

CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY
HEAD OFFICE : GUINDY, CHENNAI – 600 032.
ACADEMIC CELL
SECOND SEMESTER EXAMINATION - JULY 2022

Duration : 3 Hours
Course : DPT
Subject : Communication English-II

Max. Marks: 60
Date : 18.07.2022
Time : 02.00 p.m. to 05.00 p.m.

(DO NOT CHANGE SEQUENCE OF QUESTION NUMBER IN ANSWER SCRIPT)

PART – A

Answer **all** questions

30 x 1 = 30

Choose the most suitable alternative from the options given below –

1. I think you go out and meet new people.
(i) Should (ii) mustn't (iii) must (iv) would
2. you please lend me your pen?
(i) will (ii) could (iii) can (iv) may
3. She kept her purse the bed.
(i) in (ii) into (iii) on (iv) to
4. This is the car belongs to my brother.
(i) which (ii) whom (iii) who (iv) this
5. A boy doesn't play games will never be healthy.
(i) which (ii) whom (iii) who (iv) that
6. The new officer is a young man.
(i) Discent (ii) descent (iii) desent (iv) decsent
7. Some armed men tried to the passengers of their money.
(i) Steal (ii) rob (iii) take (iv) molest
8. My old mother milk only.
(i) lives in (ii) lives on (iii) lives for (iv) lives to
9. This book rural economy.
(i) deals on (ii) deals in (iii) deals for (iv) deals with
10. The shopping center was about 20 years ago.
(i) building (ii) build (iii) built (iv) builden
11. Antonym of the word 'Comic' is –
(i) Emotional (ii) fearful (iii) comedy (iv) tragic
12. Antonym of the word 'Advance' is –
(i) Retreat (ii) march (iii) return (iv) treat
13. Shakespeare is a famous English dramatist. Identify the type of noun.
(i) material noun (ii) proper noun (iii) common noun (iv) abstract noun
14. Either Kiran or Ahmed stolen the ring.
(i) was (ii) has (iii) have (iv) were
15. Mahesh is one of shortest boys in my class.
(i) no article (ii) a (iii) an (iv) the

Fill in the blanks with the correct tense form of the verb -

16. My father..... the doctor tomorrow.
(i) will consulted (ii) will consult (iii) will be consult (iv) will consulting
17. They often the factory.
(i) visiting (ii) have visited (iii) visit (iv) had visited
18. India her independence in 1947.
(i) get (ii) gotten (iii) will get (iv) got
19. He three essays so far.
(i) written (ii) has written (iii) had written (iv) write
20. Rita her work within three days.
(i) has finish (ii) finish (iii) will finish (iv) will finished

Write the full form of the following abbreviations/acronyms:

21. GDP
22. kWh
23. MNC
24. BIS
25. IP

26. A word that is used instead of an adjective is called a pronoun. (True/False)
27. The auxiliary 'used to' expresses a continuing habit. (True/False)
28. 'A' is used before a word beginning with a consonant sound. (True/False)
29. The present perfect continuous is used for an action which completed at some time in the past. (True/False)
30. The simple present is used to express general truths. (True/False)

PART – B

Answer **all** questions (Max. 40 words)

4 x 2 = 8

1. Change the active sentences to passive sentences :
 - (i) Do you like tea?
 - (ii) Open the door.
2. Convert the following verbs into nouns –
 - (i) Sing
 - (ii) Free
3. Insert suitable suffixes for the following words –
 - (i) Meaning
 - (ii) Develop
4. Match the words given in the column A with column B –

A	B	
Quadrant	the state of being alone	
Amateur	providing extra help or support	
Solitude	a period of three months	
Auxiliary	a quarter of a circle's circumference	
Quarterly	an unskilled person doing something	

PART – C

Answer any **four** questions (Max. 100 words)

4 x 3 = 12

1. Your friend from Malaysia is visiting India during Diwali Vacations. Write an email inviting him to join Diwali celebrations with you at your residence.
2. Spot the errors in the following sentences and correct them –
 - (i) Smoking is injurious for health.
 - (ii) Ravi met in an accident.
 - (iii) We congratulated her for her success.
3. What are idioms? Write three examples.
4. Define compound sentence and write three examples.
5. Complete the following conversation between a book seller and a student.

