

Jharkhand University of Technology, Ranchi
Diploma 1st Semester Examination, 2023 (NEP)

Subject : Fundamental of ICT**Subject Code : SEC02****Time Allowed : 3 Hours****Full Marks : 70***Answer in your own words.**Answer five questions in which Question No. 1 is compulsory.*

1. Choose the correct answer from the following: $1 \times 10 = 10$

- (i) What is the full form of CPU?
 - (a) Computer Processing Unit
 - (b) Computer Principle Unit
 - (c) Central Processing Unit
 - (d) Control Processing Unit

- (ii) Which of the following is designed to control the operation of a computer?
 - (a) User
 - (b) Application s/w
 - (c) System Software
 - (d) Utility Software

- (iii) What is Hub?
 - (a) Software
 - (b) Computing device
 - (c) Network device
 - (d) Calculating device

- (iv) Which can be used for quick access to commonly used commands and tools?
 - (a) Status bar
 - (b) Tool bar
 - (c) Menu bar
 - (d) Title bar

- (v) Auto Correct was originally designed to replace _____ words as you type.
 - (a) short, repetitive
 - (b) grammatically incorrect
 - (c) misspelled
 - (d) None of these

- (vi) The intersection of a column and a raw in a worksheet is called
 - (a) Column
 - (b) Address
 - (c) Value
 - (d) Cell

- (vii) _____ is not a function in Excel.
 - (a) SUM
 - (b) MIN
 - (c) SUBTRACT
 - (d) MAX

- (viii) Which of the following shortcut key is used to start the slideshow?
- (a) F5 key (b) F3 key
(c) F1 key (d) F6 key
- (ix) Which of the following is used to see all slides at once?
- (a) Using slide sorter view (b) Using slide view
(c) Using normal view (d) None of these
- (x) Which of the following is not a web browser?
- (a) Safari (b) Opera
(c) Google (d) Mozilla firefox
- 2.** (a) Draw the block diagram of Computer System and explain it.
(b) Differentiate between internet and intranet.
(c) Write the steps to insert a picture in word document.
- 3.** (a) Explain different network devices.
(b) Explain various mathematical function used in Ms-Excel.
(c) Write the steps to insert Header and Footer in slides of presentation.
- 4.** (a) Explain the various features of word processing.
(b) Explain different charts used in Ms-Excel.
(c) Write notes:
(i) Web browser
(ii) Web server
- 5.** Explain different types of Input and Output Device.
- 6.** (a) Discuss different web service.
(b) Differentiate between.
(i) Ram and Rom
(ii) Undo and Redo
(iii) Hardware and Software
(iv) e-mail and Postal Letters
(v) Workbook and Worksheet
- 7.** (a) Discuss about different Emerging Technology.
(b) What is networking? Explain its type.
- 9+3+3
8+5+2
7+4+(2×2)
15
5+(2×5)
6+9

Jharkhand University of Technology, Ranchi

Diploma 1st Semester Examination, 2023 (NEP)

Subject : Engineering Mathematics-I

Subject Code : AEC01

Time Allowed : 3 hours

Full Marks : 70

Answer any five questions in which Question No. 1 is compulsory and answer any four from the rest questions.

2
2
2

1. Answer the following Multiple Choice Type questions:

7x2=14

- (i) How many terms are there between 9, 12, 15, 18, ..., 87?
 $m = a + (n-1)d$
 $87 = 9 + (n-1) \times 3$
 $87 = 9 + 86 \times 3$
 $n = 30$
- (a) 25 (b) 26 (c) 27 (d) None of these
- (ii) The value of $\log_{1/N} N$ is equal to
 $87 = 9 + (n-1) \times 3$
 $87 = 9 + 86 \times 3$
 $n = 30$
- (a) -1 (b) 1 (c) 0 (d) None of these
- (iii) The type of matrix which have a multiplicative inverse—
 $87 = 9 + (n-1) \times 3$
 $87 = 9 + 86 \times 3$
 $n = 30$
- (a) row matrix (b) column matrix
~~(c) square matrix~~ (d) None of these
- (iv) The system of equation $x = y$ and $x = -y$ has the number of solution—
 $n-1 = 14$
 $n = 17$
- (a) one solution (b) two solutions
~~(c) many solutions~~ (d) no solution
- (v) Maximum value of $\sin \theta \cdot \cos \theta$ is equal to
 $n-1 = 14$
 $n = 17$
- (a) 2 (b) 1 (c) $\frac{1}{2}$ (d) None of these
- (vi) ${}^n C_r$ is equal to
 ${}^n C_{n-r}$
 ${}^n C_{n-1}$
- (a) ${}^n C_{n-r}$ (b) ${}^n C_{r-n}$
~~(c) ${}^n C_{n-1}$~~ (d) None of these
- (vii) The slope and x -intercept of the line $3x - y + k = 0$ are equal then the value of k is equal to
 $5y_1$
 $5y_1 = 3x_1$
 $5y_1 = 3(2) - 1$
 $5y_1 = 5$
- (a) 0 (b) -1 (c) 3 (d) -9

