Deerwalk Aptitude Test (DAT)

PHYSICS-SET A

1. **The dimension of universal constant is**

   (a) $L^2T^{-2}K^{-1}$ (b) $M^{-2}L^3T^{-2}$ (c) $M^{-1}L^3T^{-2}$ (d) $MT^{-3}K^{-4}$

2. **$1/n^{th}$ part of a uniform chain of length L is hanging on a table, what is the work done in pulling up the chain?**

   (a) $mgL/2n^2$ in vertical direction (b) 2L/n in vertical direction

   (c) mgL^2/n^2 (d) $2mgL^2/n$

3. **A force of 20N is acting on a block of mass 5 kg at time 5 sec. Determine the velocity.**

   (a) 0.028 m/s^2 (b) 0.28 m/s^2 (c) 0.0028 m/s^2 (d) 2.08 m/s^2

4. **If radius of earth is reduced,**

   (a) tide duration reduced (b) earth rotates slower
   (c) time period of earth decreased (d) duration of day increases

5. **Zener diode acts as**

   (a) Voltage regulator in reverse biasing
   (b) Voltage regulator in forward biasing
   (c) Current regulator in forward biasing
   (d) Current regulator in reverse biasing

6. **If total energy of satellite is E,What is new escape velocity?**

   (a) 2E (b) -2E (c) E (d) -E

7. **What is e/m ratio of electron?**

   (a) 2.76×10^{13} (b) 2.76×10^{10} (c) 1.76×10^{10} (d) 1.76×10^{11}

8. **At what temperature iron becomes paramagnetic?**

   (a) 200°C (b) 400°C (c) 600°C (d) 800°C

9. **Sparking of diamond is because of**
   (a) total internal reflection (b) refraction
   (c) diffraction (d) scattering

10. **Pressure variation in mechanical wave depends upon as**
    (a) α intensity (b) independent of intent of intensity
    (c) α I (d) none of these

11. **When reflection of lights occurs then its**
    (a) velocity remains constant
    (b) wavelength remains constant
    (c) frequency remains constant
    (d) all of above

12. **When a convergent beam of light is incident on a plane mirror, the image formed is**
    (a) up right and real (b) up right and virtual
    (c) inverted and real (d) inverted and virtual

13. **Which of the following cannot produce virtual image?**
    (a) plane mirror (b) convex mirror
    (c) concave mirror (d) all of these

14. **In case of concave mirror, the minimum distance between a real object and its real image is:**
    (a) f (b) 2f (c) uf (d) zero

15. **Which mirror is used for shaving?**
    (a) concave mirror (b) convex mirror
    (c) concave cylindrical mirror (d) none of these

16. **The angle of prism is 60°.What is the angle of incident for minimum deviation if the refraction index of the material of the prism is √2**
    (a) 45° (b) 60° (c) 90° (d) 30°

17. **An air bubble in water behaves as a**
    (a) concave lens (b) convex lens
    (c) concave mirror (d) convex mirror

18. **Near and far point of the healthy human eye are:**
    (a) 0 and 25cm (b) 0 and ∞
    (c) 25cm and 100cm (d) 15cm and ∞

19. **A person using a lens as a simple microscope sees on:**
    (a) inverted, virtual image (b) inverted, real and magnified
    (c) upright, virtual image (d) upright, real magnified image

20. **A body is projected horizontally with velocity 190 m/s from height 400m.What is time to reach the ground?**
    (a) 5 sec (b) 10 sec (c) 15 sec (d) 20 sec

21. **Self inductance of solenoid is proportional to**
(a) 2 (b) 3 (c) 4 (d) 5

22. **A wire of certain material is stretched slowly by 10%.It's new resistance and specific resistance becomes respectively**
(a) 1.2 times,1.1 times (b) 1.21 times, same
(c) both remain the same (d) 1.1 times,1.3 times

23. **The wavelength of light emitted in the vehicle region by H_e^+ ions after collisions with H atoms is**
(a) 2 (b) 3 (c) 4 (d) 5

24. **The ratio of kinetic energy of the n=2 electron from the H atom to that of H_e^+ ions is**
(a) 1/4 (b) 1/2 (c) 1 (d) 2

25. **When a ceiling fan is switched on,it makes 10 rotations in the first 4 seconds. How many rotations does it make in the next 4 sec? (Assuming uniform angular acceleration)**
(a) 10 (b) 20 (c) 30 (d) 40

SET B

1. **A projectile is projected with the K.E,K.If it has the maximum possible horizontal range,then its Kinetic energy at the highest point will be ?**
a. 0.25 k b. 0.5 k c. 0.75 k d.0.0 k

2. **A body of mass m slides down an inclined plane and reaches the bottom with a velocity v.If the same mass was in the form of a ring which rolls down this incline,the velocity of the ring at the bottom would have been**
a. V b.2v c.v/2 d.2/5v.

