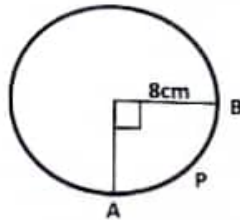




Q. No. 6

Find the length of Arc APB?

(10)



Q. No. 7

Verify the identity

$$\frac{1 + \sin \theta}{1 - \sin \theta} - \frac{1 - \sin \theta}{1 + \sin \theta} = 4 \tan \theta \sec \theta$$

(10)

OR

Any two angles in the same segment of a circle are equal.



Q. No. 2 Attempt all questions.

(3x5=15)

- i. A ship is moving at the speed of 15.55 m/s. one second later it is moving at 16.114 m/s. what is its acceleration.
- ii. A bullet of mass 30g travels at the speed of 1500 m/s. Calculate its kinetic energy.
- iii. An electric bulb is labeled as 220v and 100w. Find the resistance of the filament of the bulb.

Q. No. 3 Answer the following.

(2x5=10)

- i. An object and its image in a concave mirror are of height, yet inverted when the object is zoom from the mirror. What is the focal length of the mirror?
- ii. Calculate force between two charge bodies, each of which has a charge of 1 μ C and separated by the distance of 1cm



SECTION B - PHYSICS

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

(1.5 × 10 = 15)

- i. SI unit of Torque is
 - a. Nm
 - b. N / m
 - c. N / m²
 - d. Nm²
- ii. Rooms are heated by gas heaters by
 - a. Conduction
 - b. Convection
 - c. Radiation
 - d. Vaporisation
- iii. Speed of light is highest in one of the following media.
 - a. Air
 - b. Vacuum
 - c. Water
 - d. Glass
- iv. A current carrying solenoid acts as
 - a. A horse shoe Magnet
 - b. Bar Magnet
 - c. Magnetic Compass
 - d. U Shaped Magnet
- v. Which one of the following has no charge on it?
 - a. Alpha Particles
 - b. Beta Particles
 - c. DC Current
 - d. Both a & b
- vi. A heavy nucleus breaks on bombardment with slow neutron, the reaction is called
 - a. Fission
 - b. Fusion
 - c. Radioactivity
 - d. Nuclear delay
- vii. Which of the following has the highest penetrating power
 - a. α -rays
 - b. β -rays
 - c. γ -rays
 - d. Both a and b
- viii. Capacitance is defined as
 - a. VC
 - b. Q/V
 - c. QV
 - d. V/Q
- ix. What is the voltage across a 6 Ω resistor when 3A of current passes through it?
 - a. 2V
 - b. 9V
 - c. 18V
 - d. 36V
- x. The particles emitted from a hot cathode surface are
 - a. Boiling
 - b. Evaporating
 - c. Conduction
 - d. Thermionic emission
- xi. Release of energy by the sun is due to
 - a. Nuclear Fission
 - b. Nuclear Fusion
 - c. Burning of gases
 - d. Chemical Reaction
- xii. Which one is the correct equation of electric power
 - a. $P=VI$
 - b. $P=I/V$
 - c. $P=V/I$
 - d. $P=IR$
- xiii. Which of the following depends on the medium through which it travels?
 - a. Radio waves
 - b. Microwaves
 - c. Ultra Violet
 - d. Sound Waves
- xiv. Unit of amount of substance is
 - a. Kelvin
 - b. Mole
 - c. Candela
 - d. Ampere



WAPDA CADET COLLEGE TARBELA

Entrance Examination - 2018 for Admission to 11th Class

Time Allowed: 1 1/2 hour PAPER - B: MATHEMATICS & PHYSICS

Each Section Carry 75 Marks

Date: 25 Jun 2019

SECTION A - MATHEMATICS

Q. No. 1 (A) Fill in the blanks. (15)

- i. In general matrix, multiplication is not _____
- ii. The real part of $-2a(ai + i^2b)$ is _____
- iii. If $\log_b a = x$ then exponential form is _____
- iv. Without actual division, remainder is _____ if $9x^2 - 6x + 2$ is divided by $x + 3$
- v. If a, b and either $a < b$, or $a > b$ or $a = b$ is called law of _____
- vi. If _____ is complex cube root of unity then $(-1)^{11} =$ _____
- vii. The set of point that are equidistance from some fixed point is called _____
- viii. If _____ are roots of equation $3x^2 - 26x + 6 = 0$ then value of $9(\frac{1}{\alpha} + \frac{1}{\beta}) - 6 =$ _____
- ix. $20^\circ =$ _____ radians.
- x. If a, b, c are three quantities related such that $a : b :: b : c$ then b is called _____
- xi. $\{ \}$ is called _____ set.
- xii. $27x + \dots = (3x + \dots)^3$
- xiii. $\text{Cot} \dots \cdot \text{Sine} \dots \cdot \text{Sec} \dots =$ _____
- xiv. If $p(x)$ and $q(x)$ are two polynomials then _____ = _____
- xv. A line touches circumference of circle at single point is called _____

