CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY
HEAD OFFICE : GUINDY, CHENNAI – 600 032.
ACADEMIC CELL
FIRST SEMESTER EXAMINATION – JANUARY - 2023

Duration : 3 Hours
Course : DPMT
Subject : Communication English-I

Max. Marks: 60
Date : 09.01.2023
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

Identify the parts of speech in the following sentences:

1. She is cooking **delicious** meals.
   a. Adjective   b. Preposition   c. Adverb
2. I bought a **beautiful** dress at the mall.
   a. Preposition   b. Adjective   c. noun
3. What is **her** doubt?
   a. Conjunction   b. Preposition   c. Pronoun
4. I left my shoes **under** the table.
   a. Adjective   b. Conjunction   c. Verb
5. On Sundays I **work** from nine to five
   a. Verb   b. Preposition   c. Adverb
6. I want to go to a **university** in the United States.
   a. Adjective   b. Preposition   c. Noun
7. I'm sure I've **met** your girlfriend before.
   a. Verb   b. Preposition   c. Interjection
8. **Well,** I don't think I'll be home before 6.
   a. Interjection   b. Preposition   c. Pronoun
9. Andy knocked on the door **but** nobody answered.
   a. Adverb   b. Adjective   c. Conjunction
10. **After** lunch let's go out for a coffee.
    a. Pronoun   b. Preposition   c. Verb
11. She was wearing really **beautiful** earrings.
    a. Adjective   b. Adverb   c. Noun
12. **Wow,** you have got a great score.
    a. Conjunction   b. Interjection   c. Pronoun
13. She **quickly** packed her bag and left.
    a. Noun   b. Adjective   c. Adverb
14. **Take** your first left then go over the bridge.
    a. Noun   b. Preposition   c. Verb
15. He thinks **we** will arrive at roughly 5 p.m.
    a. Pronoun   b. Preposition   c. Conjunction

Fill in the blanks with suitable answers:

16. I _____ to the mall after school. (go / went)
17. My Sister _____ play tennis now. (can / could)
18. My brother _____ a bear an hour ago. (see / saw)
19. _____ Tom visit his grandmother last night? (Do / Did)
20. Do you _____ chocolate milk?   (like / likes)

Write Abbreviations for the following

21. WWW
22. ATM
23. UGC
24. AICTE
25. CD
26. A plural subject needs a singular verb. (True / False)
27. The terms "its" and "it's" have different meanings. (True / False)
28. Adjectives usually come before a noun. (True / False)
29. Every sentence must have a subject and an object. (True / False)
30. In British English, a collective noun is usually treated as plural. (True / False)

PART – B
Answer **all** questions (Max. 40 words)   4 x 2 = 8

1. Frame sentences using the following Idioms and Phrases:
   a. Sailing in the same boat
   b. Once in a blue moon
2. Write suitable prefix for the following words:
   a. counter
   b. look
3. Write suitable suffix for the following words:
   a. Develop
   b. Conscious
4. Match the following:

Column A	Column B
Causing death	Aristocracy
A religious war	Fugitive
Government by the nobles	crusade
One who runs away from justice	Fatal

PART – C
Answer any **four** questions (Max. 100 words)   4 x 3 = 12

1. Define Noun. Explain the types of nouns with suitable examples.
2. Differentiate Adjective and Adverb with examples.
3. Explain Coordinating Conjunctions with examples.
4. Write a dialogue between you and a shopkeeper regarding the latest brands and arrivals in the shop.
5. Spot the errors in the following sentences:
   a. I prefer coffee than tea
   b. One of these cycle is damaged
   c. Neither Tom nor Maggie are available
   d. He is tallest girl in the class

PART – D
Answer any **two** questions (Max. 300 words)   2 x 5 = 10

1. Write a letter to the municipal officer complaining about the poor sanitary condition of your locality.
2. Write a general essay on 'Deforestation'.
3. The following is the number of hours spent by a child in a day. Draw a pie Chart based on the given data:

Activity	Sleeping	Playing	School	Sports	Dance	Eating
No. of. hours	8	3	6	3	2	2

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CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY
HEAD OFFICE : GUINDY, CHENNAI – 600 032.
ACADEMIC CELL
FIRST SEMESTER EXAMINATION – JANUARY - 2023

