of load factor and diversity factor.
- 5 A power station has a maximum demand of 200 MW, a plant load factor of 0.6 a plant capacity factor of 0.5 and a plant use factor 0.8. Find the daily energy consumed.
- 6 Narrate about economics of power generation.
- 7 State and explain Kelvin's law for economic choice of conductor.
- 8 Explain the effects of Corona.
- 9 Generalize the factors affecting sag in a transmission line.
- 10 Define safety factor of insulator. Why it is desired to be high ?
- 11 A single core cable, 1.7 km. long, has a conductor radius of 13 mm. and insulation thickness of 5.8 mm. The dielectric has a relative permittivity of 2.8. Calculate the capacitance per meter length of cable.
- 12 Explain the line supports used in transmission and distribution systems.
- 13 Discriminate between self and mutual GMD.
- 14 Explain why the concept of self GMD is not applicable for capacitance calculation.
- 15 State skin effect in transmission line. Mention its effects on the resistance of the line.

(10 × 5 = 50 marks)

Turn over

Part B

*Answer any five questions.
Each question carries 10 marks.*

- II. 1 Draw the schematic diagram of hydro electric power station. State the different methods of classifying hydro electric power plant and give the classification of HPS based on all three methods.

Or

- 2 State the merits and demerits of solar energy conversion and utilization. State various types of solar thermal collectors along with their advantages and disadvantages.
- 3 A power station is to supply four regions of loads whose peak loads are 10000 kW, 5000 kW, 8000 kW and 7000 kW. The diversity factor of the load at the station is 1.5 and average annual load factor is 60 %. Calculate the maximum demand on the station and annual energy supplied from the station. Suggest the installed capacity and number of units taking all aspects into account.

Or

- 4 Explain the different types of tariff in detail.
- 5 A string of five insulator units has mutual capacitance equal to 10 times the pin to earth capacitance, find voltage distribution across various units as the per cent of the total voltage across the string and string efficiency.

Or

- 6 Derive an expression for sag of a line supported between two supports of the same height. Also explain the effect of ice and wind loading.
- 7 A 2-wire, d.c. distributor 200 meters long is uniformly loaded with 2A/m. Resistance of single wire is 0.3 ohm/km. If the distributor is fed at one end calculate :
- The voltage drop up to a distance of 150 m. from the feeding point.
 - The maximum voltage drop.

Or

- 8 With neat diagram, explain the various methods of grading of underground cables.
- 9 Derive the expression for calculation the internal and external flux linkages for a conductor carrying current. Use these expressions to derive the equation for the inductance of a single-phase transmission line.

Or

- 10 A balanced three-phase load of 30 MW is supplied 132 kV, 50 Hz and 0.85 p.f. lagging by means of a transmission line. The series impedance of a single conductor $(20 + j 52)$ ohm and the total phase neutral admittance is 315×10^{-6} Siemen. Using nominal T method. Determine (i) A, B, C and D constants of the line ; (ii) Sending end voltage ; (iii) Regulation of the line.

$(5 \times 10 = 50 \text{ marks})$

**FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2019 SCHEME]
EXAMINATION, NOVEMBER 2021**

Mechanical Engineering

ME 19 504—MECHANICS OF MACHINERY

Time : Three Hours

Maximum : 100 Marks

Part A

Answer any ten questions.

Each question carries 5 marks.

1. Classify the mechanisms based on degrees of freedom (DoF), if DoF is equal to, (i) one ; (ii) two ; and (iii) zero.
2. The dimensions of a four bar linkage is given by AB = 12 mm, BC = 30 mm, DC = 26 mm and AD (fixed link) = 32 mm. Find the transmission angle at any one extreme configuration.
3. Identify any one rocker-rocker mechanism used in automobile, draw the kinematic diagram and mention about any two salient characteristics.
4. The wheel 2 shown in Fig. 1, rotates at 600 rev/min CW and drives wheel 3 without slipping. Find the velocity difference between points B and A.

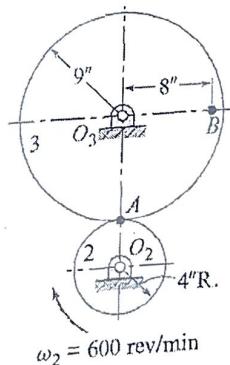


Fig. 1

5. Define and numerically illustrate the angular velocity ratio theorem of instantaneous centres.
6. Define Coriolis component of acceleration. In which cases does it occur ?
7. What is backlash in gears ? Brief the effect of backlash in power transmission.
8. Write short notes about helical gears.

Turn over

Draw the kinematic diagram of a simple planetary gear train and write the speed ratio.

10. Draw an appropriate follower displacement diagram for the following cases and specify the stroke of follower : (i) Dwell-Rise-Dwell-Return-Dwell, (ii) Dwell-Rise-Dwell.
11. Why radial follower is preferred over offset followers in cam and follower mechanism? Brief with simple sketch.
12. What are circular arc cams ? Write the expression for maximum velocity and acceleration of tangent cams with flat faced follower.
13. Differentiate the path generation synthesis and motion generation synthesis with an example.
14. A linkage is to be synthesized to generate a function $y = \sin x$, $0 \leq x \leq n$, where x and y are the input and output variables. Find the three precision positions of y within the specified range.
15. Define the term 'dyad'. Specify the use of dyad in graphical synthesis of planar linkages.

($10 \times 5 = 50$ marks)

Part B

Answer any five questions.