3. **The potential energy of a simple harmonic oscillation when the article is halfway to its end point is**
a. 2/3 E b.1/8 E c. ¼ E d.½ E

4. **If gravitational constant is decreasing with time, what will remain unchanged in case of a satellite orbiting around the earth?**
a. Time period b. Orbiting radius
c. Areal velocity d. Angular velocity

5. **50g of ice at 0°C is mixed with 50g of water at 80°C, final temperature of mixture of will be**
a. 0°C b.40°C c. 60°C d.4°C

6. **A bulb contains one mole of hydrogen mixed with one mole of oxygen at temperature T. The ratio of rms values of velocity of hydrogen molecules to that of oxygen molecules is**
a. 1:16 b.1:4 c. 4:1 d. 16:1

7. A equipotential surface is that surface-

a. On which each and every point has the same potential
b. Which has negative potential
c. Which has positive potential
d. Which has zero potential

8. A 2500 F Capacitor is charged through a 1Kresistor by a 12 V dc source.What is the voltage across the capacitor after 5 sec?

a. 10.38 V
b. 5.14 V
c. 3.25 V
d. 1.17 V

9. The focal length of a thin convex lens for a red and blue colours is 100.5 cm and 99.5cm.The dispersive power of the lens is

a. 0.01
b. 0.02
c. 1.005
d. 0.995

10. A person is approaching a plane mirror with speed 10 cm/s.The initial distance between person and mirror is 1 m ,then the distance between person and his image after 2.5 sec will be.

a. 0.25m
b. 0.5m
c. 0.75m
d. 1.5m

11. A wire has resistance 12 is bent into a circle and the effective resistance across two ends of diameter of circle is

a. 24
b. 12
c. 6
d. 3

12. A spherical drop of water carrying a charge of 310^{-10} c has potential of 500V at its surface combine with another similar drop of same size and charge.The potential of the resultant drop will be

a. 600 V b794 V c. 826 V d.500V

13. An electron is projected in a magnetic field along the line of force.How will its motion be affected?

a. There will be no effect on its motion.
b. The electron will travel along a circle and its speed will remainunchanged.
c. The electron will follow the path of a parabola and its speed willincrease.
d. The velocity will increase in magnitude but its direction will not change.

14. Two wires A and B have the same length equal to 44 cm and carry a current of 10 A each.A is bent into a circle and B into a square which wire produces greater magnetic field at the centre.

a. A
b. B
c. Both have same
d. Can't be said

15. B^{210} has a half life of 5 days. The time taken for seven-eighth of a sample to decay is

a. 15 days
b. 3.4 days
c. 10 days
d. 20 days

16. The wavelength of the most energetic x-ray emitted when a metal target is bombarded by 100 kev electron is

a. 12 A^0
b. 4 A^0
c. 0.31 A^0
d. 0.24A^0

17. How is charge carriers produced in intrinsic semiconductors?

a. By pure atoms
b. By electrons
c. By impure atoms
d. By holes

18. **Rest mass energy of an electron is**

a) 1.02 MeV
b) 0.511KeV
c) 0.511 MeV
d) 2.02 MeV

19. **"An electron can never be found inside nucleus", this statement is according to**

a) Heisenberg uncertainty principle
b) Bernoulli's equation
c) Bohrs model
d) Both a and b

20. **When K.E max of photoelectrons is zero, then the frequency of incident photon relative to threshold frequency is**

a) less
b) equal
c) greater
d) small

Chemistry - SET A

1. Hybridisation of Acetylene is

a. Sp
b. Sp2
c. Sp3
d. dsp2

2. **Silver is electrodeposited on a metallic vessel of surface area 800 cm2 by passing a current of 0.2 A for 3 hours. The thickness of silver deposited is**

a) 0.1 mm
b) 0.02 mm
c) 0.05 mm
d) 0.2 mm

3. Arrange the following groups in the order of decreasing (+I) effect.

a. C6H5O– > COO– > CR3 > CHR2 > H
b. C6H5O– > H > CR3 > CHR2 > COO–
c. CR3 > C6H5O– > H > COO– > CHR2
d. C6H5O– > COO– > CHR2 > CR3 > H

4. How does half-life period of a first order reaction vary with temperature?

a) It increases
b) It decreases
c) It remains same
d) Both increases as well as decrease

5.**125 mL of 10% NaOH (*w*/V) is added to 125 mL of 10% HCl (w/V). The resultant solution becomes**

a. Neutral
b. Alkaline
c. Acidic
d. Strongly Akaline

6. **2 g of impure CaCO3 reacts with HCl to produce 410 mL of CO2 at 1 atmospheric pressure and 27°C. Calculate the percentage purity of the CaCO3 used**.

a. 83.5
b. 97.5
c. 73.5
d. 87.5

7.**A substance that donates a pair of electrons to form coordinate covalent bond is called**

a. Lewis acid
b. Lewis base
c. Bronsted-Lowry acid
d. Bronsted-Lowry base

8. **An organic compound 'A' on reduction gives compound 'B', which on reaction with trichloromethane and caustic potash forms 'C'. The compound 'C' on catalytic reduction gives N-methyl benzenamine, the compound 'A' is**

a. Nitrobenzene
b. Nitromethane
c. Methanamine
d. Benzenamine

9. **Which of the following reactions will not result in the formation of carbon-carbon bond?**

a. Reimer-Tieman reaction
b. Fridel Crafts acylation
c. Wutz reaction
d. Cannizzaro reaction

10. Solubility product of silver bromide is 5.0 × 10–13. The quantity of potassium bromide (molar mass taken as 120 g mol–1) to be added to 1 litre of 0.05 M solution of silver nitrate to start the precipitation of AgBr is

a. 5.0×10^{-8} g
b. 1.2×10^{-10} g
c. 1.2×10^{-9} g
d. 6.2×10^{-5}g

11. Helium can be singly ionized by losing one electron to become the He+ cation. Which of the following statements is true concerning this helium cation?

