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4E1302

Roll No. _____ Total No. of Pages: 4

4E1302

B. Tech. IV - Sem. (Main) Exam., - 2022
Computer Science & Engineering (AI)
4CAI1 – 03 Managerial Economics and Financial Accounting
All Branches

Time: 3 Hours **Maximum Marks: 70**

Instructions to Candidates:

Attempt all ten questions from Part A. Five questions out of seven questions from Part B and three questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

(Answer should be given up to 25 words only) **[10×2=20]**

All questions are compulsory

Q.1 "Managerial economic supports manager to take decision for successful implementation of economic strategies." Comment upon this statement.

Q.2 Define GDP and NNP concepts of national income.

Q.3 What is meant by price elasticity?

Q.4 Elaborate the term circular flow of economy. Who are the main players involve in the circular flow of economy?

5 What are the basic elements of demand and supply?

6 Write the concept of opportunity cost with one example.

7 Define Kinked demand curve and write one reason of price rigidity.

8 Differentiate between deductive and inductive methods of economies.

9 Discuss any two significant uses of cash flow statement.

10 What is meant by debt, liabilities and current assets in accounting?

PART – B

(Analytical/Problem solving questions) **[5×4=20]**

Attempt any five questions (Word limit 100)

11 Define the concept of managerial economics. What are the micro and macro scopes of economics? Explain all in brief.

12 What is Law of demand? Draw the suitable diagram of demand curve and write its determinants.

13 Elaborate the cost and output relations in short run and long run. What is the role of Marginal cost in decisions?

14 How demand forecasting is useful for future decision making? Explain any two methods of demand forecasting.

1 4 2

Q.5 Write the stages of production function. How manager can control the inputs in production? Define your answer with suitable table of inputs and diagram.

Q.6 How price, output and profit can be determined in perfect competition? Draw suitable diagram.

Q.7 Sttelio Ltd. presents the following information and you are required to calculate funds from operations –

Profit and Loss Account

	₹		₹
To Operation Expenses	1,00,000	By Gross Profit	2,00,000
To Depreciation	40,000	By Gain on Sale of Plant	20,000
To Loss on sale of Building	10,000		
To Advertising Suspense Account	5,000		
To Discount Allowed	500		
To Discount on issue of Shares written off	500		
To Goodwill written off	12,000		
To Net Profit	52,000		
	2,20,000		2,20,000

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PART – C

(Descriptive/Analytical/Problem Solving/Design Questions) **[3×10=30]**

Attempt any three questions

Q.1 Define circular flow of economy with suitable diagram. Which are the current economic problems are facing by nation after pandemic situation (Year 2020 - 2021)?

Q.2 Define the term demand elasticity. What are the various degrees of elasticity? Define each with diagram and example.

Q.3 What is meant by least cost combinations in production function? Elaborate the properties of least cost combinations.

Q.4 Why price is rigid in market? Give reasons. Draw Kinked demand curve and how price and output can be determined under Kinked demand curve.

Q.5 Differentiate between –

(a) Demand curve and Supply curve

(b) Explicit cost and implicit cost

(c) Static economy and Dynamic economy

(d) Monopoly market and Monopolistic market

(e) Cash flow statement and Fund flow statement.

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4E1303

Roll No. _____ Total No. of Pages: 3

4E1303

B. Tech. IV - Sem. (Main) Exam., - 2022
Computer Science & Engineering (AI)
4CAI1 – 02 Technical Communication
All Branches

Time: 3 Hours **Maximum Marks: 70**

Instructions to Candidates:

Attempt all ten questions from Part A. Five questions out of seven questions from Part B and three questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

(Answer should be given up to 25 words only) **[10×2=20]**

All questions are compulsory

Q.1 What is technical communication?

Q.2 Write the forms and aspects of 'Technical communication'?

Q.3 What is the process of technical writing?

Q.4 Define note-making.

Q.5 What are the different discourse markers that can be used?

Q.6 What are the different types of resumes?

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Q.7 Combine the following sentence using an appropriate form of the verb given in the brackets.

(a) Man and woman.....complementary to each other. (is/are)

(b) The leader as well as his brothers.....to the same tribe. (belong/belongs)

Q.8 Mention the characteristics of the Report.

Q.9 Find the errors in the following –

(a) She can to drive.

(b) The house isn't enough big

Q.10 Write short on the following –

(a) Conference paper

(b) Journal

PART – B

(Analytical/Problem solving questions) **[5×4=20]**

Attempt any five questions (Word limit 100)

Q.1 "The more you read, the more you become efficient in speaking a language." Throw light on the connection of reading and speaking and tell how you can develop effective speaking skills.