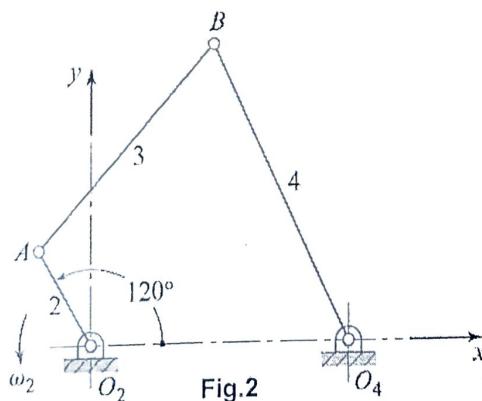
Each question carries 10 marks.

16. Identify the mechanisms that are obtained, if the crank in a slider crank chain is grounded. Also, describe about any one mechanism with simple sketch.

Or

17. Brief about any two straight line generators with simple sketch.

18. The four-bar linkage in the posture shown in Fig. 2 is driven by crank 2 at $\omega_2 = 45$ rad/s ccw. Find the angular velocities of links 3 and 4. $AO_2 = 50$ mm, $BA = 125$ mm, $O_4O_2 = 125$ mm, $BO_4 = 150$ mm.



Or

Fig. 3, show the configuration of an engine mechanism. The dimensions are as follows : $OA = 200 \text{ mm}$, $AB = 600 \text{ mm}$. At the instant shown, the crank, OA has an angular velocity of 50 rad/s CW and an angular acceleration of 800 rad/s^2 . Find the acceleration of the slider, B and the angular acceleration of the link, AB.

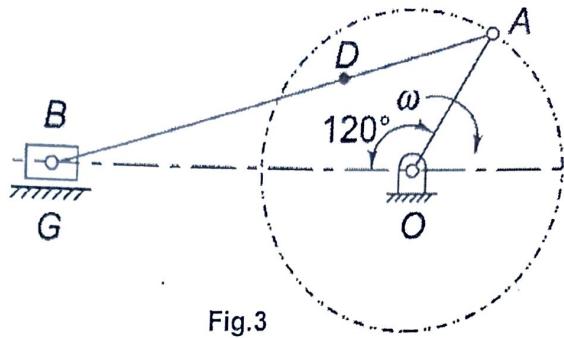


Fig.3

20. Find the contact ratio for two involute gears are in mesh. The following data is applicable : module = 6 mm, the pressure angle 18° addendum = 0.8 module, the number of teeth on pinion is 25 and that in gear is 50.

Or

21. Fig. 4 shows diagrammatically a compound epicyclic gear train. Wheels A, D and E are free to rotate independently on spindle C, while B and C are compound and rotate together on spindle P, on the end of arm OP. All the teeth on different wheels have the same module. A has 12 teeth, B has 30 teeth and C has 14 teeth cut externally. Find the number of teeth on wheels D and E which are cut internally. If the wheel A is driven clockwise at 1 rps while D is driven clockwise at 300 r.p.m., determine the magnitude and direction of the angular velocities of arm OP and wheel E.

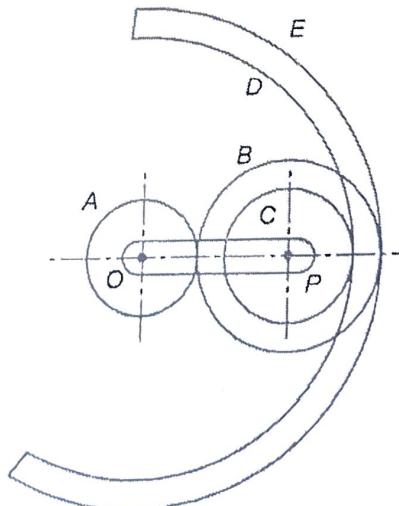


Fig.4

Turn over

Draw the profile of a cam operating a knife edge follower having a lift of 30 mm. The cam raises the follower with SHM for 150° of the rotation, followed by a period of dwell for 60°. The follower descends for the next 100° rotation of the cam with uniform velocity, again followed by a dwell period. The cam rotates at a uniform speed of 120 r.p.m. and has a least radius of 20 mm. Also, find the maximum velocity and the acceleration of the follower during the lift.

Or

23. The follower of a tangent cam is operated through a roller of 50 mm diameter and its line of stroke passes through the axis of the cam. The minimum radius of the cam is 40 mm and the nose radius 15 mm. The lift is 25 mm. If the speed of the camshaft is 600 r.p.m., calculate the velocity and acceleration of the follower at the instant when the cam is in full lift position, and is at 20° from full lift position.
24. Design a four-bar mechanism for three precision positions, when the motions of the input and output links are governed by a function $y = 2x^2$ and x varies from 2 to 4 with an interval of 1. Assume θ to vary from 40° to 120° and Φ from 60° to 132°.

Or

25. Enumerate the procedure to synthesize a four-bar mechanism for two precision positions based on function generation using graphical approach.

(5 × 10 = 50 marks)

13460

(Pages : 2)

Name.....

Reg. No.....