Duration : 3 Hours
Course : DPMT
Subject : Workshop Mathematics

Max. Marks: 60
Date : 10.01.2023
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 quadratic equation $ax^2 + bx + c = 0$ has no real roots, if
    (a) $b^2 - 4ac > 0$ (b) $b^2 - 4ac = 0$ (c) $b^2 - 4ac < 0$ (d) $b^2 - ac < 0$
2. The equation $x^2 + 1 = 2x - 3$ is a
    (a) Linear equation   (b) Quadratic equation   (c) Cubic equation   (d) None of theses
3. The quadratic equation $x^2 - 4x + 4 = 0$ has
    (a) Two equal roots   (b) Two real and unequal roots   (c) No real roots   (d) None of these
4. The quadratic formula to find the roots of a quadratic equation $ax^2 + bx + c = 0$ is given by
    (a) $\frac{-b \pm \sqrt{b^2-ac}}{2a}$ (b) $\frac{-b \pm \sqrt{b^2-2ac}}{2a}$ (c) $\frac{-b \pm \sqrt{b^2-4ac}}{4a}$ (d) $\frac{-b \pm \sqrt{b^2-4ac}}{2a}$
5. $\frac{1}{2} + \frac{1}{2}$ is equal to
    (a) 1   (b) 2   (c) $\frac{5}{2}$ (d) None of theses
6. Evaluate 10% of 60 + 15% of 80.
    (a) 5   (b) 6   (c) 15   (d) 18
7. If n is a positive integer, then the number of terms in the expansion of $(x + y)^n$ is:
    (a) n (b) $n + 1$ (c) $n + 2$ (d) None of these
8. The sum of the binomial coefficients in the expansion of $(1 + y)^4$ is:
    (a) 4   (b) 8   (c) 16   (d) 32
9. n_{C_n} is equal to
    (a) 1   (b) 0   (c) n   (d) None of these
10. If the slope of a straight line is $\frac{1}{2}$, then the slope of the line perpendicular to it, is equal to;
    (a) 1   (b) -1   (c) 2   (d) – 2
11. Which of the following equation represent a circle?
    (a) $x^2 + y^2 = 1$ (b) $x^2 + 2y^2 + 2x + 2y + 1 = 0$
    (c) $2x^2 + y^2 + 2x + 2y + 1 = 0$ (d) $x^2 + y^2 + 2xy + 2y + 1 = 0$
12. Center of the circle $(x - 2)^2 + (y + 3)^2 = 4$ is:
    (a) $(2, 3)$ (b) $(2, -3)$ (c) $(-2, 3)$ (d) $(-2 - 3)$
13. 180^0 is equal to _____ radians.
    (a) $\frac{\pi}{2}$ (b) $\frac{\pi}{4}$ (c) π (d) 2π
14. $\sin^2 90^0 + \cos^2 90^0 = $ _____.
    (a) 1   (b) -1   (c) 0   (d) 2
15. $\cos(90^0 + A)$ is equal to:
    (a) $\sin A$ (b) $-\sin A$ (c) $\cos A$ (d) $-\cos A$
16. The sum of the roots of a quadratic equation of the form $ax^2 + bx + c = 0$ is _____.
17. If the product of roots of the quadratic equation $x^2 + 8x + k = 0$ is 4, the value of k is _____.
18. If radius of a circle is $5\ cm$, then diameter is _____ cm.
19. If two straight lines are perpendicular to each other, then the product of their slopes is equal to

    _____.
20. $\cos(180^0) = $ _____.
21. If the two straight lines are parallel. Then their slopes are equal.   (True/False)
22. The maximum number of roots for a quadratic equation is 2.   (True/False)
23. A quadratic equation $ax^2 + bx + c = 0$ has equal roots, then $b^2 - 4ac > 0$.   (True/False)
24. The diameter divides the circle into two equal parts, each part is called Semicircle. (True/False)
25. $\sin(-A) = \sin(A)$.   (True/False)

26. Area of circle of radius $4\ cm$ is _____.
27. $\sin(A + B) =$ _____.
28. $\cos(A + B) =$ _____.
29. $1 + \tan^2 A =$ _____.
30. $\sin^2 A + \cos^2 A =$ _____.