Q.2 Write in detail about the aspects of technical communication and throw light on the 7C's of effective technical communication.

Q.3 Write about the challenges in the process of technical communication in detail.

Q.4 Elaborate editing strategies to achieve appropriate technical style.

Q.5 Define technical communication and its importance in the life of an engineering professional.

Q.6 Elucidate the structure and format of technical articles.

Q.7 Write notes on the following –

(a) Features of a report

(b) Sales Letter

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PART – C

(Descriptive/Analytical/Problem Solving/Design Questions) **[3×10=30]**

Attempt any three questions

Q.1 Create an email informing a group of people in the workplace about a co-worker of theirs whose management position has been downgraded to a staff position. Be clear, direct and concise in your delivery of the information and your explanation for it. Take into account workplace morale and the ethics of this decision. Your email should be at least 150 words long.

Q.2 Your workplace is deciding how to upgrade the desktop computer systems. Prepare a report comparing three types of brands. Identify what categories you would use to compare all three. Include what graphics might be necessary for this report. Include your final recommendation at the end of the analysis.

Q.3 Write a job application in response to the advertisement for various faculty positions in June 2019 issue of the Hindustan Times to apply for the post of Assistant Professor in Computer Science. Write a detailed resume to be enclosed with it.

Q.4 (a) Discuss the various elements of a formal report.

(b) Write brief notes on the following –

(i) Significance of reports.

(ii) Formal and non-formal reports.

Q.5 With the advancement of technology, technical communication has also evolved and many unethical practices have been adopted by the professionals with a huge loss of reputation and assets. Throw light on the role of ethics and moral values in generating, analyzing and communication of technical information.

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4E1325

Roll No. _____ Total No. of Pages: 3

4E1325

B. Tech. IV - Sem. (Main) Exam., - 2022
Electronics & Communication Engineering
4EC2 – 01 Advanced Engineering Mathematics - II
EC, EI

Time: 3 Hours **Maximum Marks: 70**

Instructions to Candidates:

Attempt all ten questions from Part A. Five questions out of seven questions from Part B and three questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

(Answer should be given up to 25 words only) **[10×2=20]**

All questions are compulsory

Q.1 Check the function $f(z) = z^2$ is analytic or not.

Q.2 Define conformal transformation.

Q.3 Write Cauchy's derivative formula.

Q.4 If $C:|z| = \frac{5}{3}$, the evaluate $\int_c \frac{dz}{z-2}$,

Q.5 Write statement for the Cauchy's residue theorem.

Q.6 Find residue of $\frac{z^2}{z^2+4}$ at $z = -2i$.

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Write orthogonal property for Bessel's function.

Show that $P_n(-1) = 1$

Write standard basis of vector space R^2 over R.

What do you mean by linear span?

PART – B

(Analytical/Problem solving questions) **[5×4=20]**

Attempt any five questions (Word limit 100)

Define analytic function and find the values of a, b, c and d such that the function -

$f(z) = x^2 + axy + by^2 + i(cx^2 + dxy + y^2)$ is analytic.

By using the Cauchy's integral formula, evaluate the complex integral –

$$\int_{|z|=3} \frac{dz}{(z+1)^4}$$

Find the residue of $\frac{z^2}{(z-1)(z-2)(z-3)}$, at z = 1, 2, 3 and infinity. Also show that their sum is zero.

Show that –

$$j_{\frac{3}{2}}(x) = \sqrt{\frac{2}{\pi x}}\left[\frac{\sin x}{x} - \cos x\right].$$

If $P_n(x)$ represents the Legendre's polynomial of order n, then show that –

$$nP_n(x) = xP'_n(x) - P'_{n-1}(x).$$

Check the linear dependence/linear independence of the following set of vectors –

$S = \{(1, 0, 2, 1), (1, 3, 2, 1), (4, 1, 2, 2)\}$ in R^4.

In R^3, let $v_1 = \{2, 1, 1\}$ and $v_1 = \{1, -1, 3\}$. Determine whether the vector $v = \{1, 5, -7\}$ belongs to Span $\{v_1, v_2\}$.

PART – C

(Descriptive/Analytical/Problem Solving/Design Questions) **[3×10=30]**

Attempt any three questions

Q.1 Prove that the function defined by –

$$f(z) = \begin{cases} \frac{x^3y(y-ix)}{x^3+y^2}, & \text{if } z \neq 0 \\ 0, & \text{if } z = 0 \end{cases}$$

is not analytic at the origin although Cauchy-Riemann equations are satisfied at the origin.