Q. No. 2 100 Students secured the following marks in a test. (10)

Marks (x)	0	1	2	3	4
Frequency (f)	4	19	25	29	23

Find i. Arithmeticl mean 4M

ii. Medlan 3M

iii. Mode (Modal value) 3M

Q. No. 3 Use synthetic division to find the value of n and m if $(x+3)$ and $(x-2)$ are the factors of polynomials $x^3 + 4x^2 + 21x + m$. (10)

Q.No. 4 Find the value of _____ if $x =$ _____ (10)

Q. No. 5 If $U = \{1, 2, 3, \dots, 20\}$, $X = \{-1, 3, 5, 7, 9, 8, 18, 20\}$ and $Y = \{1, 2, 5, 7, \dots, 17\}$ then show that $X - Y = X \cap Y'$ (10)



- Q. No. 2 Write briefly. (05)**
- a. Define equilibrium constant (10)
 - b. Difference between fats and oils. (20)
 - c. Discuss hydrogen bonding in water? (20)

Q. No. 3 (A) Complete the reactions

- a. $\text{Fe} + \text{H}_2\text{SO}_4 \rightarrow$ _____ (10)
- b. $\text{CaCO}_3 + \text{H}_2\text{SO}_4 \rightarrow$ _____ (10)
- c. Calculate the number of molecules in 2.5 moles of carbon dioxide. (30)



- xxvii. Ammonia gas produces when solid ammonium chloride is heated with
- Calcium Hydroxide
 - Hydrochloric Acid
 - Calcium sulphate
 - Magnesium Nitrate
- xxviii. Which element will burn in oxygen to form an acidic oxide.
- Calcium
 - Iron
 - Carbon
 - Magnesium
- xxix. The law of mass action is given in
- 1865
 - 1864
 - 1966
 - 1866
- xxx. In closed container, the formation of ammonia from its element is
- Million tons
 - Moderate
 - Very low
 - Unpredictable
- xxxi. Which of the following gives additional reaction
- Methane
 - Ethyne
 - Ethane
 - Propana
- xxxii. The cause of goiter is the deficiency of
- Florine
 - Iodine
 - Bromine
 - Propana
- xxxiii. Acids are _____ in taste.
- Bitter
 - Salty
 - Sour
 - None of these
- xxxiv. Which of these is amphoteric?
- H₂O
 - HF
 - H₂SO₄
 - H₃PO₄
- xxxiv. Density of water is maximum at
- 0°C
 - 273 °C
 - 100°C
 - 4°C
- xxxvi. Sulphuric acid is not used in
- Petroleum refining
 - Dehydration
 - Electrolysis
 - Preservation
- xxxvii. Oxidation number of sulphur in Na₂S O₃ is
- +2
 - +4
 - +9
 - +8
- xxxviii. Which of the following solution is more dilute
- 1M
 - 2M
 - 0.1M
 - 0.009M
- xxxix. In which of the following process the speed of the particles decreases.
- Melting
 - Boiling
 - Sublimation
 - Condensation
- xxxx. The lead pencils the amount of clay mixed with graphic range.
- 20-40%
 - 70-80%
 - 20-60%
 - 65-75%