PART – B
Answer **all** questions (Max. 40 words)   4 x 2 = 8

1. Find the value of $\cos 90^0 + \sin 90^0$.
2. Determine the value of p for which the quadratic equation $x^2 + 2x + p = 0$ has equal roots.
3. Find the intercepts of the line $2x + 4y = 8$.
4. If circumference of a circle is 4π cm, then find the radius of the circle.

PART – C
Answer any **four** questions (Max. 100 words)   4 x 3 = 12

1. Find the value of $\sin(75^0)$.
2. Find the combined equation of the straight lines whose separate equations are $x + y + 4 = 0$
   and $x + 2y - 4 = 0$.
3. Find the 4th term in the expansion of $(x + 2y)^6$.
4. Solve: $x^2 + 6x + 6 = 0$ by using the quadratic formula.
5. If the equation of circle is $x^2 + y^2 + 4x + 4y + 2 = 0$, then find the radius and center of the circle.

PART – D
Answer any **two** questions (Max. 300 words)   2 x 5 = 10

1. The area of the circle is 16π square units. If the centre of the circle is $(1, 2)$, then find the equation of the circle.
2. Find the middle term in the expansion of $(2x + 3y)^7$.
3. If A, B are acute angles such that $\sin A = 3/5$, $\cos B = 4/5$, find $\cos(A + B)$.

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HEAD OFFICE : GUINDY, CHENNAI – 600 032.
ACADEMIC CELL
FIRST SEMESTER EXAMINATION – JANUARY - 2023

Duration : 3 Hours
Course : DPMT
Subject : Engineering Physics

Max. Marks: 60
Date : 11.01.2023
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. The dimensional formulae for velocity is
   a) $M^0 L^0 T^0$ b) $M^0 L^1 T^{-1}$ c) $M^1 L^1 T^1$ d) none of these
2. Unit of work is
   a) Newton   b) Joule   c) dyne   d) none of these
3. Vector is having
   a) Magnitude   b) magnitude and direction   c) only direction   d) none of these
4. Potential energy is due to
   a) Velocity   b) position   c) size   d) design
5. The trajectory of projectile motion is
   a) straight line   b) ellipse   c) parabola   d) none of these
6. Hook's law relates stress with
   a) line   b) strain   c) pain   d) grain
7. What will be flow of liquid if Reynold's number is more than 2000
   a) Streamlined   b) turbulent   c) mixture of both a and b   d) can't say
8. Stoke's formula is related with
   a) Initial velocity   b) Final velocity   c) terminal velocity   d) critical velocity
9. The internal energy of ideal gas depends on only
   a) Pressure   b) volume   c) temperature   d) none of these
10. Change 100°C into °F
    a) 212 °F   b) 300 °F   c) 412°F   d) 212°F
11. Adiabatic process is
    a) No communication of heat   b) pressure constant   c) volume constant   d) temperature constant
12. Specific heat in adiabatic process is
    a) 0   b) 1   c) 2   d) infinite
13. Laser emits
    a) Electron   b) photon   c) proton   d) neutron
14. Attractive force between molecules of same substance is
    a) Atomic force   b) nuclear force   c) cohesive force   d) adhesive force
15. Laser is
    a) Bichromatic   b) monochromatic   c) polychromatic   d) none of these
16. Strain is dimensionless quantity.(true/false)
17. Principle of laser is spontaneous emission.(true/false)
18. Rain drop is spherical due to surface tension.(true/false)
19. Brick is a good conductor.(true/false)
20. The laser is high intensity source.(true/false)
21. Name any one pumping process-------------
22. Isobaric process means---------------
23. Metal is a good -----------
24. The unit of surface tension is----------
25. Newton's first law of motion is popularly known as----------
Write full form of following.
26. SMF
27. CGS
28. LASER
29. SI
30. TIR

PART – B
Answer **all** questions (Max. 40 words)   4 x 2 = 8

1. Explain stress and its unit.
2. What is spontaneous emission?
3. Define acceleration.
4. What do you mean by simple microscope?