**FIFTH SEMESTER B.TECH. (ENGINEERING) [2019 SCHEME]
DEGREE EXAMINATION, NOVEMBER 2021**

Electronics and Communication Engineering
EC 19 504—ELECTROMAGNETIC WAVES

Maximum : 100 Marks

Time : Three Hours

Part A

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

1. Prove integral form and point form of continuity equation.
2. Derive the capacitance of a coaxial cable.
3. Explain Biot-Savart's law.
4. List Maxwell's equation for time varying fields in both integral and differential forms.
5. Explain the term skin effect.
6. What are the boundary conditions between two magnetic media ?
7. Explain Poynting's theorem.
8. Compute the Brewster angle of an electric field wave travelling in air and incident normally on a boundary between air and a dielectric having permittivity of 4.
9. Explain total internal reflection.
10. What is Smith chart ? List the applications of Smith chart.
11. A transmission line has the following parameters : $Z_L = 100 - j100 \Omega$, $Z_0 = 600 \Omega$. Determine the standing wave ratio and reflection coefficient.
12. Discuss the need for impedance matching in transmission line.
13. Explain the structure of circular cylindrical wave guides.
14. Discuss the attenuation factor or constant of waveguide.
15. Discuss the advantages of waveguides.

(10 × 5 = 50 marks)

Part B

*Answer one question from each module.
Each question carries 10 marks.*

Module I

16. (a) Derive an expression for the magnetic vector potential.

Or

- (b) Derive an expression for the energy stored in electric fields.

Turn over

206370

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(Pages : 2)

Name.....

Reg. No.....

FIFTH SEMESTER B.TECH. (ENGINEERING) [2019 SCHEME]
DEGREE EXAMINATION, NOVEMBER 2021

Electronics and Communication Engineering
EC 19 504—ELECTROMAGNETIC WAVES

Time : Three Hours

Maximum : 100 Marks

Part A

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

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2. Derive the capacitance of a coaxial cable.
3. Explain Biot-Savart's law.
4. List Maxwell's equation for time varying fields in both integral and differential forms.
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14. Discuss the attenuation factor or constant of waveguide.
15. Discuss the advantages of waveguides.

($10 \times 5 = 50$ marks)

Part B

*Answer one question from each module.
Each question carries 10 marks.*

Module I

16. (a) Derive an expression for the magnetic vector potential.

Or

- (b) Derive an expression for the energy stored in electric fields.

Turn over

206370

**FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE
[2019 SCHEME] EXAMINATION, NOVEMBER 2021**

Information Technology

IT 19 504—THEORY OF COMPUTATIONS

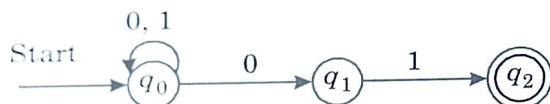
Time : Three Hours

Maximum : 100 Marks

Part A

*Answer eight questions.
Each question carries 5 marks.*

1. Explain the need for automata theory in Computer Science.
2. Define five-tuple Deterministic Finite Automaton.
3. Construct transition table for the given NFA :



4. Give a regular expression for the following :
 - (i) Set of all strings having odd number of 1's.
 - (ii) Set of all strings ending in 00.
5. What are the closure properties of regular languages ?
6. Show the equivalence of two regular expressions $(0^*1^*)^*$ and $(0 + 1)^*$.
7. Let $G = (N, T, P, S)$, $P = \{S \rightarrow A1B/a, \rightarrow 0A/\epsilon, B \rightarrow 0B/1B/\epsilon\}$ give a leftmost and rightmost derivation for the string 00101.
8. Enumerate the differences between NFA and PDA.
9. What are the different ways of language acceptances by a PDA and define them.
10. Define Turing Machine. State the features of Turing Machine.
11. When a language is said to be recursive and recursively enumerable ?
12. Explain briefly about subroutines in Turing Machines.

Turn over

13. Elaborate the types of polynomial time reductions.
 14. How do you prove that the Post Correspondence problem is undecidable ?
 15. Write short notes on tractable and intractable problems.

(10 × 5 = 50 marks)

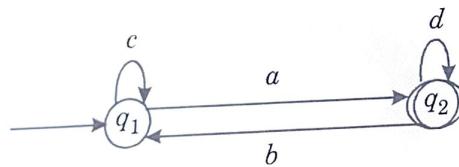
Part B

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

16. (a) Prove that $1^2 + 2^2 + 3^2 + \dots + n^2 = \frac{n(n+1)(2n+1)}{6}$ by mathematical induction for all $n \geq 1$.

Or

- (b) Construct a deterministic finite-state automaton that recognizes the set of all bit strings that begin with two 0s.
 17. (a) Convert the given finite automata into regular expression.

*Or*

- (b) State and explain the algebraic laws of regular expressions.
 18. (a) Construct a PDA accepting by empty stack the languages $\{a^m b^m c^n \mid m, n \geq 1\}$ and find PDA for the given grammar $S \rightarrow 0S1 / 00 / 11$.

Or

- (b) Find a grammar in Chomsky Normal Form equivalent to $S \rightarrow AB / aB, A \rightarrow aaB / \epsilon, B \rightarrow bbA$ form.

19. (a) Construct a TM for the language $L = \{0^n 1^n 2^n\}$ where $n \geq 1$.

Or

(b) Discuss in detail about restricted Turing Machines.

20. (a) State and prove Rice's theorem.

Or

(b) Compare the features of P, NP and NP-complete classes of problems with examples.

(5 × 10 = 50 marks)

206366

3450

(Pages : 2)

Name.....

Reg. No.....

**FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2019 SCHEME]
EXAMINATION, NOVEMBER 2021**

Printing Technology

PT 19 504—FLEXOGRAPHY

Time : Three Hours

Maximum : 100 Marks

Part A

Answer any ten questions.