$$\begin{aligned} & x^2 + 8x + 12 \\ & n^2 + 6x + 2x + 12 \\ & n(n+6) + 2(n+6) \end{aligned}$$

$$\begin{aligned} & x^2 + 8x + 12 \\ & n^2 + 6x + 2x + 12 \\ & n(n+6) + 2(n+6) \end{aligned}$$

2. (a) Resolve $\frac{x^3}{x^2 + 8x + 12}$ into partial function.

7+7

(b) The p th and q th term of a GP are a and b respectively. Find its n th term.

AEC01

(2)

7+7

3. (a) Solve these simultaneous equations by Cramer's rule.

$$x + y + 2z = 4, 2x - y - z = 1 \text{ and } 3x - 2y - z = 3$$

- (b) Show that if n is any integer greater than 1 then $6^{2n} - 35n - 1$ is divisible by 1225.

~~3085
2125
1225~~

4. (a) In any triangle ABC prove that $\tan \frac{B-C}{2} = \frac{b-c}{b+c} \cot \frac{A}{2}$.

7+7

$$(b) \text{ Prove that } 2 \tan^{-1} \sqrt{x} = \sec^{-1} \frac{1+x}{1-x}.$$

5. (a) Find the equation of straight line passing through the point (3, -2) and making an angle 45° with the line $6x + 5y = 1$.

$$(b) \text{ If } f(x) = \tan^{-1} x \text{ prove that } f(x) - f(y) = f\left(\frac{x-y}{1+xy}\right).$$

$$\begin{aligned} 6^{2n} - 35n - 1 &\stackrel{?}{=} 0 \\ \text{Let } n=2 \text{ in eqn (i)} \end{aligned}$$

6. (a) Find the differential coefficient of $\sin^{-1} x$ from the first principle.

7+7

$$(b) \text{ Find the inverse of the matrix } A = \begin{pmatrix} 1 & 2 & 2 \\ 0 & 1 & 2 \\ 0 & 0 & 1 \end{pmatrix}.$$

$$\begin{aligned} 6^{2x^2} - 35x^2 - 1 &= 0 \\ 6^4 - 70 - 1 &= 0 \end{aligned}$$

7. Solve any two of the following:

7+7

$$(a) \text{ Evaluate } \lim_{x \rightarrow 0} \frac{\tan x - \sin x}{x^3}$$

$$\begin{matrix} -4+3 \\ -1 \\ -1 \end{matrix}$$

$$\begin{aligned} &= 1296 - 71 \\ &= 1225 \end{aligned}$$

$$(b) \text{ Differentiate } y = \tan^{-1} \frac{2x}{1-x^2} \text{ with respect to } \sin^{-1} \frac{2x}{1+x^2}$$

$$an = a + (n-1)x^3$$

$$(c) \text{ If } x^m y^n = (x+y)^{m+n} \text{ then evaluate } \frac{dy}{dx}$$

$$87 = a + (n-1)x^3$$

$4+3$

1
 $2-4$

$\therefore -1+3$

2
 $-3+2$

$-2+3$

$\frac{7.8}{3}$

$-4+3$

$3) 7.8(26$
 $\frac{6}{18}$

$-2+3$
 1

$$87-9 = (n-1)x^3$$

$$78 = (n-1)x^3$$

$$\begin{matrix} -6 \\ -4+3 \\ -2+2 \end{matrix} \quad \frac{78}{2} = n-1$$

$$\begin{matrix} (n-1)=2 \\ \Rightarrow n=2+1 \end{matrix}$$

$$n=27$$

$-1+3$
 2

Jharkhand University of Technology, Ranchi**Diploma 1st Semester Examination, 2023 (NEP)****Subject : Engineering Physics****Subject Code : DSC01****Time Allowed : 3 Hours****Full Marks : 70***Answer in your own words.**Answer any five questions. Question No. 1 is compulsory.**Marks are given in the right margin.***1. Choose the correct answer in the following:**