PART – C
Answer any **four** questions (Max. 100 words)   4 x 3 = 12

1. What is Young's modulus?
2. Explain Poisson's ratio.
3. State Boyle's law.
4. What is pumping?
5. Write life time of metastable state.

PART – D
Answer any **two** questions (Max. 300 words)   2 x 5 = 10

1. Derive an expression for centripetal acceleration.
2. Prove that trajectory of projectile is parabola.
3. Prove that $C_p - C_v = R.$

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18-514

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

Max. Marks: 60
Date : 12.01.2023
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. The value of Form Factor is
   a) 1.11   b) 2.22   c) 3.33   d) 4.44
2. A battery stores which type of Voltage?
   a) AC   b) DC   c) Both   d) None
3. Unit of resistance is
   a) Mho   b) Ohm   c) Siemen   d) Ohm^{-1}
4. The power factor is maximum in
   a) Resistive circuit   b) Inductive circuit   c) Capacitive circuit   d) Electrical circuit
5. The operating principle of DC generator is based on
   a) Faraday's first law   b) Faraday's second law   c) Ohm's law   d) Zeroth law
6. The load of the electrical consumer is generally measured in
   a) Volt   b) Ampere   c) kW   d) Ampere hour
7. Which domestic utilities has highest power factor?
   a) Refrigerator   b) ceiling fan   c) Tube light   d) Electric Iron
8. A wattmeter is a device used to measure power. The unit of power read by wattmeter is given by
   a) Watt   b) Watt hour   c) Kilo Watt hour   d) Kilo Volt Ampere
9. Unit of flux density is given by
   a) Wb   b) Wb/m^2 c) Wb/m   d) AT
10. The function of commutator in DC generator is to convert
    a) AC to DC   b) DC to AC   c) AC to AC   d) DC to DC
11. The function of starter in starting of any motor is to limit
    a) Starting current   b) starting voltage   c) both   d) none of the above
12. The efficiency of transformer is maximum when
    a) Iron loss > copper loss   b) Iron loss < copper loss
    b) Iron loss = copper loss   d) copper loss > iron loss
13. Current and voltage transformer is used as a
    a) Instrument transformer   b) power transformer
    b) Tool transformer   d) distribution transformer
14. The wiring used for house hold purpose is done in
    a) Series   b) parallel   c) series – parallel   d) any manner
15. Clues of electrical hazards are
    a) Burst conductor   b) insulation brake   c) defective power tool   d) all of the above
16. In _____ connection the current flowing is same in throughout the circuit.
17. The ohm's law only applicable when _____ condition of the circuit remains constant.
18. The transformer core is made of _____steel.
19. The machine which converts mechanical energy in to electrical energy is called_____.
20. The _____ power is the useful power which is actually dissipated in the circuit.
21. The time taken to complete one complete revolution is called time period of AC wave. (write True or False)
22. Rectifier is a device which converts AC in to DC. (write True or False)
23. A purely inductive or capacitive circuit dose not stores any energy. (write True or False)
24. In transformer the eddy current loss and the hysteresis loss is collectively called copper loss. (write True or False)
25. In three phase power supply the number of conductor required is three or may be four. (write True or False)

26. What is the abbreviation of MCCB?
27. What is the abbreviation of kVAR?
28. What is the abbreviation of µF?
29. What is the abbreviation of MMF?
30. What is the abbreviation of EP?

PART – B
Answer **all** questions (Max. 40 words)   4 x 2 = 8

1. State Kirchhoff's current law.
2. Define electromagnetism.
3. What is back emf in DC motor?
4. Why efficiency of the transformer is high?

PART – C
Answer any **four** questions (Max. 100 words)   4 x 3 = 12

1. Explain the following in brief
   a) Cross arms
   b) Isolator
   c) Fuse
2. What are the possibilities of electrical hazards? Explain in brief.
3. What is Rectifier? Give its types.
4. Explain star and delta connection of transformer winding.
5. Give the applications of DC shunt motor.