Each question carries 5 marks.

1. Explain the stack flexo press configuration with neat diagram and list its advantages and disadvantages.
2. Describe the molding press used for rubber plate making.
3. Describe with neat diagram the follower arm tension control system.
4. Describe the deflection of fountain roll, its reason and how to determine the deflection ?
5. Describe the mechanical principle of flexography with neat diagram.
6. Describe the mounting and demounting of plates on plate cylinder.
7. Explain the elements of control console and deck control of a flexo press.
8. What are the basic requirements of process color flexo printing ? Explain.
9. What are the different image carriers used for flexo printing ? Brief.
10. Explain the principle of working of two roll inking system with neat diagram.
11. Explain the anilox roller wear, its reason and what is the solution to avoid wearing of anilox roller.
12. Explain bench micrometers and thickness control bearers used for rubber plate making.
13. What is water based flexo printing ? What are the applications and the benefits ? Explain.
14. Describe the sheet fed flexographic printing press and its applications.
15. What is the purpose of mounting and proofing flexo plates ?

($10 \times 5 = 50$ marks)

Turn over

206366

Part B

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

16. a) Explain the parts of an inline flexographic press with neat diagram and the function of each element.

Or

- b) Describe the different types of gears used on flexographic presses. Mention the specific requirement of gear on each element of the press.

17. a) Explain the step by step procedure of making molded rubber plates.

Or

- b) How do you prepare the photopolymer plates for process color printing? What are the requirements to be followed? Explain.

18. a) Explain with neat diagrams two types of surface winders used on flexo presses.

Or

- b) Define tension zones of a flexo press. Describe the level and pattern of tension to be maintained at each tension zone.

19. a) What are the different cell structures used on anilox roller? Explain with simple diagrams and their applications.

Or

- b) What are the things to be accomplished while checking the equipment before mounting and proofing of flexo plates? explain

20. a) What are the components and applications of narrow flexographic printing? Explain.

Or

- b) Write an essay on best press room practices to be followed in flexo industry.

($5 \times 10 = 50$ marks)

**FIFTH SEMESTER B.TECH. (ENGINEERING) [2019 SCHEME]
DEGREE EXAMINATION, NOVEMBER 2021**

Mechanical Engineering

ME 19 505—METROLOGY AND INSTRUMENTATION

Time : Three Hours

Maximum : 100 Marks

Part A

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

1. What is rotameter ? Explain its working principle.
2. List out the applications of Machine vision system.
3. Distinguish between Accuracy and Precision of an instrument.
4. Write short notes on (i) readability ; (ii) Dynamic response.
5. List out the errors in screw thread and gear.
6. What is a CMM probe ? Explain the various types of probes used in CMM.
7. Define R_a and R_z , with respect to surface roughness.
8. Give details about the zero, first and second order instruments.
9. Define strain gauges. Mention types of strain gauge.
10. What is meant by primary and secondary transducers ?
11. Write about the calibration system in metrology.
12. Enumerate the method of determining an absolute length of slip gauges.
13. Explain the term accuracy and precision.
14. With a neat sketch, explain the Hall effect.
15. Explain the lead back effect with a neat sketch.

(10 × 5 = 50 marks)

Part B

*Answer all questions.
Each question carries 10 marks.*

16. Describe in detail the different types of dynamic errors in a measurement system.

Or

17. Describe the precautionary measures to be taken at various stages of using slip gauges and explain mathematically why error in sine bar increases when the angle being measured exceeds 45° .

Turn over

18. Explain in detail Taylor's principle of gauging and explain in detail about any two limit gauge and its applications with a neat sketch.

Or

19. Figuratively state the construction of the Pitter-NPL flatness interferometer and explain its working principle.
20. Suggest the suitable measuring instrument used to measure the tooth thickness of a spur gear. Explain in detail about its procedure with an appropriate sketch.

Or

21. Explain in detail about the measurement of effective diameter of screw thread using floating carriage micrometer.
22. With neat sketches, explain the construction and working of LVDT. List the advantages and applications of LVDT.

Or

23. Describe the different modes of operation of piezo electric transducers.
24. Explain the application of flow meters used in flow measurement with appropriate definitions, principles and working methodology.

Or

25. Brief about:

- (i) Liquid in glass thermometer. (5 marks)
- (ii) Complete partial and total immersion thermometers. (5 marks)

[$5 \times 10 = 50$ marks]

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(Pages : 2)

Name.....

Reg. No.....

**FIFTH SEMESTER B.TECH. (ENGINEERING) [2019 SCHEME]
DEGREE EXAMINATION, NOVEMBER 2021**

Electrical and Electronics Engineering

EE 19 505—MICROPROCESSORS

Time : Three Hours

Maximum : 100 Marks

Part A

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

- I. 1 Give the operation of minimum mode of 8086 microprocessor.
- 2 Explain the purpose of segment registers in 8086.
- 3 Classify the types of 8086 interrupts.
- 4 Illustrate some string instructions with its operation.
- 5 Outline processor control instructions with example.
- 6 Write an assembly language program to search a number in a string using 8086.
- 7 Write the basic concepts of modular programming.
- 8 Write an assembly language program for calculating the factorial of a number using 8086 microprocessor.
- 9 List the features of Pentium processor.
- 10 Explain the functional types used in control words of 8251.
- 11 Give the features of Interrupt controller 8259.
- 12 Write the different modes of operation of 8237.
- 13 What are the purposes of register banks in 8051 ?
- 14 Tell about flag bits.
- 15 Explain loop and jump instructions with suitable example.