Q.2 Represent the function $\frac{1}{(z-1)(z-3)}$ in powers of z which are valid for regions –

(a) $|z| < 1$,

(b) $1 < |z| < 3$ and

(c) $|z| > 4$

Q.3 Use method of contour integration to evaluate –

$$\int_0^{2\pi} \frac{d\theta}{a+b\sin\theta}, |a| > |b|.$$

Q.4 State and prove the Rodrigues formula for the Legendre's polynomials.

Q.5 Apply the Gram-Schmidt process to the vectors $\beta_1 = (1, 0, 1)$, $\beta_2 = (1, 0, -1)$, and $\beta_3 = (0, 3, 4)$ to obtain an orthonormal basis for $V_3(R)$ with the standard inner product.

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4E1326

Roll No. _____ Total No. of Pages: 3

4E1326

B. Tech. IV - Sem. (Main) Exam., - 2022
Electronics & Communication Engineering
4EC4-04 Analog Circuits
EC, EI

Time: 3 Hours **Maximum Marks: 70**

Instructions to Candidates:

Attempt all ten questions from Part A. Five questions out of seven questions from Part B and three questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

(Answer should be given up to 25 words only) **[10×2=20]**

All questions are compulsory

Q.1 Why conversion of an analog signal into an equivalent digital signal is essential?

Q.2 Why does an OP-AMP have high CMRR?

Q.3 What is the difference between cascaded and cascaded amplifier?

Q.4 How do series and shunt feedback differ from each other?

Q.5 Why power amplifiers are called large signal amplifiers?

Q.6 Explain, why positive feedback and not negative feedback is necessary to produce oscillations?

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Q.7 Define offset voltage as applied to an OP-AMP.

Q.8 Why bias compensation is required?

Q.9 Why FET is called voltage controlled device?

Q.10 Why collector is made larger than emitter and base in BJT?

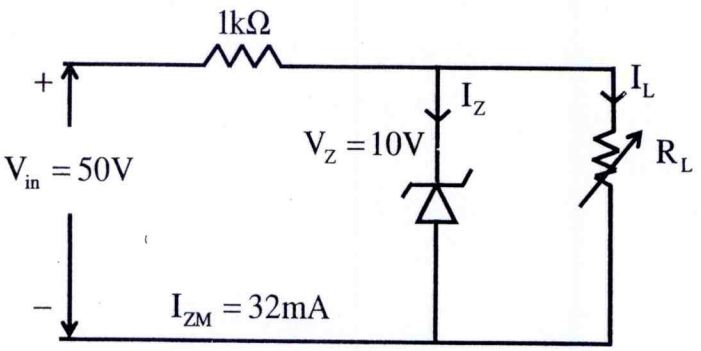
PART – B

(Analytical/Problem solving questions) **[5×4=20]**

Attempt any five questions (Word limit 100)

Q.1 Compare the characteristic of transistor amplifiers in three possible configurations.

Q.2 For the circuit given below determine the range of R_L and I_L that will result in V_{RL} being maintained at 10 volt



Q.3 Draw the circuit for Wien bridge oscillator and hence obtained its condition of sustained oscillations.

Q.4 The input terminals of an OP-AMP are connected to voltage signal of strength 745 μv and 740 μv respectively. The gain of OP-AMP in differential mode is 5×10^5 and its CMRR is 80 dB. Calculate the output voltage and percentage error due to common mode.

Q.5 Explain successive approximation type $\frac{A}{D}$ converter.

Q.6 Draw the circuit diagram of voltage series feedback amplifier and derive the expressions for input and output impedance.

Q.7 Explain the working of Astable multivibrator with neat circuit diagram.

PART – C

(Descriptive/Analytical/Problem Solving/Design Questions) **[3×10=30]**

Attempt any three questions

Q.1 (a) Draw the circuit of a common-emitter amplifier with emitter bias (or self-bias). Derive relation for stability factor $\int = \frac{\partial I_C}{\partial I_{CO}}$ for such a circuit.

(b) In above circuit let V_{CC} = 20 volt, R_E =lkΩ and $\beta = 100$ for silicon transistor. Design the values for different resistors in the circuit, so that S=10 & I_C=2mA.

Q.2 (a) Draw the V-I characteristic of P-N junction diode and show how temperature change affect the characteristic.

(b) A class 'A' power amplifier user a transformer as a coupling device, the transformer has a turn ratio of 10 and the secondary load is 10Ω. If the zero signal collector current is 100 mA. Find the maximum output power.