(a) The line spectrum of this helium cation will resemble the line spectrum of a hydrogen atom.
(b) The line spectrum of this helium cation will resemble the line spectrum of a lithium cation.
(c) The line spectrum of this helium cation will remain the same as for unionized helium.
(d) The line spectrum of this helium cation will resemble the line spectrum of a lithium atom.

12. **The energy of an electron in first Bohr orbit of H-atom is –13.6 eV. The possible energy value of electron in the excited state of Li2+ is**

a. -122.4 eV
b. 30 .6 eV
c. -30.6 eV
a. 13.6 eV

13. **The crystal system of a compound with unit cell dimensions, a = 0.387, b = 0.387 and c = 0.504 nm and a = β = 90° and γ = 120° is**

a. Cubic
b. Hexagonal
c. Orthorhombic
d. Rhombohedral

14. In a single replacement reaction, why will one metal replace another metal in an ionic compound?

(a) The metal will replace another metal if it has a smaller mass and thus is able to hit the ionic

compound with a higher velocity and thus more energy.
(b) The metal will replace another metal if it has a larger mass and thus is able to hit the ionic compound with more energy.
(c) The metal will replace another metal if it can gain electrons more readily than the other metal.
(d) The metal will replace another metal if it can lose electrons more readily than the other metal.

15. **How many milliliters of 4.00 M NaOH must be added to 100.0 mL of 0.2000 M H_2SO_4 solution to completely neutralize the acid?**

a. 0.04 mL
b. 5.0 mL
c. 10.0 mL
d. 500 mL

16.Which of the following statements is not correct?

a) Aldehydes and ketones undergo nucleophilic addition
b) Aldehydes and ketones undergo electrophilic substitution
c) Aldehydes and ketones contain polar carbonyl group
d) Lower members of aldehydes and ketones are soluble in water due to hydrogen bonding

17.Which one of the following compounds converts methyl magnesium Iodide to methane in one step?

a. C_2H_4
b. C_2H_5Cl
c. $C_2H_5OC_2H_5$
d. C_2H_5OH

18.The entropy change involved in the isothermal reversible expansion of 2 moles of an ideal gas from a volume of 10 dm3 to a volume of 100 dm3 at 27°C is

a. 42.3 J mol–1 K–1
b. 38.3 J mol–1 K–1
c. 35.8 J mol–1 K–1
d. 32.3 J mol–1 K–1

19. What is the electron configuration of Mn^{3+} ion?

a. [Ar] 4s2 3d10
b. [Ar] 4s2 3d2
c. [Ar] 3d5
d. [Ar] 3d4

20. Which of the following statements about sulfuric acid is false?

a. It is a strong acid.
b. One mole of sulfuric acid reacts completely with two moles of potassium hydroxide.
c. The sulfur atom is sp^2 hybridized.
d. It is often present in acid rain.

SET -B

1. The alkene may be represented by a general formula:
(a) C_nH_{2n+2} (b) C_nH_{2n} (c) C_nH_{2n-2} (d) C_nH_{2n+1}|

2. When Ethyl alcohol is heated with excess of concentrated sulphuric acid at about 160 – 170°C, it produces:
(a) Ethane (b) ethyl ether (c) ethyne (d) ethane

3. Aldehyde and ketone can be distinguished by
(a) Fehling's solution (b) NH_3 (c) $NaHSO_3$ (d) Cl_3

4. Heavy water is
(a) D_2O (b) H_2O (c) T_2O (d) H_2+ CO

5. In the chemical reaction $P+KOH+H_2O \rightarrow 2NaH_2PO_2+PH_3$:
(a) P is oxidised (b) P is oxidised and reduced
(c) P is reduced (d) H_2 is oxidised

6. Copper Sulphate($CuSO_4.5H_2O$) is also known as
(a) Blue vitrol (b) Malachite (c) Calomel (d) Corrosive sublimate

7. Al_2O_3 is a
(a) Basic oxide (b) Acidic oxide
(c) Neutral oxide (d) Amphoteric oxide

8. For which of the following molecule would the VSEPR theory predict a tetrahedral structure?
(a) B_2F_2 (b) CH_4 (c) BF_3 (d) NH_3

9. Malachite is the ore of
(a) Copper (b) Iron (c) Sodium (d) Magnesium

10. Permanent hardness of water can be removed by
(a) Washing soda process (b) permutit process
(c) Calgon process (d) All of above

11. The chemical formula of oil of Vitriol is
(a) H_2SO_4 (b) HCl (c) HNO_3 (d) HCOOH

12. Electronic configuration of alkaline earth metal is
(a) ns^{-1} (b) ns^2 (c) $(n-1)d^{10}ns^1$ (d) ns^2nps

13. Herber's process is used for manufacture of

(a) H_2 (b) Al (c) NH_3 (d) NaOH

14. The compound that give cannizzaro reaction is
(a) CH_3COOH (b) C_2H_5CHO (c) HCHO (d) CH_3OCH_3

15. If phenolphthalein is added to alkali, color change to
(a) purple (b) orange (c) pink (d) red

16. Which order of bond angle is correct?
(a) H_2O324 (b) $NH_3>H_2O>CO_2>CH_4$
(c) H_2O342 (d) CH_432O2

17. The amount of H_2SO_4 present in 500ml of 2N H_2SO_4 solution is
(a) 89 gm (b) 49 gm (c) 33.25 gm (d) 24.5 gm

18. The equivalent weight of $KMnO_4$ in acidic medium is
(a) M/2 (b) M/3 (c) M/4 (d) M/5

19. The pH of 0.001M NaOH is
(a) 11 (b) 8 (c) 14 (d) 3

20. The unit of rate constant for the 2nd order reaction is
(a) $molL^{-1}S^{-1}$ (b) S^{-1} (c) $mol^{-1}LS^{-1}$ (d) $mol^{-2}L^2S^{-1}$