(10 × 5 = 50 marks)

Part B

*Answer any five questions.
Each question carries 10 marks.*

- II. 1 Draw with neat sketch and explain the architecture of INTEL 8086 microprocessor.

Or

- 2 Describe the interrupt system of 8086 in detail with suitable examples.

Turn over

- 3 Enumerate the concept of Addressing modes and discuss its types.

Or

- 4 Write an assembly language program to convert a 8 bit BCD number into hexadecimal number using 8086 microprocessor.
- 5 Explain in detail about memory organization.

Or

- 6 Describe the function of Pentium processor with its architecture in detail with neat sketch.
- 7 Brief the concept of keyboard controller and interfacing with the assembly language program.

Or

- 8 Explain the block diagram and the functions of each block of the 8251 USART.
- 9 Discuss in detail about 8051 interrupts.

Or

- 10 Demonstrate the interfacing of microcontroller with Stepper motor control with suitable program.

($5 \times 10 = 50$ marks)

**FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE
[2019 SCHEME] EXAMINATION, NOVEMBER 2021**

Printing Engineering

PT 19 505—MACHINE DYNAMICS

Maximum : 100 Marks

Time : Three Hours

Part A

Answer any ten questions.

Each question carries 5 marks.

1. Differentiate higher pairs from lower examples with suitable examples.
2. Differentiate whit worth quick-return mechanism and crank and slotted lever mechanism.
3. With a neat sketch explain the working of the toggle press mechanism
4. Explain the consequences of not balancing a rotating or a reciprocating mass.
5. Explain the terms with respect to a vibration system : (i) Degrees of freedom ; and (ii) Critical damping.
6. What is meant by forced vibration ? List engineering applications where such vibrations are possible and are detrimental.
7. Derive the expression to find the minimum number of teeth on the pinion to avoid interference between involute gears.
8. Suggest gears as per the following constraints for some engineering applications. With sketch explain their salient features.
 - (a) driver and driven shafts are parallel to each other. The gears should run making less noise.
 - (b) driver and driven spindles are at right angles and have a velocity ratio of 1.
9. Derive the relation for the ratio of driving tensions of a V-belt.
10. What is the significance of endurance limit? Explain with a suitable example its real life usage.
11. What are rolling contact bearings ? List any four advantages of such bearings.
12. Define stress, strain, Young's modulus.

Turn over

13. How is the shaft designed when it is subjected to twisting moment only ? 2
14. What are the different types of material that can be used in making of springs ?
15. Show schematically at least 2 different types of keys that are used in machines. List their salient features.
16. Show schematically at least 2 different types of keys that are used in machines. List their salient features.

(10 × 5 = 50 marks)

Part B

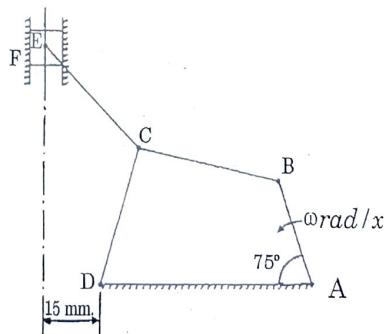
*Answer all questions.
Each question carries 10 marks.*

16. A cam turning clockwise with a uniform speed of 240 r.p.m. is to give the following motion to a roller follower of 16 mm. diameter. Follower to rise through a distance of 45 mm. during 120° rotation of the cam. Follower to dwell for the next 60° rotation of the cam. Follower to then return to its initial position during the next 120° of cam rotation. Follower to dwell for remaining period of 60° cam rotation. The minimum radius of the cam is 32 mm. and the line of stroke of the follower is offset 12 mm. from the axis of the cam towards the right. The displacement of the follower is to take place with S. H. M. motion on rise and with uniform acceleration and deceleration motion during return stroke. Draw the cam profile.

Or

17. In the mechanism shown in Fig. Q 17 below, the dimensions of various links are, AB = 30 mm, BC = 45 mm, CD = 40 mm, AD = 65 mm, CE = 40 mm. and angle DAB = 75°. The crank AB rotates at uniform speed of 600 r.p.m. in counterclockwise direction. Determine the linear acceleration of slider E and angular acceleration of link BC. The velocities of various links are tabulated below.

Link	Velocity m/s
AB	1.885
BC	1.15
CD	1.5
CE	1.95
SLIDER E	1.85



18. A rotating shaft carries four masses A, B, C and D which are readily attached to it. The mass centres are 30 mm, 38 mm, 40 mm. and 35 mm. respectively from the axis of rotation. The masses A, C and D are 7.5 kg, 5 kg. and 4 kg. respectively. The axial distances between the planes of rotation of A and B is 600 mm and between B and C is 500 mm. The masses A and C are right angle to each other, find for complete balance,

- The angles between the masses B and D from mass A.
- The axial distance between the planes of rotation of C and D.
- The magnitude of mass B.

Or

19. A shaft is rotating at a uniform angular speed. Four masses M₁ to M₄ having magnitudes 30 kg, 45 kg, 36 kg and 40 kg. respectively are attached rigidly to the shaft. The masses are rotating in the same plane and the corresponding radii of rotation are 20 cm, 15 cm, 25 cm and 30 cm respectively. The angle made by these masses with the horizontal are 0°, 45°, 120° and 250° respectively. Determine the magnitude of balancing mass if the radius of rotation is 20 cm.
20. Following data relate to two meshing involute gears : Number of teeth on the gear wheel = 60, Pressure angle = 20°, gear ratio = 1.5, speed of the gear wheel = 100 r.p.m, Module = 8 mm. The addendum on each wheel is such that the path of approach and the path of recess on each side are 40 % of the maximum possible length each. Determine the addendum for the pinion and gear and length of arc of contact.