1×10=10

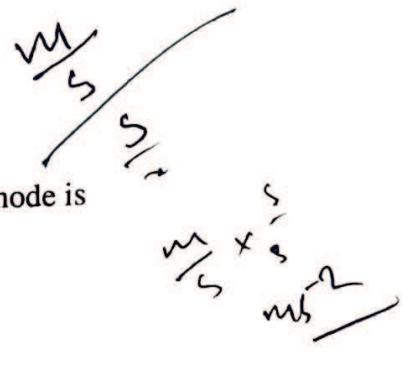
- (i) Which of the following is a vector quantity?
 (a) Energy (b) Impulse
 (c) Temperature (d) Density
- (ii) In the measured length of 0.05060m, the number of significant figures is
 (a) 5 (b) 4
 (c) 2 (d) 3
- (iii) A rocket works on the principle of conservation of
 (a) mass (b) energy
 (c) linear momentum (d) angular momentum
- (iv) Newton's first law of motion gives the concept of
 (a) work (b) power
 (c) momentum (d) inertia
- (v) The weight of a body at the centre of the earth is
 (a) zero (b) infinite
 (c) same as on the surface of earth (d) None of these
- (vi) Heat travels through vacuum by
 (a) conduction (b) convection
 (c) radiation (d) Both (a) and (b)
- (vii) Spring is made of steel instead of copper because
 (a) steel is cheap. (b) steel is in abundance.
 (c) steel is more elastic than copper. (d) None of these

$$\text{Ans} \therefore \frac{F}{P} = \frac{F}{M}$$

(2)

(viii) Pressure has the same dimensional formula as that of

- | | |
|------------|------------|
| (a) power | (b) force |
| (c) stress | (d) strain |



(ix) In a stationary wave, the distance between the nearest node and antinode is

- | | |
|---|-------------------------|
| (a) λ | (b) $\frac{\lambda}{2}$ |
| (c) $\frac{\lambda}{4}$ | (d) 2λ |

(x) The ratio of co-efficient of superficial expansion and co-efficient of linear expansion is

- | | |
|-----------|----------------------|
| (a) 1 : 1 | (b) 2 : 1 |
| (c) 3 : 1 | (d) None of these |

2. (a) What do you mean by dimensions of a physical quantity? Explain with examples. Also write the dimensional formula of momentum, impulse and universal gravitational constant (G).

(b) Diameter of a pipe was measured by Vernier Callipers. The measurements were 3.71 cm, 3.70 cm. and 3.67 cm. Calculate mean absolute error and percentage error. 10+5

3. (a) State Newton's laws of motion. Also define force, momentum and impulse. Write their units too.

(b) Explain why a passenger sitting on a running bus tends to fall forward, when the bus suddenly stops. 10+5

4. (a) Define the terms — velocity and acceleration. Also derive the following equations for a uniformly accelerated motion.

- (i) $v = u + at$
- (ii) $s = ut + \frac{1}{2}at^2$
- (iii) $v^2 = u^2 + 2as$

where the symbols have their usual meanings.

(b) A car initially at rest starts moving with a constant acceleration of 0.5 ms^{-2} and travels a distance of 25 m. Find :

- (i) its final velocity
- (ii) the time taken

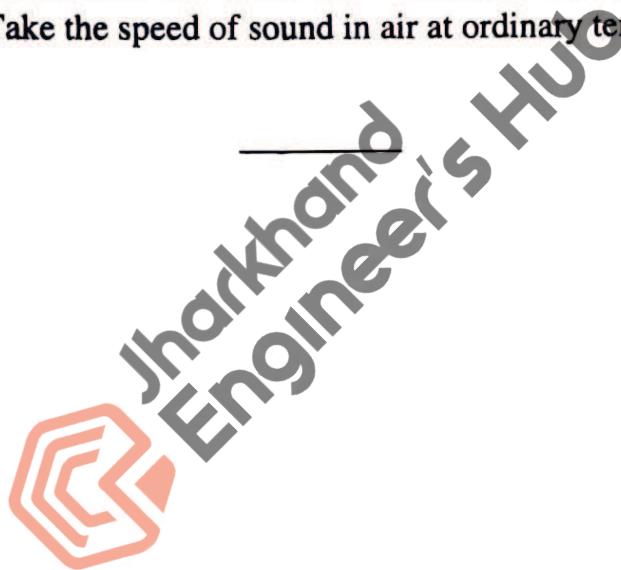
$$\frac{R^2}{r^2} + \frac{R}{h^2}$$

10+5

5. (a) Define acceleration due to gravity(g) and write its S.I. unit. How is it related to universal gravitational constant(G)? Explain the variation of ' g ' with altitude and depth.