21. Isobars have same number of
(a) electrons (b) protons (c) neutrons (d) nucleons

22. In covalency,
(a) The transference of electron takes place
(b) Sharing of electrons takes place
(c) The electrons are shared by only one atom
(d) None of these takes place

23. A lewis acid is
(a) proton accepter
(b) electron pair donor
(c) proton donor
(d) electron pair accepter

24. A spontaneous reaction is impossible when
(a) Both Δ H and Δ s are negative
(b) Both Δ H and Δ s are positive
(c) Δ H is negative and Δ s is positive
(d) Δ s is negative and Δ H is positive

24. In adiabatic process

(a) Pressure is constant
(b) The gas is expanded isothermally
(c) There is perfect heat insulation
(d) System exchange heat with surrounding

ENGLISH

English—DAT-I

Grammar Questions

1. Let us play_____ chess.
    A. no article
    B. a
    C. an
    D. the
2. He hopes to join _____ university soon.
    A. a
    B. an
    C. the
    D. no article
3. Waiting for a bus is a _____ experience.
    A. kills
    B. kill
    C. killing
    D. is killing
4. He went on _____ foolishly.
    A. spoke
    B. to speaking
    C. speaking
    D. speaks
5. I shall meet you _____ 6 o'clock.
    A. by
    B. at
    C. in
    D. during
6. My father will retire from service _____ a year.
    A. of
    B. on
    C. in
    D. by
7. Suganya writes _____ her left hand.
    A. on
    B. with
    C. in

D. by

8. ‘Shakespeare has written dramas appealing to all people of all ages.’ Which tense is this?
   A. simple present
   B. present continuous
   C. past perfect
   D. present perfect
9. ‘I shall visit the book fair tomorrow.’ Which tense is this?
   A. simple past
   B. simple present
   C. simple future
   D. future continuous
10. ‘If it rains, the match will be postponed.’ What kind of sentence is this?
   A. simple
   B. negative
   C. complex
   D. compound
11. ‘Being busy, I could not attend the function.’ What kind of sentence is this?
   A. simple
   B. negative
   C. complex
   D. compound
12. I am honest, _____?
   A. didn't I?
   B. am I?
   C. am not I?
   D. aren't I?

II. Reading Comprehension

Uncle Wilbur My uncle Wilbur used to spend hours every day checking on the lightning rods that stood guard on the roof of his house. We get a lot of storms here in our state. Sometimes we see wind up to sixty miles per hour and baseball-size hail. Lightning, Uncle Wilbur would say, is a living thing, and like a cat, it will strike anything that moves. You’d better not tempt it, he always told us. He advised my cousins and me to always be mindful of the nearest sheltering tree. He said we should be prepared to drop to the ground like a hot potato at the first sound of thunder. Knowing that lightning is attracted to the tallest thing around, Uncle Wilbur worried constantly about my cousin Jared, who, at sixteen, was 6’2” and still growing.

Uncle Wilbur has always been a smart man. We all listened as he dismissed the automobile as a passing fancy. Every year it seemed more and more Model Ts came rolling into town, but Uncle Wilbur insisted that nothing could replace the reliability of a good old-fashioned mule when it came to transportation, work, or even entertainment. Yes, Uncle Wilbur’s Mule Olympics, complete with obstacle courses and a long jump, was known far and wide. Sadly, the Mule Olympics did not survive into the next decade because the mules got too old and lost interest.

Nonetheless, my uncle Wilbur continued to predict future trends and warn us of impending tragedy. To this day, he reminds us that he foresaw the stock market crash of 1929, and that’s why he kept his

money wrapped in a handkerchief under his mattress. When the government started collecting income taxes a few years back, Uncle Wilbur reluctantly shared his wealth with Uncle Sam, insisting that the money was just a temporary loan.

Uncle Wilbur did not take kindly to the power company man who came knocking one day in 1936. This was the year the government launched a campaign to bring electricity to rural areas like ours. Most people, like Uncle Wilbur, were a little wary of having electricity in their homes. Many of us had running water, and we just weren't sure that the two mixed. Nevertheless, Uncle Wilbur was downright floored when the man said he wanted to string power lines up to the house. Nearly losing his temper, Uncle Wilbur exclaimed, "Here I am doing everything in my power to keep from getting struck by lightning, and you want to bring it right to my doorstep?" He sent the man on his way with a "No, thank you," and a "Good day, sir," but in the months that followed, we all eventually relented and let in the light. I must admit, playing checkers in the dark is a talent you can easily lose without daily practice.

Many things have changed since those times. Uncle Wilbur still lives in mortal fear of a lightning strike, but because he doesn't get out much anymore, most of his lightning rods have rusted through and fallen to the ground. Uncle Wilbur lives mostly on Social Security, which he proudly proclaims as his victory (see, he says, the government did eventually give his money back). He probably spends more time reminiscing about the past than he does making future predictions, but Uncle Wilbur will be the first to tell you that television will never be as popular as radio, and the idea of a human traveling into outer space is just plain crazy!