- xiv. What is the mass of Al in 204g of Al_2O_3 ?
- a. 26g
b. 27g
c. 54g
d. 108g
- xv. Carbon and silicon are in the same group of periodic table. What is the formula of sodium silicate?
- a. $Na Si O_2$
b. $Na Si O_3$
c. $Na_2 Si O_3$
d. $Na_2 Si O_4$
- xvi. Which substance is not an essential raw material in the extraction of iron in a blast furnace?
- a. Air
b. limestone
c. Coke
d. Sand
- xvii. Which element reacts with oxygen to form a compound that is gas at room temperature?
- a. Mg
b. Cu
c. H₂
d. C
- xviii. Which substance removes impurities from iron ore in the blast furnace?
- a. Carbon
b. Sand
c. Limestone
d. Slag
- xix. Which gas is used as general anesthesia?
- a. Carbon
b. Ethene
c. Ethane
d. benzene
- xx. Which type of reaction occurs when soap is formed from fats?
- a. Hydrolysis
b. Polymeration
c. Fermentation
d. Substitution
- xxi. Which manufacturing process uses a catalyst?
- a. Fractional distillation of crude oil
b. The production of ammonia by Haber's Process
c. The production of Al by the electrolysis of Al_2O_3
d. The production of Iron in the blast furnace
- xxii. The step in which roasted ore is again melted in the blast furnace along with mixture of coal and sand is
- a. Smelting
b. Jugging
c. Grinding
d. Shaking
- xxiii. Which element is liberated at carbon cathode when aqueous sodium chloride is electrolyzed?
- a. Chlorine
b. Hydrogen
c. Oxygen
d. Sodium
- xxiv. The effect of mineral acid on the coinage metals is
- a. Decrease from Cu to Au
b. Remains same
c. Increase from Cu to Au
d. Cannot be predicted
- xxv. Which metal has the highest melting point
- a. Ammonia
b. Sodium Chloride
c. Methane
d. Water
- xxvi. In periodic table how many periods are needed to accommodate the elements of atomic number 1 - 18?
- a. 2
b. 4
c. 3
d. 8



WAPDA CADET COLLEGE TARBELA

Entrance Examination - 2018 for Admission to 1st Class

Time Allowed: 1½ hour PAPER - A: ENGLISH & CHEMISTRY

Each Section Carry 75 Marks

Date: 25 Jun 20

SECTION A - ENGLISH

- Q. No. 1 (A) Correct the following sentences. (10)**
- He is waiting for the bus for 3 days.
 - He is senior than me
 - A team of experts have studied the problem.
 - Neither of the boys have returned.
 - We are playing tennis everyday.
- (B) Change the voice of the given sentences (10)**
- All is writing a book
 - Please post this letter
 - Has he invited you?
 - The masons were building the house.
 - We are going to watch a movie tonight.
- (C) Change the narration of the following. (10)**
- Ahmad said to her, "I have completed my work".
 - "I prefer hot coffee", my friend said.
 - "Who are you?", he said to me.
 - "Be careful", said he to her.
 - He said to me, "what are you looking for?"
- (D) Use correct form of verb in brackets. (05)**
- He is a good friend of (I)
 - All is a (big) brother of Asif.
 - You would have won if you (work) hard.
 - It was warm, so I (take) off my coat.
 - I saw my friend (walk) in the field.
- Q. No. 2 Write an essay on any one of the following topics of about 150-200 words. (20)**
- Co-Education
 - The future of the Pakistan.
 - My Favorite book
 - Life at Cadet College.
- Q. No. 3 Read the following passage carefully and answer the questions given at the end. (10)**
- A man is known by the Company he keeps. A good student should avoid the company of those who keep playing all the time. Many students miss their classes and seldom do their home work because follow students do the same. There are hardworking students also who work while others play. They know when to study and when to play. They play when it is time to play. They enjoy the game of their choice because they know that playing games are essential for health. A sick student is not so quick in learning his lessons as a helthy one.
- Questions**
- What kind of company should a good student keep?
 - why do some students miss their classes?
 - Why do good students enjoy good helath?
 - Why are games necessary for students?
 - Provide a suitable title to the above passage.



4 Translate any five of the following into English.

- ۱۔ لڑکا دس بجے سے رسی کھینچ رہا ہوگا۔
- ۲۔ آدمی پانچ منٹ سے کیوں تالیاں بجا رہے تھے۔
- ۳۔ اس نے کاغذ کیوں پھاڑا
- ۴۔ وہ تین گھنٹے سے فون کر رہے تھے۔
- ۵۔ کیا وہ بارش میں کھیل چکے ہونگے۔
- ۶۔ کیا وہ ہماری بات سن کر جواب نہیں دیتے ہیں؟
- ۷۔ میں اُس سے کبھی نہیں ملنا چاہتا ہوں۔



SECTION B - CHEMISTRY

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

(1.5 x 40 = 60)

