

WAPDA CADET COLLEGE TARBELA

Entrance Examination for Admission to 11th Class

Time Allowed: 45 Min

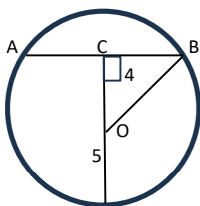
MATHEMATICS

Total Marks: 50

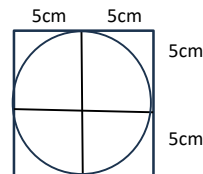
Q. No. 1 Choose the correct answer and encircle it.

(20 x 1 = 20)

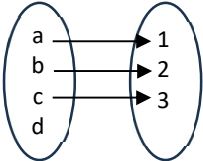
- i. If $\log_6 (m-5) = 2$, then $m =$
a. 36
b. 40
c. 41
d. 17
- ii. If $27 \times 3^x = 81^{(y-4)}$, then $x = \underline{\hspace{2cm}}$ for $y=4$
a. 3
b. -3
c. 4
d. -4
- iii. In the quadratic equation $px^2+qx-q=0$, Value of $\alpha^2+\beta^2 =$
a. $\frac{q^2 + 2pq}{p^2}$
b. $\frac{q^2 - 2pq}{p^2}$
c. $\frac{q^2 + 2pq}{q^2}$
d. $\frac{q^2 - 2pq}{q^2}$
- iv. If $\tan \theta > 0$ and $\sec \theta < 0$, then θ lies in _____ quadrant
a. I
b. III
c. IV
d. II
- v. A line perpendicular to a end point of radial segment is called _____
a. Tangent
b. Chord
c. Normal
d. Diameter
- vi. Mean Proportional of $2x^4y^4$ and $8x^2$ is
a. $16x^6y^4$
b. $4x^4y^2$
c. $4x^3y^2$
d. $8x^2y^2$
- vii. For what value of x , $x+13 : x+7 = 4:5$?
a. 37
b. 17
c. -37
d. -17
- viii. What is length of Chord AB intercepted at 4cm away from the center of circle having radius 5 cm



- a. 3cm
b. 6cm
c. 7cm
d. 9cm
- ix. If two circle of radiuses $r_1 = 5\text{cm}$, and $r_2 = 3\text{cm}$ touches internally then distance between their centres is
a. 0 cm
b. 1cm
c. 2 cm
d. 3 cm
- x. What is radius of circle inscribed in a square of side 10cm?



- a. 10cm
b. 5cm

- xi. c. 8cm d. 12 cm

represents
- a. Into Function b. Bijective Function
c. Onto Function d. Not a Function
- xii. Simplified form of $(7+5w+5w^2)^2$
a. 4 b. 12
c. 49 d. 144
- xiii. If $b^2 - 4ac > 0$ and $b^2 - 4ac$ is a perfect square then root are
a. Real, Unequal; b. Rational
c. Ir-rational d. Imaginary
- xiv. Partial Fraction of $\frac{x^2}{x(x^2+1)}$
a. $\frac{x^2}{x(x^2+1)} + \frac{c}{x^2+1}$ b. $\frac{A}{x} + \frac{Bx+C}{x^2+1}$
c. $\frac{A}{x} + \frac{B}{x^2+1}$ d. $\frac{Ax+B}{x} + \frac{Cx+D}{x^2+1}$
- xv. Which of the following is the multiplicative inverse of $\begin{bmatrix} -2 & 5 \\ -1 & 3 \end{bmatrix}$ is
a. $\begin{bmatrix} -3 & 5 \\ -1 & 2 \end{bmatrix}$ b. $\begin{bmatrix} -1 & 2 \\ 3 & -5 \end{bmatrix}$
c. $\begin{bmatrix} -1 & -3 \\ -2 & -5 \end{bmatrix}$ d. $\begin{bmatrix} 3 & -5 \\ 1 & -2 \end{bmatrix}$
- xvi. If $\text{Log } 100 + \text{Log } 1000 =$
a. 5 b. 3
c. 4 d. 2
- xvii. If $P = 2 + \sqrt{3}$, then value of $P - \frac{1}{P}$
a. $-\sqrt{3}$ b. 4
c. -4 d. $\sqrt[2]{3}$
- xviii. For which expression a+b is not a factor
a. $a^2 - b^2$ b. $a^4 - b^4$
c. $a^3 + b^3$ d. $a^2 + b^2$
- xix. If $p(x) = x^72 + 5x^31 + 4$ then x+1 is a
a. Factor b. Divisor
c. Quotient d. Remainder
- xx. Graph of $y=x$, bisect quadrant
a. 1st & 3rd b. 2nd & 4th
c. 1st & 4th d. 2nd & 3rd