13. What is the prefix in the word foresaw?
    A. fore
    B. saw
    C. for
    D. aw
14. Which phrase is an example of personification?
    A. lightning rods standing guard
    B. dismissed the automobile as a passing fancy
    C. string power lines up to the house
    D. idea of a human traveling into outer space.

15. How would Uncle Wilbur feel about cellular phones?
    A. fearful
    B. distrustful
    C. welcoming
    D. indifferent.
16. Compared to Uncle Wilbur, how does the narrator feel toward modern advancements?
    A. resisting
    B. accepting
    C. uncertain
    D. exhilarated
17. Which reason explains why the author wrote about Uncle Wilbur?
    A. to explain him
    B. to pacify him

C. to remember him
D. to persuade him

18. Which pair of words best describe how the narrator most likely feels about Uncle Wilbur?
A. annoyed and frustrated
B. respectful and amused
C. sad and indifferent
D. envious and distrustful

19. What BEST describes the passage?
A. a character sketch
B. a factual research
C. a persuasive essay
D. a news article

20. The synonym of the word 'exclaimed' is:
A. shout B.scream C. cry out D.say something

SET B

Section A: English

I. GRAMMAR AND VOCABULARY

Read the whole text carefully. Choose the correct answer:

Rabin went out. Telling himself that any intelligent man in his position **(1)** _____ these possible developments made things worse, not better. He went along the High Street in search of a telephone box. In a grocery store he provided himself with **(2)** _____ . He crossed the bridge into the centre of town, where he found a card phonebox **(3)** _____ because there was a long queue. He waited. Two people, a black man and a white woman, talked until **(4)** _____ their cards. When the woman stepped out, the people before Rabin were courteously brief, and it was finally Rabin's turn. He **(5)** _____ place, and a voice told him **(6)** _____ at that moment. Then, at last, Mira was there. 'Rabin? I tried to phone you. I don't know **(7)** _____ . I don't even know what we were trying to do with the letters.' 'I wish **(8)** _____ when I had the chance.' And **(9)** _____ , everything would have been so much easier. No awkward questions **(10)** _____ . They were neither of them very decisive, but now they **(11)** _____ . *(Based on: Possession, by A.S. Byatt)*

1.

A. must have foreseen
B. should have foreseen
C. must be foreseen
D. should be foreseen

2.

A. a phone card and a change
B. a phone card and some change
C. phone card and a change
D. phone card and some change

3.
A. which had functioned
B. that had functioned
C. that had to be functioning
D. what had to be functioning

4.
A. they exhausted
B. they have exhausted
C. they were exhausted
D. they had been exhausted

5.
A. got up to Mira
B. got up to Mira's
C. got through to Mira
D. got through to Mira's

6.
A. she had taken a shower
B. she has taken a shower
C. she was taking a shower
D. she is taking a shower

7.
A. if Valerie had told you
B. if Valerie told you
C. had Valerie told you
D. did Valerie tell you

8.
A. I disappeared
B. I had disappeared
C. I would disappear
D. to disappear

9.
A. he had done so
B. he had to do so
C. had he to do so
D. had he done so

10.
A. would have risen
B. would have raised
C. would have been raised
D. would have been risen

11.
A. know what has to be done
B. know what will have to be done
C. knew what has been done
D. knew what had to be done

II - Choose the correct answer:

12. He _____ the gun but no one at the party had actually seen him with it.
A. was gossiped to bring
B. was rumoured to bring
C. was gossiped to have brought
D. was rumoured to have brought

13. Although Joan felt _____, she smiled _____ .
A. nervously / in a friendly way
B. nervous / in a friendly way
C. nervously / friendly
D. nervous / friendly

14. If you are lying _____ your boyfriend now, what will happen _____ six months, when you get married?
A. - / for
B. - / in
C. to / in
D. to / for

15. 'I hope there was nothing _____ in the portfolio,' she said.
A. worthy
B. worth
C. valueless
D. valuable

16. _____ all the letters, they finally posted them to different people.
A. Having to stamp
B. Having been stamped
C. Having stamped
D. Being stamped

17. In order to please his manager, he felt that it was absolutely necessary_____ the conference.
A. for him attending
B. for his attending
C. that he should attend
D. that he ought to attend

18. By this time next Monday we _____ for three weeks.
A. will have been sailed
B. will have been sailing
C. will be sailed
D. will sail

19. My cousins lost their lovely dog a month ago. It appeared _____ yesterday.
A. out of the blue
B. out of the blue moon
C. over the blues
D. over the moon

20. Which of the words below means the opposite of 'reluctant'?
A. unwilling
B. disinclined
C. eager
D. earnest

II. **READING COMPREHENSION**

Read the texts carefully and choose the correct answer:

There are few things that play as central a role in our everyday lives as language. It is our most important tool in communicating thoughts and feelings to each other. Infants cry and laugh, and their facial expressions surely give their parents some notion of the kinds of emotions they are experiencing. However, it is not until children are able to articulate speech that we gain much understanding of their private thoughts. As we grow, language comes to serve other functions as well. Most young people develop jargon that is more meaningful to those of the same age than to older or younger individuals. Such specialized language serves to bind us more closely with people of courage and social status while at the same time excluding those who belong to another page or social group. Over time, for many of us, language becomes not merely a means to an end, but an end itself. We come to love words and word play. So we turn to writing poetry or short stories. Or to playing word games, such as crossword puzzles. Or to reading novels on a lazy summer afternoon. A tool that is vital for communicating our basic needs has also become a source of leisurely pleasure. The diversity of how we use language is of overwhelmingly vast interest for psychologists who wish to study language. How can something so widespread and far-reaching as language be examined psychologically? An important consideration is that the psychology of language deals with the mental processes that are involved in language use.