- i. A photographic film is basically an emulsion of gelatin with?
 - a. NaCl
 - b. CuCl₂
 - c. AgBr
 - d. NaNO₃
- ii. The nature of Na₂O is
 - a. Weak base
 - b. Amphoteric
 - c. Weak Acidic
 - d. Strongly Basic
- iii. Sodium react with cold water and forms.
 - a. Na₂O
 - b. Na₂CO₃
 - c. NaOH+H₂
 - d. NaH
- iv. Which of the following halogen is strong oxidizing agent?
 - a. I₂
 - b. Cl₂
 - c. Br₂
 - d. F₂
- v. Stratosphere extends upto
 - a. 50km
 - b. 15km
 - c. 12km
 - d. 80km
- vi. Which of the following has the highest electrical conductivity?
 - a. Sugar solution
 - b. Solid Sodium chloride
 - c. Solid Graphite
 - d. Gaseous carbon dioxide
- vii. Which compound has both ionic and covalent bond?
 - a. Ammonium Chloride
 - b. Calcium chloride
 - c. Carbon dioxide
 - d. Sodium chloride
- viii. Graphite is used to make
 - a. Glass
 - b. Electric wiring
 - c. Cutting tools
 - d. Electrodes
- ix. Ricket is caused due to deficiency of
 - a. Vitamin A
 - b. Vitamin C
 - c. Vitamin D
 - d. Vitamin E
- x. Which process produces an alkane?
 - a. Combustion
 - b. Dehydration
 - c. Hydration
 - d. Hydrogenation
- xi. Which electrons arrangement is that of metallic element?
 - a. 2,1
 - b. 2,4
 - c. 2,5
 - d. 2,7
- xii. Which substance contains covalent bond but also conduct electricity?
 - a. Brass
 - b. Graphite
 - c. Iodine
 - d. Steel
- xiii. Heating calcium hydrogen carbonate produces?
 - a. CO₂
 - b. CaCO₃
 - c. H₂O
 - d. All of these



WAPDA CADET COLLEGE TARBELA

Entrance Examination - 2018 for Admission to 1st Class

Time Allowed: 1½ hour PAPER - C: BIOLOGY & PHYSICS
Each Section Carry 75 Marks

Date: 25 Jun 2018

SECTION A - BIOLOGY

- i. What would be the best experimental design for testing hypothesis that bean plants required sodium?
 - a. Measures the amount of sodium in few beans plants
 - b. Grow bean Plants with and without sodium
 - c. Look for sodium in leaf tissues
 - d. Analyze root contents for sodium
- ii. Scientific name of onion is
 - a. Muscaria
 - b. Rana Tigrina
 - c. Allium
 - d. None of these
- iii. The surface texture of human hair is studied by
 - a. SEM
 - b. LM
 - c. TEM
 - d. EM
- iv. Which is acellular particle
 - a. Virus
 - b. Prions
 - c. Viroid
 - d. All of these
- v. Ribosome is chemically composed of
 - a. Protein DNA
 - b. Protein rRNA
 - c. Protein tRNA
 - d. Protein mRNA
- vi. How many triplets of microtubules are present in a centriole
 - a. 3
 - b. 6
 - c. 8
 - d. 9
- vii. Cell wall of bacteria is made up of
 - a. Cellulose
 - b. Peptidoglycan
 - c. Chitin
 - d. Prothrombin
- viii. Which of the following stage of cell division is very different for animal and plant cells?
 - a. Metaphase
 - b. Anaphase
 - c. Telophase
 - d. Cytokinesis
- ix. The Mitosis cell division was discovered by
 - a. Walther Flemming
 - b. August Weismann
 - c. Oscar Hertwig
 - d. Rudolf Virchow
- x. The cell death due to tissue damage is called
 - a. Apoptosis
 - b. Necrosis
 - c. Cancer
 - d. Metastasis
- xi. Which structure actively helps in taking the air out of lungs?
 - a. Nasal Cavity
 - b. Trachea
 - c. Bronchus
 - d. Bronchiole



Q. No. 3 Write a letter to your friend sharing your feeling about your upcoming College life-its new experience, challenges and excitements. (15)

Q. No. 4 Read the following passage carefully and answer the questions given at the end. (10)
There are a few people in the world today who have brought more happiness to children than Enid Blyton. The children of Britain love her and her books and so do most other nations, for her stories have been translated into many languages. Enid Blyton is justly termed the "World's Story-Teller". But she is more than that. She is the guide, philosopher and friend of countless boys and girls amusing them by her stories standing for all that is right and fair, a person of complete sincerity who is fearless in her convictions and belief trusted alike by parents and children.