Book Seller : Welcome, please come in.

Student :

Book Seller : Yes, we have some copies of 'Introduction to Shakespeare.'

Student :

Book Seller : Each copy costs Rs. 350/-

Student :

Book Seller : We've 'Othello', 'The Tempest' and so on.

Student :

Book Seller : Yes, we send the books by VPP too.

PART – D

Answer any **two** questions (Max. 300 words)

2 x 5 = 10

1. You are interested in doing a short term course in computer programming during your summer vacation. Write a letter to the Director, Computer World, Sector 22, Chandigarh, inquiring about the duration of the course and the terms and condition for admission.
2. You have placed an order for a few books with City Central Book Shop, New Delhi. You have not received the books so far. Write a letter to the bookshop complaining about the non-compliance of your order.
3. Write a paragraph on – 'Books are Our Best Companions' in not more than 150 words.



18-1122

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HEAD OFFICE : GUINDY, CHENNAI – 600 032.
ACADEMIC CELL
SECOND SEMESTER EXAMINATION - JULY 2022

Duration : 3 Hours
Course : DPT
Subject : Engineering Mathematics

Max. Marks: 60
Date : 19.07.2022
Time : 02.00 p.m. to 05.00 p.m.

(DO NOT CHANGE SEQUENCE OF QUESTION NUMBER IN ANSWER SCRIPT)

PART – A

Answer **all** questions

30 x 1 = 30

- Which of the following holds true for a vector quantity?
a) It has only magnitude b) It has only direction
c) A vector has both direction and magnitude d) A vector can never be negative
- Express $(\frac{1}{3} + 3i)^3$ in the form of $a + ib$
a) $3+0i$ b) $\frac{-242}{27}+(-26i)$ c) $2+3i$ d) $\frac{1}{3} + (-3i)$
- Find the magnitude of $\vec{a} + \vec{b}$, if $\vec{a} = 4\hat{i} + 9\hat{j}$ and $\vec{b} = 6\hat{i}$.
a) $\sqrt{181}$ b) $\sqrt{81}$ c) $\sqrt{11}$ d) $\sqrt{60}$
- Evaluate the dot product of $\vec{a} = \hat{i} + 3\hat{j} + 2\hat{k}$ and $\vec{b} = 2\hat{i} + 3\hat{j} + 4\hat{k}$
a) 12 b) 19 c) -23 d) none of these
- What will be the value of x for which the value of $\cos x$ is minimum?
a) 0 b) -1 c) 1 d) Cannot be determined
- If $A = \begin{bmatrix} \cos x & -\sin x \\ \sin x & \cos x \end{bmatrix}$, then $|A|$
a) $\frac{4}{3} \sin x$ b) 0 c) 1 d) none of these
- Find order and degree of $\frac{d^4 y}{dx^4} + 4 \frac{d^2 y}{dx^2} = 5y$
a) 4, 1 b) 1, 4 c) 2, 5 d) none of these
- Which symbol denote impossible event?
a) S b) Φ c) β d) μ
- A Random Variable X can take only two values, 4 and 5 such that $P(4) = 0.32$ and $P(5) = 0.47$. Determine the Variance of X .
a) 8.21 b) 12 c) 3.7 d) 4.8
- find dy/dx of $y = \sin(ax + b)$.
a) $a \cdot \cos(ax + b)$ b) $b \cdot \sin(ax + b)$ c) $a \cdot \sin(ax + b)$ d) $-a \cdot \cos(ax + b)$
- If $2/11$ is the probability of an event, what is the probability of the event the event 'not A'
a) $2/11$ b) $9/11$ c) $5/11$ d) $7/11$
- What is direction of vector \vec{a} if it is multiplied with $-\lambda$?
a) Downwards b) Upwards c) Same d) Opposite
- Angle between two vectors,
a) $\cos \theta = \frac{\vec{A} \cdot \vec{B}}{|\vec{A}| |\vec{B}|}$ b) $\sin \theta = \frac{\vec{A} \times \vec{B}}{|\vec{A}| |\vec{B}|}$ c) $\cos \theta = 0$ d) none of these
- If $z = 3xy + 4x^2$, what is the value of $\partial z / \partial x$?
a) $3y + 8x$ b) $3x + 4x^2$ c) $3xy + 8x$ d) $3y + 3x + 8x$
- Find the value of x and y , if vectors $2\hat{i} + 3\hat{j}$ and $x\hat{i} + y\hat{j}$ are equal
a) $x=2, y=3$ b) $x=4, y=3$ c) $x=2, y=2$ d) $x=-3, y=2$
- $\frac{d}{dx}(\tan x)$ is.....
- write the value of ω^3
- If scalar product, the value $\hat{i} \cdot \hat{i} =$
- The sum of happened and not happened event is.....
- $\int u \cdot v \, dx =$
- If any two rows/column of a matrix are identical then the value of $\det A$ is zero (True/False)
- Scalar quantities have direction and magnitude (True/False)
- Possible orders of a matrix if it has 9 elements are 3 (True/False)
- $r(\cos x + i \sin x)$ is the polar form of complex number (True/False)
- Integration of $\sin x$ is $\cos x$ (True/False)