Or

21. A leather belt transmits 9 kW from a motor running at 520 r.p.m. by an open belt drive. The diameter of the driven pulley is 350 mm, center distance between the pulleys is 4 m. and speed of the driven pulley is 175 r.p.m. The belt weighs 1.100 g/cc and the maximum allowable tension in the belt is 3.5 N/mm². Co-efficient of friction = 0.25. Find the width of the belt assuming the thickness to be 10 mm. Neglect the belt thickness to calculate the velocities.
22. Design a suitable journal bearing for a machine. The load caused on the bearing is 14 kN. Diameter of the journal is 85 mm while the rotational speed is 25 r.p.s. Bearing characteristics number at the working temperature at 75 °C is 30. Safe bearing pressure intensity is 0.6 MPa to 1.2 MPa. Ambient temperature can be assumed to be 32 °C. Estimate the cooling requirement.

Or

23. A ball bearing is subjected to a radial force of 2.5 kN and an axial force of 1.5 kN. The dynamic load carrying capacity of the bearing is 7 kN. The value of X and Y factors 0.46 and 1.7 respectively. The shaft is rotating at 15 r.p.s. Estimate the life of bearing.

Turn over

24. A vertical spring loaded valve is required for a compressed air receiver. The valve is to start opening at a pressure of 1 MPa and must be fully open with a lift of 4 mm. at a pressure of 1.2 MPa. The diameter of the port is 25 mm. Assume the safe stress in the spring material to be 480 MPa and shear modulus as 80 kN/mm^2 . Take $K = [(4C - 1)/(4C - 40)] + [0.615/C]$. Standard wire diameters in mm are 12.7, 11.875, 10.973, 10.160, 9.940, 8.839, 8.229, 7.620, 7.010, 6.401, 5.893, 5.385, 4.877, 4.470, 4.064, 3.658, 3.251, 2.946, 2.642, 2.337, 2.032, 1.829, 1.626, 1.422, 1.219, 0.254, 0.233, 0.213, 0.193, 0.172, 0.152, 0.1321, 0.121, 0.111, 0.101, 0.091, 0.081, 0.071.

Or

25. Design a clamp coupling to transmit 30 kW power at 100 r.p.m. The allowable shear stress for the shaft and key is 40 MPa and the number of bolts connecting two halves are six. The permissible tensile stress for the bolts is 70 MPa. The co-efficient of friction between the muff and shaft surface can be taken as 0.3

($5 \times 10 = 50$ marks)

**FIFTH SEMESTER B.TECH. (ENGINEERING) [2019 SCHEME]
DEGREE EXAMINATION, NOVEMBER 2021**

Electronics and Communication Engineering
EC 19 505—COMPUTER ARCHITECTURE

Time : Three Hours

Maximum : 100 Marks

Part A

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

1. With a diagram, explain the logic of a carry look ahead adder.
2. Using Booth algorithm, multiply -13 and $+12$.
3. Explain about the IEEE standard for floating point numbers.
4. What are registers in a computer ? List four registers normally available in any CPU.
5. Explain the concept of stored program organization with an example.
6. Illustrate about the various phases of an instruction execution cycle.
7. Explain the process of next address generation in a micro program sequencer.
8. Give the structure of a microinstruction format.
9. What is control memory ? Explain.
10. With reference to memory, explain about :
 - (i) MAR ; (ii) MDR ; (iii) R/ \overline{w} ; (iv) MFC ; (v) CS.
11. Brief about flash memory system.
12. Illustrate the memory mapping techniques.
13. With a diagram, explain how a computer access I/O devices.
14. What are interrupts ? Why is it necessary ?
15. Explain briefly about bus arbitration.

(10 \times 5 = 50 marks)**Part B**

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

16. With a suitable diagram illustrate working of a Binary Division Process.

Or

17. With an appropriate diagram, explain the floating-point addition-subtraction unit.

Turn over

18. Briefly illustrate the functions of the following instructions :
(i) LDA ; and (ii) BSA.

Or

19. Describe the various steps involved in execution of a programme in a computer.
20. With a block diagram, explain the concept of microprogrammed control organization.

Or

21. Briefly illustrate the steps involved the design of Control Unit of a CPU.
22. With a suitable diagram, explain the internal organization of a memory chip.

Or

23. With necessary diagram, explain how virtual-memory address translations are implemented.
24. Illustrate the concept of daisy chain in handling multiple interrupts.

Or

25. With appropriate diagram, illustrate the concept of DMA controller in a computer system.
($5 \times 10 = 50$ marks)

D 13466

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Name.....

Reg. No.....

**FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE
[2019 SCHEME] EXAMINATION, NOVEMBER 2021**

Information Technology

IT 19 505—SOFTWARE ENGINEERING

Maximum : 100 Marks

Time : Three Hours

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

1. Identify six different phases of a classical waterfall model with diagram.
2. What is the need for a prototype in a software development ?
3. Explain the role of system analyst in requirements gathering.
4. List the items that are designed and documented during design phase.
5. Explicate the shortcomings of DFD models.
6. In what ways, a structure chart differs from a flow chart ?
7. Explain the types of software documentation.
8. Enumerate the general guidelines for effective debugging.
9. What are three types of system testing ? Differentiate among them.
10. Mention the characteristics of software maintenance of software products.
11. What is ISO 9000 certification ? Specify the three standards of ISO 9000.
12. List the five maturity levels of capability maturity model.
13. What is functional point metric ? Mention the steps to compute functional point metric.
14. Specify the quantities used for the calculation of critical path method.
15. List the characteristics of CASE tools.