(Based on: *The Psychology of Language by David Carroll)*

21. According to the author of the text, there are _____ things that are so important for our lives as language. Many
A. not many
B. just enough
C. Several

22. According to the text, most young people

A. exclude those who belong to different social status.
B. bind themselves closely to younger individuals.
C. use jargon that distinguishes them from other age and social groups.
D. develop a specialized language that is more meaningful than ordinary language.

23. Children's thoughts and feelings
A. are best understood through their facial expressions.
B. can really be understood only when children start speaking.
C. help their parents experience the same emotions.
D. reveal their experiences to their parents.

24. For many people language becomes a means of
A. pure enjoyment.
B. writing poetry.
C. doing crossword puzzles.
D. playing word games.

25. Different ways of using language
A. make the psychological study of language overwhelmingly difficult.
B. can be widespread and diversified by psychologists.
C. are of enormous interest for psychologists who study language.
D. make a number of psychologists wish to study language.

English—DAT
Grammar Questions

1. Let us play_____ chess.
   A. no article
   B. a
   C. an
   D. the

2. He hopes to join _____ university soon.
   A. a
   B. an
   C. the
   D. no article

3. Waiting for a bus is a _____ experience.
   A. kills
   B. kill
   C. killing
   D. is killing

4. He went on _____ foolishly.
   A. spoke
   B. to speaking
   C. speaking
   D. speaks

5. I shall meet you _____ 6 o'clock.
   A. by
   B. at
   C. in
   D. during

6. My father will retire from service _____ a year.
   A. of
   B. on
   C. in
   D. by

7. Suganya writes _____ her left hand.
   A. on
   B. with
   C. in
   D. by

8. 'Shakespeare has written dramas appealing to all people of all ages.' Which tense is this?
   A. simple present
   B. present continuous
   C. past perfect
   D. present perfect

9. 'I shall visit the book fair tomorrow.' Which tense is this?
   A. simple past
   B. simple present
   C. simple future
   D. future continuous

10. 'If it rains, the match will be postponed.' What kind of sentence is this?
   A. simple
   B. negative
   C. complex
   D. compound

11. 'Being busy, I could not attend the function.' What kind of sentence is this?
   A. simple
   B. negative
   C. complex
   D. compound

12. I am honest, _____?

A. didn't I?
B. am I?
C. am not I?
D. aren't I?

II. Reading Comprehension

Uncle Wilbur My uncle Wilbur used to spend hours every day checking on the lightning rods that stood guard on the roof of his house. We get a lot of storms here in our state. Sometimes we see wind up to sixty miles per hour and baseball-size hail. Lightning, Uncle Wilbur would say, is a living thing, and like a cat, it will strike anything that moves. You'd better not tempt it, he always told us. He advised my cousins and me to always be mindful of the nearest sheltering tree. He said we should be prepared to drop to the ground like a hot potato at the first sound of thunder. Knowing that lightning is attracted to the tallest thing around, Uncle Wilbur worried constantly about my cousin Jared, who, at sixteen, was 6'2" and still growing.

Uncle Wilbur has always been a smart man. We all listened as he dismissed the automobile as a passing fancy. Every year it seemed more and more Model Ts came rolling into town, but Uncle Wilbur insisted that nothing could replace the reliability of a good old-fashioned mule when it came to transportation, work, or even entertainment. Yes, Uncle Wilbur's Mule Olympics, complete with obstacle courses and a long jump, was known far and wide. Sadly, the Mule Olympics did not survive into the next decade because the mules got too old and lost interest.

Nonetheless, my uncle Wilbur continued to predict future trends and warn us of impending tragedy. To this day, he reminds us that he foresaw the stock market crash of 1929, and that's why he kept his money wrapped in a handkerchief under his mattress. When the government started collecting income taxes a few years back, Uncle Wilbur reluctantly shared his wealth with Uncle Sam, insisting that the money was just a temporary loan.

Uncle Wilbur did not take kindly to the power company man who came knocking one day in 1936. This was the year the government launched a campaign to bring electricity to rural areas like ours. Most people, like Uncle Wilbur, were a little wary of having electricity in their homes. Many of us had running water, and we just weren't sure that the two mixed. Nevertheless, Uncle Wilbur was downright floored when the man said he wanted to string power lines up to the house. Nearly losing his temper, Uncle Wilbur exclaimed, "Here I am doing everything in my power to keep from getting struck by lightning, and you want to bring it right to my doorstep?" He sent the man on his way with a "No, thank you," and a "Good day, sir," but in the months that followed, we all eventually relented and let in the light. I must admit, playing checkers in the dark is a talent you can easily lose without daily practice.