26. $\frac{dy}{dx}$ stands for
27. The value of $\int \frac{dx}{x}$ is
28. What is derivative of x^n
29. Value of i^{15} is
30. In $\int_a^b f(y) dy$, what is 'a' called as

PART – B

Answer all questions (Max. 40 words)

4 x 2 = 8

1. Differentiate $\log(\csc x)$
2. Find the projection of vector $a = 2\hat{i} + 3\hat{j} + 2\hat{k}$ on the vector $b = \hat{i} + 2\hat{j} + \hat{k}$?
3. Find the middle term of $(3 - \frac{x^3}{6})^7$?
4. Evaluate $\int \frac{dx}{x^2-16}$

PART – C

Answer any four questions (Max. 100 words)

4 x 3 = 12

1. Solve with Cramer's rule
 $3x-2y+4z=5, x+y+3z=2, -x+2y-z=1$
2. Find second order derivative of $x^3 \log x$?
3. compute $(1 + i)^{12}$ with the help of De'Moivre's theorem?
4. Find $\frac{d}{dx} \sec(\tan \sqrt{x})$
5. Find $\int_0^2 x^2 + 1 dx$

PART – D

Answer any two questions (Max. 300 words)

2 x 5 = 10

1. Find inverse of $\begin{bmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{bmatrix}$.
2. A random variable has following probability distribution find K and P ($x \geq 3$).

X	0	1	2	3	4
P(X)	0.1	K	2K	2K	K

3. If $u = x^3 + y^3 + 2x^2 y$, find $\frac{\partial u}{\partial x}, \frac{\partial u}{\partial y}$ and $\frac{\partial^2 u}{\partial x^2}$.

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HEAD OFFICE : GUINDY, CHENNAI – 600 032.
ACADEMIC CELL
SECOND SEMESTER EXAMINATION - JULY 2022

Duration : 3 Hours
Course : DPT
Subject : Engineering Physics

Max. Marks: 60
Date : 20.07.2022
Time : 02.00 p.m. to 05.00 p.m.