Q. No. 2 Attempt all questions. Each question carries equal marks. (3 x10=30)

- i. Find x and y, if $(3+4i)^2 - 2(x-iy) = x + iy$
- ii. Solve $\frac{2x}{x-1} + \frac{1}{3} = \frac{5}{6} + \frac{2}{x-1}$ $x \neq 1$
- iii. Find expression for perimeter of rectangle whose area is given by $2x^2 - 7x - 4$.
- iv. Use distance formula check A(-2,-2), B(4,-2), B(4,-2) and C(4,6) shows which triangle?
- v. Find x, if $\begin{vmatrix} x & 3 \\ 4 & x \end{vmatrix} = 36$
- vi. Resolve into partial fraction. $\frac{x^2+1}{x^2-1}$
- vii. Waheeda is making a shirt. Each panel of this skirt is of a shape shown shaded region in diagram. How much material is required.
- viii. If $\tan \alpha = -\frac{1}{2}$ and $\alpha \in \text{I.Q.}$ Find remaining trigonometric ratios.
- ix. If $2\tan^2\theta \cos\theta = 3$. Shows that $2\cos^2\theta + 3\cos\theta - 2 = 0$
- x. The sum of three consecutive even numbers is 306. Find the numbers.

WAPDA CADET COLLEGE TARBELA

Entrance Examination for Admission to 11th Class – Sample

Time Allowed: 45 Min

PHYSICS

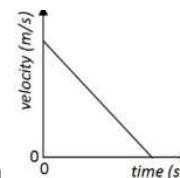
Total Marks: 50

Q. No. 1 Choose the correct answer and encircle it.

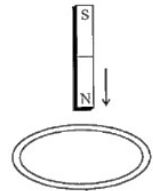
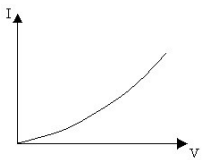
(20 x 1 =

20)

- xxi. When rounding 0.02347 to 2 significant figures, the result is:
a. 0.02
b. 0.023
c. 0.024
d. 0.0235
- xxii. The slope shown in the speed- time graph represents
a. Uniform acceleration
b. Uniform speed
c. Zero acceleration
d. Uniform retardation
- xxiii. When two forces of 3 N and 4 N act together and produce net force of 5 N, then the forces must act
a. Parallel to each other
b. Opposite to each other
c. To cancel each other
d. Perpendicular to each other
- xxiv. Friction always acts:
a. In the direction of motion
b. Opposite to the direction of motion
c. Perpendicular to the motion
d. Randomly
- xxv. Gravitational field strength is maximum at
a. The surface of the Earth
b. The center of the Earth
c. A point outside the Earth's atmosphere
d. The Moon's surface
- xxvi. The power of a water pump is 1.5 hp. The power in watts is?
a. 746 W
b. 1492 W
c. 1119 W
d. 2238 W
- xxvii. Why does atmospheric pressure decrease with altitude?
a. The air gets denser
b. The temperature increases
c. The weight of air above decreases
d. The oxygen concentration decreases
- xviii. Water has a high specific heat capacity. This means:
a. It stores heat energy efficiently
b. It heats up quickly
c. It cools down rapidly
d. It does not conduct heat
- xxix. When water waves move from deep to shallow region, the frequency and wavelength are respectively:
a. Increase, decrease
b. Decrease, increase
c. Remains same, decrease
d. Decrease, remains same
- xxx. How does the pitch of a sound change if the frequency of the sound wave increases?
a. The pitch decreases.
b. The pitch remains unchanged.
c. The pitch becomes inaudible.
d. The pitch increases.
- xxxi. The refractive index of glass (prism) is greatest for
a. Red colour
b. Green colour
c. Violet colour
d. Blue colour
- xxxii. Why do objects appear bent when partially submerged in water?
a. Reflection of light
b. Diffraction of light
c. Refraction of light
d. Dispersion of light
- xxiii. If the potential difference between plates of capacitor is becomes half, then capacitance of the capacitor will
a. Become half
b. Remains same
c. Decrease by 4 times
d. Become double