Many things have changed since those times. Uncle Wilbur still lives in mortal fear of a lightning strike, but because he doesn't get out much anymore, most of his lightning rods have rusted through and

fallen to the ground. Uncle Wilbur lives mostly on Social Security, which he proudly proclaims as his victory (see, he says, the government did eventually give his money back). He probably spends more time reminiscing about the past than he does making future predictions, but Uncle Wilbur will be the first to tell you that television will never be as popular as radio, and the idea of a human traveling into outer space is just plain crazy!

13. What is the prefix in the word foresaw?
    A. fore
    B. saw
    C. for
    D. aw

14. Which phrase is an example of personification?
    A. lightning rods standing guard
    B. dismissed the automobile as a passing fancy
    C. string power lines up to the house
    D. idea of a human traveling into outer space.

15. How would Uncle Wilbur feel about cellular phones?
    A. fearful
    B. distrustful
    C. welcoming
    D. indifferent

16. Compared to Uncle Wilbur, how does the narrator feel toward modern advancements?
    A. resisting
    B. accepting
    C. uncertain
    D. exhilarated

17. Which reason explains why the author wrote about Uncle Wilbur?
    A. to explain him
    B. to pacify him
    C. to remember him
    D. to persuade him

18. Which pair of words best describe how the narrator most likely feels about Uncle Wilbur?
    A. annoyed and frustrated
    B. respectful and amused
    C. sad and indifferent
    D. envious and distrustful

19. What BEST describes the passage?
    A. a character sketch
    B. a factual research
    C. a persuasive essay
    D. a news article

20. The synonym of the word ‘exclaimed’ is:
    A. shout
    B. scream
    C. cry out
    D. say something

English—DAT
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    D. aren't I?

MATHS

1. **The maximum and minimum values of $\sin^4x + \cos^4x$**

   a. 2, 1 b. 3, $\frac{1}{2}$ c. 4, 3 d. 1, $\frac{1}{2}$

2. **If a=2, b=$\sqrt{6}$, A=45°. Then value of angle B in $\Delta\ ABC$ is**

   a. 75° b. 60° c. 45° d. 120°

3. **The principal value of $\sin^{-1}\left(sin\frac{7\pi}{6}\right)$ =**

   a. $-\frac{\pi}{6}$ b. $\frac{\pi}{6}$ c. $\frac{\pi}{3}$ d. $\frac{7\pi}{6}$

4. **If $\sec^{-1}x = \text{cosec}^{-1}y$, then the value of $\frac{1}{x^2} + \frac{1}{y^2}$ =**

   a. -1 b. 0 c. 1 d. $\frac{7\pi}{6}$

5. **If set A has 3 elements and set B has 6 elements then the minimum number of elements in AUB**

   a. 3 b. 6 c. 9 d. 0

6. **The domain of f(x) = $\frac{1}{\sqrt{x^2-3x+2}}$ is**

   a. $(-\infty, 1)$ b. $(-\infty, 1)U(2,\infty)$ c. $(-\infty,1)U(2,\infty)$ d. (2)

7. **The value of $\log_{25} i25$ =**

   a. $\frac{3}{2}$ b. $\frac{2}{3}$ c. $\frac{1}{2}$ d. $\frac{1}{3}$

8. **If $f(x) = x^2-2x-5$ and $A = \begin{bmatrix}1 & 2\\ 3 & 1\end{bmatrix}$, then f(A) =**

   a. $\begin{bmatrix}0 & -4\\ 3 & 3\end{bmatrix}$ b. $\begin{bmatrix}0 & 0\\ 0 & 0\end{bmatrix}$ c. $\begin{bmatrix}1 & 0\\ 0 & 1\end{bmatrix}$ d. $\begin{bmatrix}2 & 1\\ 2 & 0\end{bmatrix}$

9. **The value of $x^{1/2}, x^{1/4}, x^{1/8}$, ... ∞ is**

   a. x^2 b. x^3 c. $\frac{1}{x}$ d. x

10. **The sum of series** $\frac{1}{1.2}+\frac{1}{3.4}+\frac{1}{5.6}+\cdots\infty$

a. e^x b. $1-\ln_2$ c. $\ln_2$ d. a^x

11. **If α and β are imaginary cube roots of unity, then the value of $\alpha^4+\beta^4+\alpha^{-1}\beta^{-1}$ =**

a. 0 b. 2 c. -1 d. 1

12. **If one root of $x^2-11x+a=0$ and $x^2-14x+2a=0$ common, then the value of a =**

a. 24, 1 b. 0 , 24 c. 0 , 12 d. 3 , 12

13. **The angle between vectors $2\vec{i}-\vec{j}+\vec{k}$ and $\vec{i}-\overrightarrow{3j}-5\vec{k}$**