(DO NOT CHANGE SEQUENCE OF QUESTION NUMBER IN ANSWER SCRIPT)

PART – A

Answer **all** questions

30 x 1 = 30

- The French System of Units is known as
(a) CGS System (b) FPS System (c) SI System (d) MKS System
- The SI unit of length is
(a) Metre (b) Millimetre (c) Foot (d) Kilometre
- Velocity is a quantity
(a) Kelvin (b) Heat (c) Vector (d) Scalar
- Activity involving a force and movement in the direction of force is known as.....
(a) Power (b) Work (c) Friction (d) Couple
- A collision where part of kinetic energy is changed to some other form of energy is known as
(a) Elastic collision (b) Reversible collision (c) Irreversible collision (d) Inelastic collision
- Stress that acts to shorten an object is known as
(a) Shear Stress (b) Compression stress (c) Directed stress (d) Hydrostatic stress
- Measure of stiffness of an elastic material is known as
(a) Bulk modulus (b) Young's modulus (c) Poisson's ratio (d) Impulse
- 273 K is equal to
(a) 0 °C (b) 100 °C (c) 373 °C (d) 212 °F
- When heat is not transferred from the system to outside or from outside to a system, it is known as
(a) Adiabatic process (b) Isothermal process (c) Isobaric process (d) Isochoric process
- All processes cease as temperature approaches absolute zero
(a) First law of thermodynamics (b) Second law of thermodynamics
(c) Third law of thermodynamics (d) Zeroth law of thermodynamics
- A virtual image produced by a single mirror or lens is
(a) Inverted (b) Not inverted (c) Parallel (d) Perpendicular
- A curved mirror in which the reflective surface bulges towards the light source
(a) Plane mirror (b) Prism (c) Convex mirror (d) Concave mirror
- The process of an atom in higher energy state transiting to a lower energy state with external support is known as
(a) LASER (b) Spontaneous emission (c) Stimulated emission (d) Coherent emission
- When there are more number of atoms in higher energy state than lower it is known as
(a) Pumping (b) Emission (c) Conversion (d) Population inversion
- The active medium in Nd-YAG laser is YAG doped with
(a) Cr³⁺ ion doped (b) Mn²⁺ doped (c) Mg²⁺ doped (d) Nd³⁺ doped
- A quantity is said to be dimension, if that quantity is independent of basic units.
- A fluid that has no resistance to shear stress is known as
- Ratio of size of the image to the size of the object is
- Emits photons with high directionality
- is pumping donewith an electromagnetic radiation of energy.
- Derived quantity can be expressed in terms of other physical quantity. True/False
- Unit of second is also known as mean solar second. True/False
- Energy can be created and destroyed. True/False
- Water is thin having a lower viscosity while honey is thick having a higher viscosity. True/False
- The hotter the object is, the slower it cools. True/False

Expand the following abbreviations

26. °C
27. K
28. PE
29. t
30. f

PART – B

Answer **all** questions (Max. 40 words)

4 x 2 = 8

1. What is a dimensionless constant?
2. What is centripetal force?
3. Define specific heat capacity.
4. What is population inversion?

PART – C

Answer any **four** questions (Max. 100 words)

4 x 3 = 12

1. State Newton's second law.
2. Define momentum of a body.
3. Derive the relationship between surface tension and surface energy.
4. What is terminal velocity?
5. Write down the laws of reflection.

PART – D

Answer any **two** questions (Max. 300 words)

2 x 5 = 10

1. State and explain the Newton's laws of forces.
2. Write short notes on (a) Hooke's law (b) Bulk modulus
3. Explain the principle and working of LASER.



18-1124

CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY
HEAD OFFICE : GUINDY, CHENNAI – 600 032.
ACADEMIC CELL
SECOND SEMESTER EXAMINATION - JULY 2022

Duration : 3 Hours
Course : DPT
Subject : Electrical & Electronics Engineering

Max. Marks: 60
Date : 21.07.2022
Time : 02.00 p.m. to 05.00 p.m.