- xxiv. The electric field is applied opposite to the direction of electron beam, the electron will
- Speed up
 - Speed down
 - Deflect
 - Speed will not be affected
- xxxv. The I-V characteristic graph shown in the figure represents which of the following components
- Ohmic conductor
 - Filament of bulb
 - Semiconductor diode
 - Thermistor
- xxvi. A battery of 12volt connect with a resistor of 24 ohm. The value of current in this circuit will be.
- 0.5A
 - 2A
 - 1.5A
 - None of the above
- xxvii. The magnetic field inside a solenoid is:
- Non-uniform and weak
 - Uniform and strong
 - Zero
 - Uniform and weak
- xviii. A bar magnet is moving toward a stationary copper ring as shown in the figure. According to Lenz's law the direction of induced current in the ring is
- Clockwise
 - Counterclockwise
 - Direction of current depends on the speed of the magnet
 - No current is induced
- xxix. The radioisotope which is used as tracer for the monitoring of thyroid gland functioning is
- Carbon-14
 - Phosphorous-32
 - Iodine-131
 - Cobalt-60
- xl. Which type of logic gate produces a HIGH output only when both inputs are LOW?
- AND
 - OR
 - NOT
 - NAND



Q. No. 2 Attempt all questions. Each question carries equal marks. (3 x10=30)

- xi. A ball is thrown vertically upward with an initial velocity. It rises until it reaches its maximum height, then starts descending back to the ground. Draw and label the following to represent this motion:
- Distance-time graph and
 - Speed-time graph.
- xii. A 10 kg box is pushed with a force of 40 N. If the frictional force is 10 N, calculate the acceleration of the box.
- xiii. How the position of centre of mass of an object plays an important role in their stability. Explain with examples
- xiv. It is easy to remove air from a balloon but it is very difficult to remove air from a glass tube. Why?
- xv. How we can get (a)real image and (b) virtual image from concave mirror. Support your answer with ray diagram.
- xvi. What is a commutator? And why it is essential in a D.C. motor?
- xvii. The sound intensity 3m from a Jackhammer is $8.2 \times 10^{-2} \text{ W/m}^2$. What is the sound intensity level in decibel. (Where $I^0 = 1.0 \times 10^{-12} \text{ w/m}^2$).
- xviii. How does acoustic protection help to reduce environmental noise pollution in urban areas?
- xix. In nuclear transmutation how alpha, beta and gamma emission effect the atomic and mass number of an atom.
- xx. Draw a comparison between series combination and parallel combination of resistors.

Recommended Books: Punjab Text Books, National Book Foundation, KPK Text Book, Balochistan Text Book (Class 9th & 10th)

- iv. Which of the following test is used to differentiate between Alcohol and Aldehyde in laboratory?
 - a. Fehling's Test
 - b. Bromine Water Test
 - c. Baeyer's Test
 - d. Flame Test
- lvi. Does not react with aqueous solution of bromine.
 - a. C₂H₆
 - b. C₂H₄
 - c. C₂H₂
 - d. C₃H₆
- lvii. The least reactive Halogen is
 - a. F₂
 - b. U₂
 - c. Br₂
 - d. I₂
- lviii. "Survey: disease is because of deficiency of Vitamin ____?
 - a. A
 - b. B
 - c. C
 - d. D
- lix. Which of the following layer is closest to the earth?
 - a. Stratosphere
 - b. Thermosphere
 - c. Mesosphere
 - d. Troposphere
- lx. No. of Carbon present in Gasoline is
 - a. C₈ – C₁₂
 - b. C₅ – C₁₀
 - c. C₁₄ – C₂₀
 - d. C₂₀ – C₂₈

Q. No. 2 Attempt all questions
(15x3=45)

- i. Calculate the number of molecules present in 22g of CO₂.
- ii. The concentration of an aqueous solution of H₂SO₄ contains 0.001 M. what is the pH? Classify solution is acidic or basic.
- iii. Why alkenes are called "Paraffins"?
- iv. What is Dative Covalent Bond? Explain with examples
- v. What is meant by Ozone depletion?
- vi. Write method with reaction for permanent hardness of water removal.
- vii. Differentiate between molecule and molecular ion with examples.
- viii. Complete the reactions
 - a. $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH} \xrightarrow[180^\circ\text{C}]{\text{H}_2\text{SO}_4} ? + ?$
 - b. $\text{CH}_3\text{CH}_2\text{Br} \xrightarrow{\text{Zn/HCl}} ? + ?$
 - c. $\text{CH}_3\text{CH}_2\text{Cl} \xrightarrow{\text{AlCl}_3.\text{KOH}} ? + ?$
- ix. Can you give reaction when KMnO₄ react with Ethyne? 180°C
- x. Identify the group and period of the following with help of electronic configuration.
 - a. ${}_{13}^{27}\text{Al}$
 - b. ${}_{4}^9\text{Be}$, ${}_{19}^{39}\text{K}$