Q.3 Determine the following in OP-AMP –

(a) Slew rate

(b) Input offset current

(c) Input bias current

(d) Power supply rejection ratio (PSRR)

(e) Common mode rejection ration (CMRR)

Q.4 Explain the Barkhausen criterion for sustained oscillations. Draw the circuit of RC phase shift oscillator, describe its working and find frequency of oscillations.

Q.5 Write short notes on following –

(a) Cross over distortion

(b) Brief account of feedback topologies

(c) Transistor biasing schemes

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4E1327

Roll No. _____ Total No. of Pages: 2

4E1327

B. Tech. IV - Sem. (Main) Exam., - 2022
Electronics & Communication Engineering
4EC4 - 05 Microcontrollers
EC, EI

Time: 3 Hours **Maximum Marks: 70**

Instructions to Candidates:

Attempt all ten questions from Part A. Five questions out of seven questions from Part B and three questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

(Answer should be given up to 25 words only) **[10×2=20]**

All questions are compulsory

Q.1 Why AD_0-AD_7 lines are multiplexed? Explain.

Q.2 What is the difference between microprocessor and microcontroller?

Q.3 Differentiate between Flash memory and Cache memory.

Q.4 What is interrupt service routine?

Q.5 Explain the various steps involved while executing CALL instruction with an example.

Q.6 What is the difference between software interrupt and hardware interrupt?

Q.7 What do you mean by embedded processor?

Q.8 Give comparison between memory mapped I/O and I/O mapped I/O.

Q.9 What is the function of ALE signal in 8085 microprocessor?

Q.10 Define Access time.

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PART – B

(Analytical/Problem solving questions) **[5×4=20]**

Attempt any five questions (Word limit 100)

Q.1 Explain with example the various addressing modes of 8051.

Q.2 Explain different types of jump instructions used in 8086 microprocessor.

Q.3 How physical address is generated in 8086 microprocessor.

Q.4 What is RISC processor? Discuss its advantages and disadvantages in detail.

Q.5 What do you mean by the term addressing mode? What are different addressing modes supported by 8051?

Q.6 Explain the operation of the following instructions and specify addressing mode and number of machine cycle required:

(a) DAA

(b) DAD B

(c) XTHL

(d) CNC addr

Q.7 Write a program in 8085 microprocessor to find the smallest number from a given block of data.

PART – C

(Descriptive/Analytical/Problem Solving/Design Questions) **[3×10=30]**

Attempt any three questions

Q.1 Explain DMA controller with the help of proper block diagram.

Q.2 Draw and explain the virtual memory organization.

Q.3 Explain ARM microcontroller interface design.

Q.4 Draw and explain the architecture of 80486 processor.

Q.5 Draw pin diagram of 8085 microprocessor and explain its various pins.

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4E1328

Roll No. _____ Total No. of Pages: 2

4E1328

B. Tech. IV - Sem. (Main) Exam., - 2022

Electronics & Communication Engineering

4EC3 – 06 Electronics Measurement & Instrumentation

Time: 3 Hours **Maximum Marks: 70**

Instructions to Candidates:

Attempt all ten questions from Part A. Five questions out of seven questions from Part B and three questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

(Answer should be given up to 25 words only) **[10×2=20]**

All questions are compulsory

Q.1 Define the terms of Limits of errors.

Q.2 What do you mean by probable error?

Q.3 Draw the basic diagram of Q meters.

Q.4 What do you mean by shielding and grounding?

Q.5 What are the applications of sampling oscilloscopes?

Q.6 What are the applications, merits and demerits of sweep frequency generators?

Q.7 Draw the block diagram of heterodyne wave analyzers.

Q.8 Differentiate the active and passive transducers.

Q.9 What do you mean by LVDT? Draw its Characteristics.

Q.10 What are the applications, merits and demerits of strain gauges?

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PART – B

(Analytical/Problem solving questions) **[5×4=20]**

Attempt any five questions (Word limit 100)

Q.1 Explain the Gaussian error analysis with suitable diagrams.

Q.2 Explain the RF power & voltage measurements with suitable diagrams.

Q.3 Draw and explain the circuit diagram of electronic multimeters.

Q.4 Explain the different types of CRO Probes?

Q.5 Explain the working and applications of frequency synthesized signal generators.

Q.6 What do you mean by see-back effect? Draw and explain the various characteristics of thermocouples.

Q.7 What do you mean by piezoelectric transducers? Explain its working, merits and demerits & applications also.