(DO NOT CHANGE SEQUENCE OF QUESTION NUMBER IN ANSWER SCRIPT)

PART – A

Answer **all** questions

30 x 1 = 30

1. What is the unit of current?
a) Ampere b) Volt c) Ohms d) Watt
2. A battery is a source of which type of voltage?
a) 1-phase AC Voltage b) 3-phase AC Voltage c) Both a and b d) DC Voltage
3. EMF in an electric circuit is equal to _____ in a magnetic circuit.
a) flux b) frequency c) MMF d) potential difference
4. What is the power factor of PURE CAPACITIVE circuit?
a) Lagging b) Leading c) Zero d) Unity
5. In a six-pole D.C. machine _____.
a) all the four poles are south poles b) all the four poles are north poles
c) two east poles follow west pole d) alternate poles are north and south
6. D.C Shunt motor is _____ motor.
a) constant speed b) low speed c) high speed d) over speed
7. In an star connected circuit, the magnitude of each line current is _____.
a) one-third the phase current b) equal to the corresponding phase current
c) two-thirds the phase current d) unity
8. In a three phase system, the voltages are separated by _____.
a) 90° b) 100° c) 110° d) 120°
9. If secondary side voltage is higher than primary side voltage then this transformer is called _____.
a) step up transformer b) step down transformer c) CT d) PT
10. Transformer core is made of _____.
a) bronze b) soft iron c) sponge d) copper
11. By which of the following systems electric power may be transmitted?
a) underground system b) overhead system c) Both a & b d) insulator
12. What device converts AC to DC?
a) Inverter b) Capacitor c) Resistor d) Rectifier
13. Which device is used to protect the buildings from the effect of lightning?
a) Lightning conductor b) Light house c) Lightning insulator d) None of these
14. What is the most useful example of semiconductor?
a) Silicon b) Copper c) Plastics d) Gold
15. NOT logic gate has _____.
a) four Inputs b) one input c) two inputs d) three Inputs
16. Frequency of AC supply in India is _____. (fill in the blank)
17. NOT of OR gate is called _____. (fill in the blank)
18. Holes are the majority carrier in _____ semiconductor. (fill in the blank)
19. Transformer is rated in _____. (fill in the blank)
20. Megger is used to measure _____. (fill in the blank)
21. DC Generator working on the principal of the Faraday's Law. (write true or false)
22. In parallel circuit, the current through each of the components is not same. (write true or false)
23. In single-phase power supply system, the voltage may reach up to 230 volts. (write true or false)
24. Diode has three no. of terminals. (write true or false)
25. Transformer is a static device. (write true or false)
26. What is abbreviation of EMF?
27. What is abbreviation of CT?
28. What is abbreviation of MCB?
29. What is abbreviation of SCR?
30. What is abbreviation of pf?

PART – B

Answer **all** questions (Max. 40 words)

4 x 2 = 8

1. State Kirchhoff's Current Law (KCL).
2. Explain Electromagnetic Induction.
3. Write down do's and don'ts to avoid electric shocks.
4. Write down the truth table and Boolean expression of AND gate.

PART – C

Answer any **four** questions (Max. 100 words)

4 x 3 = 12

1. What are Series and Parallel Circuits?
2. Discuss about transformer core and develop the e.m.f. equation of transformer.
3. Write down Faraday's 2nd law of Electromagnetic Induction.
4. Explain about majority carriers and minority carriers of P-type and N-type semiconductors.
5. What is Time Period of a.c waveform and back e.m.f. of d.c motor.

PART – D

Answer any **two** questions (Max. 300 words)

2 x 5 = 10

1. Describe briefly the constructions of DC Machines with net sketch.
2. Explain using single line diagram how power is transferred from generating station to our home.
3. Draw and discussed about the process of converting AC to DC using I/P waveform, circuit diagram, O/P wave form for full wave rectifier.

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HEAD OFFICE : GUINDY, CHENNAI – 600 032.
ACADEMIC CELL
SECOND SEMESTER EXAMINATION - JULY 2022

Duration : 3 Hours
Course : DPT
Subject : Development of Life Skills

Max. Marks: 60
Date : 22.07.2022
Time : 02.00 p.m. to 05.00 p.m.