(b) Define — stress, strain and elastic limit. Also write their S.I. units. 10+5

6. (a) State the laws of thermal conductivity of a material of a body. Also define the co-efficient of thermal conductivity and write its S.I. unit.
- (b) Describe the various modes of transmission of heat giving one example of each. 10+5
7. (a) What do you mean by longitudinal wave and transverse wave? Also define — stationary wave, node and antinode.
- (b) The audible range of human ear is 20 Hz – 20 kHz. Convert this into the corresponding wavelength range. Take the speed of sound in air at ordinary temperature = 340 ms^{-1} . 10+5



Jharkhand University of Technology, Ranchi**Diploma 1st Semester Examination, 2023 (NEP)****Subject : Communication Skills****Subject Code : ACE02****Time Allowed : 3 Hours****Full Marks : 70***Answer All questions.*

- 1. Read the passage carefully and answer the questions that follow:**

Once upon a time an old man lived with his son, daughter-in-law and a four-year old grandson. The old grandfather had become very thin and frail. He was very weak and his hands trembled. His eyesight was poor and he walked slowly. He had lost almost all his teeth and hair.

Every night the family ate together at the dinner table. Old grandfather's hands would shake and it made eating rather difficult. Roti, rice and curry fell from his fingers on his clothes and onto the floor. When he tried to drink milk, it spilled over the table cloth.

The young man and the daughter-in-law soon became irritated with grandfather. The daughter-in-law did not like changing dirty table cloth every day and the husband was disturbed by grandfather's noisy eating. The grandfather even broke some plates and glasses. They decided to do something about it. So the husband and wife took the old man to another room and laid a mat on the floor. There, the grandfather ate alone while the rest of the family enjoyed dinner at the table. Grandfather's food was served in a wooden bowl which would not break. The poor old man ate his food with tears in his eyes. He did not complain yet the young man and his wife scolded him for dropping food and spilling milk over the floor. The four-year old grandson watched this every day in silence.

One evening before dinner, the father notices his son playing with some pieces of wood on the floor. He asked the child what he was making. The little boy looked up and replies, "Oh, I am making a bowl for you." The young man laughed and asked what he would do with a wooden bowl. "You and Ma can eat your food from this bowl when you grow old like grandfather." The four-year old child smiled sweetly and went back to playing. His words struck the parents and made them realize what they had done. The young man sat speechless in his chair. Then tears started to fall down the daughter-in-law's cheeks. They did not speak a word but both knew what must be done. That evening, the young man took grandfather's hand and gently led him back to the dinner table.

Children always observe and imitate their mother and father throughout their lives. All parents provide a happy home, food, clothes and education for their children. It is also their duty as parents to set a good example. A wise parent realizes this and tries to be a good role model.

- (a) Whom did the old man live with?
- (b) Why were the young man and his wife irritated with grandfather?
- (c) What was the four-year old boy making?
- (d) Whom do children observe and imitate?

1+2+2+1

Please Turn Over

2. Answer *any six* of the following:

- (a) Why should we say no to plastic bags?
- (b) Why is Dr. APJ Abdul Kalam known as the Missile Man of India?
- (c) Describe briefly the skills and strategies required for unlocking one's hidden powers for maximum achievements.
- (d) Suggest measures for making one's life remarkable.
- (e) Give full form of IQ, EQ and SQ.
- (f) Who was Arunima Sinha? What lessons do we learn from her life?
- (g) What is the moral of the story 'The Roses of Gratitude'?
- (h) Elucidate if even a small act of kindness can change lives.
- (i) Give the names of mountains that Arunima Sinha had climbed.
- (j) Describe briefly the childhood of Dr. APJ Abdul Kalam.

3. Write short notes on *any six* of the following:

- (a) Phonetics
- (b) Vowels
- (c) Consonants
- (d) Homophones
- (e) Collocations
- (f) Dressing and Grooming
- (g) Kinesics
- (h) Facial Expressions
- (i) Eye contact
- (j) Gestures and Postures

4. Write a paragraph on *any one* of the following:

- (a) Blood donation camp in your college
- (b) An accident in the powerplant where you worked as a supervisor
- (c) Pre-interview preparation.

5. Write a dialogue between you and your friend Samir/Sameera talking about ongoing preparations for forthcoming examination.

6. Describe a computer in your own words.

Assignment

AEC02

(3)

7. Write a diary entry about how you managed to secure top position in your classroom. 4
8. Use appropriate prefix or suffix to form new words from the following:
action, understanding, act, imagine, love, manage, sensitive, final 4
9. Give synonyms of any four of the following words:
abandon, usual, biased, conceal, elegant, fabulous, genuine, kind, lack, mingle 4
10. Write phonetic transcription of any four of the following words:
assassination, alive, weigh, enthusiastic, pneumonia, diarrhoea