(10 × 5 = 50 marks)

Turn over

Part B

Answer one full section from each question.

Each question carries 10 marks.

16. (a) Outline the basic idea with principles and drawbacks of agile development models.

Or

- (b) Explain the significance of SRS document in categorizing user requirements.

17. (a) Discuss the role of structured analysis and structured design in performing high-level design of software.

Or

- (b) Design level 0 and 1 DFD for safe home software.

18. (a) What is integration testing ? Explain the types of integration testing approaches.

Or

- (b) Summarize the debugging approaches of programmers and outline the approaches to design black box test cases.

19. (a) With a neat sketch, explain the various activities involved in the process of software reverse engineering.

Or

- (b) How can the maintenance cost of a typical software product be estimated ? Explain the registration process of ISO 9000 certification.

20. (a) Explain COCOMO 2 model in detail.

Or

- (b) Describe the support of CASE tools in software development life cycle.

($5 \times 10 = 50$ marks)

D 13462

(Pages : 2)

Name.....

Reg. No.....

**FIFTH SEMESTER B.TECH. (ENGINEERING) [2019 SCHEME]
DEGREE EXAMINATION, NOVEMBER 2021**

Electronics and Communication Engineering

EC 19 506 (E)—ELECTRONIC INSTRUMENTATION

Maximum : 100 Marks

Time : Three Hours

Part A

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

1. List the functional elements of the measurement systems.
2. Differentiate between Instruments and Instrumentation.
3. A voltmeter is calibrated to read from 100 V to 200 V. Its accuracy is specified with $\pm 2\%$. Find the static error.
4. Draw the general configuration of Wheatstone bridge.
5. A potentiometer is provided with 50 turns per mm. The gearing arrangement is such that the motion of the main shaft by one resolution crosses 4 resolution. Determine the resolution of the potentiometer.
6. Write five applications of AC bridges.
7. Draw the schematic diagram of a DAC.
8. List the specifications of ADC.
9. Determine the resolution of a 16 bit ADC.
10. Draw the block diagram of RF signal generator.
11. List the advantages of digital storage oscilloscope.
12. What is an XY recorder ? How do you distinguish it from Xt and Yt recorders ?
13. What are the advantages of LCD over LED ?
14. Define the Q factor of an inductor.
15. Determine the dynamic range of a spectrum analyser with a third order intercept point of $+30 B_m$ and a noise level of -90 dB_m .

(10 \times 5 = 50 marks)

Turn over

Part B

*Answer one question from each module.
Each question carries 10 marks.*

Module I

16. (a) What is measurement standard ? Discuss the different types of standards.

Or

- (b) Explain on the static and dynamic characteristics of a measurement system.

Module II

17. (a) Draw the circuit of a Kelvin bridge used for measurement of low resistance and explain.

Or

- (b) Explain how inductance is measured by using Maxwell's bridge.

Module III

18. (a) Discuss three bit R-2R type digital to analog converter.

Or

- (b) Discuss the construction and operation of a LVDT.

Module IV

19. (a) Draw the diagram of XY recorder and explain its working.

Or

- (b) Explain the working of pulse generator with block diagram.

Module V

20. (a) Explain the structure and operation of LCD.

Or

- (b) Discuss the construction and working of power factor meter.

$(5 \times 10 = 50 \text{ marks})$

D 13457

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Name.....

Reg. No.....

**FIFTH SEMESTER B.TECH. (ENGINEERING) [2019 SCHEME]
DEGREE EXAMINATION, NOVEMBER 2021**

Electrical and Electronics Engineering

EE 19 506(D)—ELECTRICAL MATERIAL SCIENCE

Time : Three Hours

Maximum : 100 Marks

Part A

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

- I. 1 What is electrical conductivity ? Obtain the expression for electrical conductivity of a metal.
- 2 Write short notes on ferrites.
- 3 Explain the magnetic materials used in electrical machines.
- 4 Define Polarization and what are different polarization processes.
- 5 Explain the properties of Mica and Ceramics.
- 6 State the factors affecting dielectric strength.
- 7 Explain Townsend's criterion for spark breakdown.
- 8 How breakdown due to liquid globules occur ?
- 9 Explain bubble theory.
- 10 List the properties of good insulator.
- 11 Outline the effects of ageing of insulators.
- 12 Tell about liquid insulators.
- 13 Draw and explain I-V curve of dark and illuminated junction.
- 14 What are the materials used for solar cells ? Explain.
- 15 Give the details of solar cell parameters.

(10 × 5 = 50 marks)

Part B

*Answer any five questions.
Each question carries 10 marks.*

- II. 1 Classify the magnetic materials and explain them in detail. Also distinguish hard and soft magnetic materials.

Or

Turn over

- 2 State and explain Weiss theory of ferromagnetism with their applications.
 3 Discuss any four dielectric parameters in detail.

Or

- 4 Explain the types of dielectric materials with its application.
 5 Explain a break down mechanism in gases also discuss the factor on which dielectric strength of gaseous dielectric depends.