WAPDA CADET COLLEGE TARBELA

Entrance Examination for Admission to 11th Class - Sample

Time Allowed: 45 Min

BIOLOGY

Total Marks: 100

Q. No. 1 Choose the correct answer and encircle it.

- lxi. Human immunodeficiency virus (HIV) causes acquired immunodeficiency syndrome (AIDs) in human beings by:
- Increasing the pH of blood
 - Decreasing the number of white blood cells
 - Increasing the division of red blood cells
 - Decreasing the oxygen carrying capacity of blood
- lxii. If a patient has severe throat infection, which of the following types of medicine is required?
- Sedative
 - Vaccine
 - Narcotics
 - Antibiotics
- lxiii. Which of the following statement is true for Eustachian tube
- It has sound receptor cells
 - It separates middle ear from inner ear
 - It directs sound waves to inner ear
 - It regulates air pressure on both side of tympanum
- lxiv. In which of the following organism's alcoholic fermentations takes place?
- Lactobacillus species
 - Streptococcus species
 - Saccharomyces Cerevisiae
 - Homo Sapiens
- lxv. How many genetically different kinds of gametic an individual with Genotype AaBB can produce
- 1
 - 4
 - 2
 - 8
- lxvi. During unfavorable conditions, Amoeba reproduces asexually?
- Binary Fission
 - Fragmentation
 - Spore Formation
 - Multiple Fission
- lxvii. The enzyme required to cut the DNA in specific sequence is
- Amylase
 - Ligase
 - Endonuclease
 - DNAase
- xviii. Chemical coordination takes place through certain chemical called
- Fatty acid
 - Enzyme
 - Inhibitors
 - None of these
- lxix. Malaria in human is caused by
- Bacteria
 - Virus
 - Plasmodium
 - Fungi
- lxx. Selected the one which is NOT related to single cell protein
- Prediction in pollution
 - Mass growth of microorganism
 - Less nutritious food
 - Use of agricultural waste
- lxxi. Function of pleural membrane is to _____
- Enclose the lungs
 - Help to increase the volume of cavity during respiration
 - Increase the volume of chest
 - Secrete fluid that enable lungs to glide over one another
- lxxii. If a piece of DNA has based sequence AGLTTCA, what will be the sequence of bases in mRNA?
- TCGAACG
 - TCGAAGT
 - UCGAAGU
 - ALGAACT

- xxiii. When primary oocyte divides through meiosis-I, it results in the formation of two cells of different size. What is the small size cell?
- Oogonia
 - First polar body
 - Second oocyte
 - Ovum
- xxiv. Which of the following is true about cerebral cortex?
- It is located deep in the brain
 - It is located at the back of the brain
 - it is the folded outer covering of the brain
 - It is the part of peripheral nervous system
- lxxv. The point of attachment which is pulled during muscle contraction is
- Origine
 - Insertion
 - Tendon
 - Ligament
- xxvi. Hypersonic urine is formed when water in the body fluid
- Less
 - Absent
 - In excess
 - Not filtered
- cxvii. Hardness of a seed coat is due to
- Sclereid
 - Fiber
 - Tracheid
 - Vessels
- xviii. Select the one which is NOT the characteristics of a prion?
- Composed of protein only
 - Can replicate
 - Cause disease in sheep
 - Contain circular RNA
- xxix. Antidiuretic hormone promotes the retention of water by stimulating the
- Active transport of water
 - Active transport of chloride
 - Active transport of sodium
 - Permeability of collecting duct to water
- lxxx. Calcitonin and Parathormone work in collaboration with each other for the regulation of
- Calcium in cell cytoplasm
 - Calcium in teeth
 - Calcium in bones
 - Calcium in blood

Q. No. 2 Attempt all questions
(10x3=30)

- Construct a flow chart showing the spermatogenesis in Rabbit
- Differentiate between the cross-sectional views of brain and spinal cord with reference to white and grey matter.
- The flow chart is showing anaerobic respiration
 - Identify the process A, B and C
 - Mention the products (i), (ii) and (iii) produces by these processes
- What are the steps of eutrophication?
- Complete the given table
- Answer the following:
 - Write any two similarities between dialysis machine and a real kidney?
 - Name some waste products of plants
- Answer the following:
 - Why the dog kept their tongue hanging outside their mouth?
 - List down the osmotic adjustments adapted by the water lily for its survival in the habitat.
- Differentiate between prokaryotes and Eukaryotes
- Write down the taxonomic hierarchy of man?
- Answer the following:
 - Although our teeth are made of mainly calcium, but they are not bones, why?
 - What is the function of cartilage at the end of bones?