Questions

- i. What do children of Britain love Enid Blyton?
- ii. What is she termed as?
- iii. How is she guide and friend of countless children?
- iv. What reward does Blyton get from Parents and Children?
- v. What is she stand for?

Q. No. 5 Develop the following lines into a complete Story (05)
Ahmed was ten years old and sole son of Poor parents, living in a village near Rawalpindi. His father would go to the city for work daily before dawn and return late in evening. One night his mother was very sick and this father had not returned home. it was raining heavily.....

Q. No. 6 Translate any five of the following into English. (10)

- ۱۔ آپ کو میری کتاب واپس کرنی چاہیے تھی۔
- ۲۔ اگر آپ ناراض جانا چاہتے ہیں تو آپ کو ایبٹ آباد سے گزرنا ہوگا۔
- ۳۔ یہ تم نے کیا کیا؟
- ۴۔ کاش کہ وہ ایسے نہ کرتا۔
- ۵۔ اگر میں وقت پر آتا تو کھانا کھاتا۔



WAPDA CADET COLLEGE TARBELA

Entrance Examination - 2019 for Admission to 1st Class

Time Allowed: 45 Min

Paper -A: ENGLISH

Date: 17 Jun 2019

Total Marks: 100

Q. No. 1 (A) Correct the following sentences.

(10)

- i. If you had come on time you would meet the chief guest.
- ii. By this time tomorrow, I will reach station.
- iii. I helped him to go upstairs.
- iv. The cat jumped above the wall.
- v. This is the young man that saved my life.
- vi. I saw him before he was married.
- vii. I know arif for a long time.
- viii. She is having long hair
- ix. Ali works in a bank now
- x. I wish I helped everyone.

(B) Change the voice of the given sentences

(10)

- i. Take it easy
- ii. Did you ask him to post this letter?
- iii. By whom had he taken help form?
- iv. Please fulfill your responsibility.
- v. The strike was called off by the labourer

(C) Change the narration of the following.

(10)

- i. He asked me not to do it.
- ii. He said, "I purchased a new house last year".
- iii. "What did you eat for your breakfast", I said to Ali.
- iv. My mother proposed that I should apply for a bank loan.
- v. "When will you return from office", I said to him.

(D) Use correct form of verb in brackets.

(10)

- i. I shall take you around the field when you (take) some rest
- ii. The man reached (receive) his gift.
- iii. The bus (stop) before we stepped out.
- iv. I found my friend (wait) when I reached station.
- v. When did you (write) this essay.

Q. No. 2 Write an essay on any one of the following topics of about 50-200 words. (20)

- i. Climate Changes.



xv. Choose lewis Acid

- a. CN
- b. H₂O

- c. NH₃
- d. H⁺

Q. No. 2 Attempt any ten short questions, answer should not exceed to 3 line. (4 x 10=40)

- i. Write formula of Chalcopryrite, Silica, Halite?
- ii. How hardness is produced in water?
- iii. Give general formula for Alkane, Alkene, Alkynes, Alkyl radical?
- iv. State law of mass action?
- v. K_c for the reaction is $K_c = \frac{NO_2}{N_2O_2}$ write chemical equation for the reaction and derive unit K_c?
- vi. What is global warming?
- vii. What is baeyer's test?
- viii. Distinguish between mono, di and tri saccharides?
- ix. Identify the group and period of the following elements on the basis of electronic configuration. i) ${}_{14}A^{20}$ ii) ${}_{16}B^{32}$ iii) ${}_{9}C^{19}$
- x. Why an atom is electrically neutral?
- xi. Why sodium has high I.E then potassium?
- xii. What is carbonization?
- xiii. Draw structure o glucose and fructose.