a. 120° b. 0° c. 90° d. 45°

14. $\lim\limits_{x\to\pi/3}\frac{\sin(\pi/3-x)}{2x-1}$ =

a. $\frac{1}{2}$ b. $\frac{\sqrt{3}}{2}$ c. 1 d. $\frac{1}{\sqrt{3}}$

15. $\lim\limits_{x\to0}\frac{|x|}{x}$ =

a. 0 b. 1 c. Does not exists d. ±1

16. **The derivative of** $\tan^{-1}\left(\frac{sin2x}{1+cos2x}\right)$ =

a. 1 b. x c. tanx d. sin2x

17. $\int\frac{2x+3}{\sqrt{x^2+3x+1}}dx$

a. $\frac{2}{3}(x^2+3x+1)^{3/2}$+c b. $2\sqrt{x^2+3x+1}$ +c

b. c. $\sqrt{x^2+3x+1}$ + c d. none

18. **Angle of intersection if the curve $y=x^2$ and $x=y^2$ at (1,1) is**

a. $\tan^{-1}\frac{3}{4}$ b. 90° c. 45° d. $\tan^{-1}\frac{4}{3}$

19. **If (3,3) lies on the line joining (h,0) and (0,k) then,**

a. h+k = 9 b. hk = 3 c. 3h – 3k = 1 d. $\frac{1}{h}+\frac{1}{k}=\frac{1}{3}$

20. **If the points (a,0), (0,b) and (1,1) are collinear then,**

a. a-b=1 b. a-b=0 c. a+b=ab d. a-b = ab

21. The angle between pair of lines $x^2 - 2xycot\theta - y^2$

a. $\frac{\pi}{4}$ b. $\frac{\pi}{2}$ c. $\frac{\pi}{3}$ d. $\frac{\pi}{6}$

22. The slope of tangent to the circle $x^2 + y^2$ at (2,2)

a. 1 b. 2 c. -1 d. 0

23. The line y = mx+c touches the parabola $y^2 = 4ax$

a. c=$\frac{a}{m}$ b. c= am c. c $< \frac{a}{m}$ d. c $> \frac{a}{m}$

24. Sum to infinity of the series $1 + \frac{3}{2} + \frac{5}{4} + \frac{7}{8} + \cdots$, ∞

a. 1 b. 6 c. $\frac{1}{2}$ d. 2

25. The area bounded by the region $y^2 = x$ and $x^2 = y$

a. $\frac{16}{3}$ b. $\frac{5}{4}$ c. $\frac{1}{2}$ d. $\frac{1}{3}$

26. The value of $cos^2\theta + sec^2\theta$ is always

a. ≥ 1 b. ≥ 2 c. ≤ 2 d. ≤ 1

27. In ΔABC, if asinA-bsinB = $\lambda \sin(A - B)$ and A$\neq \lambda$ =

a. a b. b c. c d. 2c

28. If cos($2\sin^{-1} x$)=$\frac{1}{9}$, then the value of x=

a. $\pm\frac{2}{3}$ b. $\pm\frac{1}{3}$ c. $\frac{4}{3}$ d. $\frac{1}{5}$

29. The equation sinx+cosx = 2 has

a. Unique solution b. Finite Solution c.Infinite Solution d. No Solution

30. The range of f(x)=$\frac{x}{|x|}$ is

a. R – {0} b. {1, -1} c. {0,1} d. R – {-1,1}

31. $|x| < a$ implies

a. –a<x<a b. –a>x>a c. –a≥x≥a d. –a ≤x .

32. A matrix $\begin{bmatrix} 0 & k+2 \\ 5 & 0 \end{bmatrix}$ is a skew symmetric matrix if k=

a. -3 b. -5 c. -2 d. -7

33. For any invertible matrix if A^5= I then A^{-1} =

a. A^5 b. A^4 c. A^3 d. I

34. The fourth term of G.P is 2. Then the product of first seventh term is

a. 2^5 b. 2^6 c. 2^7 d. 2^4

35. The coefficient of x^2 in the expansion ofe^{2x} is

a. $\frac{2!}{7!}$ b. $\frac{7!}{2!}$ c. $\frac{7}{2!}$ d. $\frac{2}{7!}$

36. The value of $(1-\omega+\omega^2)^4(1+\omega-\omega^2)^4$ =

a. 256 b. 128 c. 512 d. 64

37. If one root of $ax^2+bx+c=0$ is $\frac{1}{2+3i}$, then other is

a. $\frac{1}{2-3i}$ b. $2-3i$ c. $\frac{2+3i}{13}$ d. $\frac{2-3i}{13}$

38. The value of λ for which $2\vec{i}+\lambda\ \vec{j}+\vec{k}$ and $\vec{i}-2\vec{j}+4\vec{k}$ are perpendicular is

a. $\lambda=5$ b. $\lambda=3$ c. $\lambda=-2$ d. $\lambda=\frac{1}{2}$

39. $\lim_{x\to 0}\left(\frac{1-cos3x}{1-cos4x}\right)$ =

a. $\frac{9}{16}$ b. $\frac{6}{15}$ c. $\frac{16}{9}$ d. $\frac{3}{4}$

40. The point of discontinuities of f(x)= $\frac{3x-1}{x^3-5x^2+6x}$

a. 0,1,2 b. 0,2 c. 0,3 d, 0,2,3

41. The derivative of $\tan^{-1}\left(\frac{2x}{1-x^2}\right)$ =

a. $\frac{1+x^2}{2}$ b. $\frac{x^2}{2}$ c. $\frac{2}{1+x^2}$ d. $\frac{x}{1-x^2}$

42. $\int_0^{\frac{1}{\sqrt{2}}}\frac{dx}{\sqrt{1-x^2}}$ =

a. $\frac{\pi}{2}$ b. $\frac{\pi}{4}$ c. $\frac{\pi}{3}$ d. $\frac{\pi}{6}$

43. The function f(x)=x^3-6x^2+9x+8 is strictly decreasing in

a. $(-\infty,1)$ b. $(3,\infty)$ c. $(-\infty,1)\cup(3,\infty)$ d. (1,3)