(DO NOT CHANGE SEQUENCE OF QUESTION NUMBER IN ANSWER SCRIPT)

PART – A

Answer **all** questions

30 x 1 = 30

1. A behavior change or behavior development approach designed to address a balance of three areas namely knowledge, attitude, and skills is called
(a) Life skills (b) Job skills (c) Personal skills (d) Functioning skills
2. The act of choosing between two or more courses of action is known as
(a) Self-awareness (b) Critical thinking (c) Empathy (d) Decision making
3. An individual's freedom to go for any kind of possible rules or ideas to reach the solution is
(a) Syllogism (b) Algorithms (c) means-end-analysis (d) Heuristics
4. Which method is not used to enhance life skills?
(a) Debate (b) Role play (c) Stress (d) Case study
5. Recognition of "self" and identifying our strengths and weaknesses, desires and dislikes is
(a) self-awareness (b) empathy (c) creative thinking (d) critical thinking
6. The model used for decision making is called:
(a) SWOT model (b) MBTI model (c) POWER model (d) Johari-window model
7. The psychological abilities for adaptive and positive behavior are known as
(a) self-skill (b) vocational skills (c) life skills (d) recreational skills
8. The relationship between two or more people is called
(a) intimate (b) cordial (c) intra-personal (d) inter-personal
9. The first step in the process of solving a problem is
(a) define and identify a problem (b) evaluate the outcome
(c) decide on a solution (d) evaluate alternatives.
10. The reaction of our body to people, events, and our own thoughts is called
(a) stress (b) emotion (c) relationship (d) awareness
11. Which method is used to enhance life skills?
(a) Stress (b) MBIT (c) Self-unawareness (d) Audio-visual activities
12. The basic qualities required for critical thinking are
(a) Flexibility (b) Persistence (c) Open-mindedness (d) All of the above
13. In SWOT analysis, T stands for
(a) Treatment (b) Tiredness (c) Thinking (d) Threat
14. The ability to analyze information and experiences in an objective manner is called
(a) critical thinking (b) problem solving (c) decision making (d) creative thinking
15. Verbal skills, social skills, and body language are important aspects of
(a) effective communication (b) interpersonal skills (c) critical thinking (d) creative thinking
16. is an individual's ability to appreciate the strengths and weaknesses of one's own character.
(a) Self-efficacy (b) self-esteem (c) self-regulation (d) self-awareness
17. The goal of the approach is to promote healthy and social behavior.
(a) Life skills (b) Job skills (c) Personal skills (d) Functioning skills
18. are ways in which we learn to deal with various stressors
(a) coping skills (b) empathy (c) critical thinking (d) decision making
19. is the ability to identify, cope with and find solutions to difficult or challenging situations.
(a) Problem solving (b) coping skills (c) critical thinking (d) decision making
20. means everyone is in the agreement or they may live with the agreement.
(a) consensus (b) conflict (c) solution (d) happiness

21. We should work with our team if needed. (True/ False)
22. We should listen to our teachers. (True/ False)
23. Communication is more than just talking face to face. (True/ False)
24. Body language is the exchange of information through the use of words. (True/ False)
25. Non-verbal communication includes gestures, facial expressions, and body positions. (True/ False)
26. Write the extended form of LEDO.
27. Write the extended form of IMHO
28. APE stands for.
29. In communication ALF stands for.
30. What does SOFT stand for?

PART – B

Answer **all** questions (Max. 40 words)

4 x 2 = 8

1. What do you mean by attitude? Explain its components.
2. What do you mean by motivation?
3. What is the difference between hard skills and soft skills?
4. Explain the term "soft skill"

PART – C

Answer any **four** questions (Max. 100 words)

4 x 3 = 12

1. What are the basic elements of life skills?
2. Explain the role of chronemics in the presentation.
3. What is kinesics? How does body language help in communication?
4. What do you mean by professional values?
5. Describe three main components of life skills.

PART – D

Answer any **two** questions (Max. 300 words)

2 x 5 = 10

1. Write 10 (ten) characteristics of a good leader.
2. What are helpful tips for an effective telephonic or video interviews?
3. What are the essential qualities of a good employee in your opinion?