PART – D
Answer any **two** questions (Max. 300 words)   2 x 5 = 10

1. What is electrical shock? Give the factors in which severity of shocking current depend.
2. Compare the single phase supply and three phase power supply with different parameters.
3. Define transformer. Explain the working principle of step- up transformer in full details.

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HEAD OFFICE : GUINDY, CHENNAI – 600 032.
ACADEMIC CELL
FIRST SEMESTER EXAMINATION – JANUARY - 2023

Duration : 3 Hours
Course : DPMT
Subject : Environmental Sciences

Max. Marks: 60
Date : 13.01.2023
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 The source of energy in an ecosystem
 a) ATP   b) Sunlight   c) DNA   d) RNA
2. The Taj Mahal is threatened due to effect of
 a) Oxygen   b) Hydrogen   c) Chlorin   d) Sulphur Dioxide
3. The part of the earth and its atmosphere in which organism live is
 a) Biosphere   b) Lithosphere   c) Hydrosphere   d) Biomass
4. Gas released during Bhopal tragedy was
 a) Methyl isocyanate   b) Potassium isocyanate   c) Isocyanate   d) All of them
5. The concept of ecological pyramid was first proposed by
 a) Charles Elton   b) Hackle   c) Odum   d) Taylor
6. Which of the following is not recycled in the Biosphere
 a) Energy   b) Nitrogen   c) Carbon   d) Water
7. Soil infertility is caused by
 a) Shifting cultivation   b) Overgrazing   c) Industrialization   d) All the above
8. Instrument used to measure earthquake is known as
 a) Seismograph   b) Barometer   c) Ammeter   d) Anemometer
9. Which of the following diseases is not waterborne disease
 a) Malaria   b) Dysentery   c) Diarrhea   d) Cholera
10. Chipko movement is associated with
 a) Water   b) Soil   c) Forest   d) Sound
11. Which of the following is secondary pollutant
 a) Carbon di oxide   b) methene   c) ozone   d) sulphur di oxide
12. Harmful trace metals in fly ash
 a) Antimony   b) Cadmium   c) Arsenic   d) All of them
13. Montreal Protocol aims at
 a) Control of co_2 emission   b) reduction of ozone depleting substances
 c) Biodiversity conservation   d) control of water pollution
14. Renewable energy resource is
 a) Coal   b) Petroleum   c) solar energy   d) Natural gas
15. Who said "Nature can provide for all the needs of human but not for their greed"
 a) J. L Nehru   b) Sardar Patel   c) Indira Gandhi   d) Mahatma Gandhi
16. Amrita Devi is known for............
17. Formation of ozone hole is maximum over.............
18. Organism that feeds primary consumer only is called............
19. Silent valley Project is located in..........
20 Human Rights Day is celebrated ....
21 Term Ecology was coined by Hackle   (true/false)
22. Energy flow in ecosystem is unidirectional (true/false)
23. World Environment Day is celebrated on 5 June (true/false)
24. 1Decible is equal to 1000Htz   (true/false)
25. Birds and Animals are the example of Abiotic Environment (true/false)
26. EIA Refers to_____
27. NEPA refers to_____
28. COD refers to_____
29. NDRF refers to_____
30. MAB stands for_____

PART – B

Answer **all** questions (Max. 40 words)   4 x 2 = 8

1. Write the type of food pyramid?
2. What do you mean by Biodiversity?
3. Name different layer of Atmosphere?
4. Explain Renewable and Non- renewable energy sources with their Example?

PART – C

Answer any **four** questions (Max. 100 words)   4 x 3 = 12

1. Discuss the salient features of Wildlife Protection Act 1972?
2. Describe the harmful effects of Noise Pollution?
3. Brief note over different phases of disaster?
4. What is waste water treatment?
5. Write short note over causes and effects of earthquake?

PART – D

Answer any **two** questions (Max. 300 words)   2 x 5 = 10

1. Describe Rain water harvesting and provide two ways for rainwater harvesting?
2. What is the effect of human activities on environment? Discuss the key features of the Environmental Protection Act (1973)?
3. Write short note on i) Water logging   ii) Soil erosion   iii) Acid Rain   iii) Ozone layer Depletion

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