Or

- 6 Explain the following for breakdown in liquids :
 (i) Suspended particle theory.
 (ii) Colloidal theory.
 7 Describe the applications of following insulating materials used in electrical apparatus :
 (i) Liquid insulator ; (ii) Gaseous insulators ; (iii) Organic insulator ; (iv) Inorganic insulator.

Or

- 8 Identify suitable organic materials for insulators and explain them.
 9 Explain the following in detail :
 (i) Antireflection coating.
 (ii) Solar selective coating.
 (iii) Cold mirror coating.

Or

- 10 Explain the construction and working of solar cell with its characteristics.
 (5 × 10 = 50 marks)

J 13467

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Name.....

Reg. No.....

**FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2019 SCHEME]
EXAMINATION, NOVEMBER 2021**

Information Technology

IT 19 506 (A)—WEB AND INTERNET TECHNOLOGY

Maximum : 100 Marks

Time : Three Hours

Part A

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

1. Write the format of HTML program.
2. Explain about list tag.
3. Explain the attributes of table tag with an example.
4. List the features of JavaScript.
5. Write a JavaScript program to find the Fibonacci series of a given number.
6. Give an overview of creation and initialization of arrays in JavaScript.
7. Explain the data types of PHP.
8. Write a simple calculator program in PHP using if-else statement.
9. Specify a PHP program to reverse the given number 23456.
10. Differentiate client and server application.
11. List the steps taken to send an electronic mail.
12. Explain the basic idea behind VoIP.
13. Elaborate the process of streaming stored audio and video in multimedia networking.
14. Summarize the security problems exist on the internet.
15. Outline the different functional components of integrated services architecture.

(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) Describe how the text content of an XHTML document can be formatted with XHTML tags.

17. a) Illustrate various objects and methods in JavaScript with examples.

Or

- b) Demonstrate the usage of switch and do-while statements in JavaScript.

18. a) Give a brief overview of server-side scripting language PHP. Write a simple PHP program to count the vowels, digits and spaces in a string.

Or

- b) Enumerate the differences between echo and print with examples. How to show alphabets in ascending and descending order in PHP using while loop ?

19. a) Illustrate the sequence of socket functions called by a client and server with diagram.

Or

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

20. a) Explain the significance network management in internet.

Or

- b) Discuss the two approaches of QoS services and explain internet QoS technologies.

($5 \times 10 = 50$ marks)

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Name.....

Reg. No.....

**FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2019 SCHEME]
EXAMINATION, NOVEMBER 2021**

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. Explain the importance of renewable energy sources in current scenario of world energy consumption.
2. Discuss the objective and accountability of energy policy.
3. What do you understand by load curve ? What information are conveyed by load curve ?
4. What are various renewable energy sources ?
5. Explain nuclear energy generation.
6. Mention the impact of tidal energy power plants in the environment.
7. What are heat pipes ?
8. How do industry Nation and Globe would benefit from energy efficiency programs ?
9. Explain any three methods for controlling air pollution by thermal power plants.
10. Discuss types of energy audit.
11. How waste recovery system classified ?
12. Discuss heat regenerators.
13. What is cogeneration ?
14. Explain the concept of energy from waste.
15. Explain pinch technology.

(10 × 5 = 50 marks)

Part B

*Answer any five questions.
Each question carries 10 marks.*

16. What is cause for the loss of biodiversity and how is biodiversity protected ?

Or

17. Discuss the various causes and effects of ozone layer depletion.

Turn over

18. Discuss the advantages and limitations of vertical axis wind turbines over horizontal axis wind turbines.

Or

19. Explain the components and layout of a geothermal energy harvesting system.
20. What are the two distinct thermal energy storage systems ? What is the typical value of storage density of sensible heat energy storage ?

Or

21. Draw the general layout of a thermal power plant and explain the working of different circuits
22. Discuss about ECO in chemical and Electrical Industries.

Or

23. Explain type of bed is used in fluidized combustion boiler.
24. Discuss about the energy conservation measures adopted in India.

Or

25. Explain impact of energy on economy, development and environment.

($5 \times 10 = 50$ marks)

**FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE [2019 SCHEME]
EXAMINATION, NOVEMBER 2021**

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 movement.
2. Explain the characteristics of vision.
3. With the help of examples, explain metaphor and synecdoche.
4. Explain the visual ingredients of graphic design - Line, Texture, Point, Graphic space, Scale.
5. Explain legibility and readability.
6. Explain the difference between illustration and photography with the help of examples.
7. Explain the role of photographers in media production.
8. Write a short note on advertising agency.
9. Explain the design strategies used for books and magazines.
10. Explain the factors to be considered while designing a website.
11. Write a short note on content creation.
12. Explain the various tools used in preparing layout.
13. Explain the format of story board with an example.
14. Write a note on estimating procedures.
15. Explain the term marking up.

(10 × 5 = 50 marks)

Part B

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

16. a) Explain the limitations occurred in binding and finishing processes.
- Or*
- b) Explain the factors to be considered while producing radio jingles.

Turn over

17. a) Explain the role of graphic designer.

Or

b) Explain the types of images.

18. a) Explain the services provided by an advertising agency.

Or

b) Explain website hosting and maintenance.

19. a) Explain the production process of advertising commercials.

Or

b) Explain the problem occurred during media production.

20. a) Explain the factors to be considered in photography.

Or

b) Explain the important elements of a good brief.

($5 \times 10 = 50$ marks)