PART – C

(Descriptive/Analytical/Problem Solving/Design Questions) **[3×10=30]**

Attempt any three questions

Q.1 Explain the following errors with suitable examples –

(a) Random errors

(b) Systematic errors

Q.2 Explain the diagram of vector impedance meter with merits, demerits and applications.

Q.3 Explain the construction and working of storage oscilloscopes with suitable diagram, merits and demerits.

Q.4 Explain the block diagram of frequency selective wave analyzers with applications.

Q.5 Explain the following with suitable diagram.

(a) RTD

(b) Bourdon Tubes

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4E1329

Roll No. _____ Total No. of Pages: 2

4E1329

B. Tech. IV - Sem. (Main) Exam., - 2022
Electronics & Communication Engineering
4EC4-07 Analog and Digital Communication
EC, EI

Time: 3 Hours **Maximum Marks: 70**

Instructions to Candidates:

Attempt all ten questions from Part A. Five questions out of seven questions from Part B and three questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

(Answer should be given up to 25 words only) **[10×2=20]**

All questions are compulsory

Q.1 What is VSB? Where is it used?

Q.2 Differentiate random variable and random process.

Q.3 Define noise in communication.

Q.4 State the sampling theorem.

Q.5 What is Quantization in PCM System?

Q.6 What is Nyquist criterion?

Q.7 Define modulation index.

Q.8 List any four advantages of TDM.

Q.9 Define Inter Symbol Interference.

Q.10 Define slope overload distortion in delta modulation.

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PART – B

(Analytical/Problem solving questions) **[5×4=20]**

Attempt any five questions (Word limit 100)

Q.1 Determine the signal to quantization ratio of a delta modulator for a sinusoidal signal with a bit rate of 64 kbps and input signal bandwidth of 4 kHz.

Q.2 Describe the role of pre-emphasis and de-emphasis circuit in SNR improvement.

Q.3 Explain the generation and demodulation of PAM signals with suitable block diagram.

Q.4. Find the percentage of power saved in SSB when compared with AM system.

Q.5 Explain coding and decoding of a PCM signal.

Q.6 Explain PSK sketch the waveform of PSK for binary sequence 1100101.

Q.7 What are digital modulation tradeoffs? Explain optimum filter.

PART – C

(Descriptive/Analytical/Problem Solving/Design Questions) **[3×10=30]**

Attempt any three questions

Q.1 Draw the block diagram and describe the operation of a delta modulator. What are its advantages and disadvantages compared to a PCM system?

Q.2 Define modulation index for FM and PM and obtain the relation between modulation index and modulating signal for FM and PM.

Q.3 Explain maximum likelihood sequence detection with suitable block diagram.

Q.4 What do you mean by optimum detector? Find the impulse response of optimum detector in the presence of additive white noise.

Q.5 What is multiplexing in communication system? Describe the multiplexing hierarchy for digital multiplexing.

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3E1103

Roll No. _____ Total No. of Pages: 2

3E1103

B. Tech. IV - Sem. (Back) Exam., - 2022
HSMC Aeronautical Engineering
4AN1-03/ Managerial Economics and Financial Accounting
Common for all branches

Time: 2 Hours **Maximum Marks: 80**
Min. Passing Marks: 28

Instructions to Candidates:

Attempt all five questions from Part A, four questions out of six questions from Part B and two questions out of three from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

(Answer should be given up to 25 words only) **[5×2=10]**

All questions are compulsory

Q.1 Circular flow of economic activity

Q.2 Demand forecasting

Q.3 Define marginal cost

Q.4 Oligopoly marker

Q.5 Capital budgeting

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PART – B

(Analytical/Problem solving questions) **[4×10=40]**

Attempt any four questions

Q.1 What is Managerial Economic? What are the principles of Managerial Economic?

Q.2 What is National Income and methods of measuring National Income?

Q.3 What is Price Elasticity? Explain types of Price Elasticity of Demand.

Q.4 Discuss the different cost concepts relevant to managerial decision for Planning and Control.

Q.5 Describe the characteristics of Pure/Perfect Competition and Pure Monopoly.

Q.6 What are Financial Ratios? Explain two Financial Ratios in detail.

PART – C

(Descriptive/Analytical/Problem Solving/Design Questions) **[2×15=30]**

Attempt any two questions

Q.1 What is Law Supply? What are the determinants of Supply? Explain four determinates in detail.

Q.2 State and explain the law of variable proportions.

Q.3 What is Financial Statement Analysis? What are the three basic tools for Financial Statement Analysis?