Q. No. 3 Attempt any one question

(30)

A)

- i. What is electroplating, Describe Tin-Plating.
- ii. Define Galvonic cell? Write the reaction occur in Galvonic cell (Daniel Cell)

B)

- i. What is evaporation? Explain why evaporation is cooling process?
- ii. A Solution of NaOH has concentration 1.2 M. Calculate mass of NaOH in g/dm³ in this solution



- xiv. Which of the following can be used to produce both transverse and longitudinal waves?
- A string
 - A helical spring
 - 54g
 - A tuning fork
- xv. The index of refraction depends upon
- Focal length
 - Image distance
 - Speed of light
 - Object distance
- xvi. Which type of image is formed by a convex lens on screen
- Inverted, real
 - Upright, real
 - Inverted, virtual
 - Upright, virtual
- xvii. If a ray of light in glass is incident on an air surface at an angle greater than critical angle, the ray will
- Reflect only
 - Partially reflected
 - Inverted, virtual
 - Diffract only
- xviii. The angle of refraction $\angle A$ is equal to
- 30°
 - 60°
 - 45°
 - 90°
- xix. $\sin 60^\circ =$
- 0.5
 - 0.866
 - 0.707
 - 1
- xx. One pico farad is equal to
- 10^{-3} Farad
 - 10^{-12} Farad
 - 10^{-6} Farad
 - 10^{-12} Farad
- xxi. If both terminals of galvanometer are at same potential, then the deflection in the galvanometer will be
- Maximum
 - Zero
 - Minimum
 - Between zero and maximum
- xxii. Electrical power is given by
- VI
 - V^2/R
 - I^2R
 - All of these
- xxiii. Which of the following is not a derived unit
- Pascal
 - Newton
 - Kilogram
 - watt
- xxvi. If $X=A$, in case of AND gate, then X is 1 when
- A and B are 1
 - A is 1, B is 0
 - A or B is 0
 - A is 0, B is 1
- xxv. One of the isotopes of uranium is ${}_{92}\text{U}^{238}$, the number neutrons in this isotope is
- 92
 - 238
 - 146
 - 330

Q. No. 2 Attempt all questions (3 x 10=30)

- Will a vector be zero if one of its components is zero?
- What is the direction of motion of an object moving in circle?
- A capacitor holds 0.06C of charge when fully charged by a 9 volt battery. Calculate the capacitance of capacitor

Q. No. 2 Attempt all questions (2 x 10=20)

- What is thermometer? Why mercury is preferred in thermometer?
- What is the effect of emission of alpha, beta, gamma particles on atomic number and mass number of a radioactive element?



WAPDA CADET COLLEGE TARBELA

Entrance Examination - 2019 for Admission to 1st Class

Paper -C: PHYSICS

Time Allowed: 45 Min

Total Marks: 100

Date: 17 Jun 2019

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

(25 x 2 = 50)

- i. The direction of torque can be found by
 - a. Head to tail rule
 - b. Left hand rule
 - c. Right hand rule
 - d. Torque has no direction
- ii. What will be the value of G , if mass of earth becomes four times.
 - a. One time
 - b. Four time
 - c. Double
 - d. No change
- iii. Weight of the body of mass 10 kg on the surface of moon is
 - a. 160N
 - b. 1.62N
 - c. 16N
 - d. Zero
- iv. If radius of the circle in which the object is moving is doubled, then centripetal acceleration becomes
 - a. Doub
 - b. Three times
 - c. Half
 - d. Four times
- v. Unit of amount of substance is
 - a. Kelvin
 - b. Candela
 - c. Mole
 - d. Ampere
- vi. Walking on road is an example of
 - a. First Law
 - b. Third Law
 - c. Second Law
 - d. Fourth Law
- vii. A spider web remains intact due to
 - a. Weight
 - b. Tension
 - c. Momentum
 - d. None of these
- viii. Release of energy by sun is due to
 - a. Fission
 - b. Burning of Gas
 - c. Fusion
 - d. Chemical Reaction
- ix. $50^{\circ}\text{C} =$
 - a. 122°F
 - b. 278°F
 - c. 130°F
 - d. 273°F
- x. If $t=0$, then the distance covered is
 - a. $S=VI$
 - b. Maximum
 - c. Zero
 - d. Minimum
- xi. When two equal opposite and parallel forces acting at two points of the same body, then form
 - a. Torque
 - b. Momentum
 - c. Moment of Couple
 - d. Couple
- xii. When an object is resting on a smooth horizontal surface, weight of the object is balanced by
 - a. Normal reaction
 - b. Friction
 - c. Torque
 - d. Couple
- xiii. Which one is an example of simple harmonic motion
 - a. Motion of Simple Pendulum
 - b. Spinning of earth
 - c. Motion of ceiling fan
 - d. Bouncing ball on a floor

45



WAPDA CADET COLLEGE TARBELA

Entrance Examination - 2019 for Admission to 1st Class

Time Allowed: 45 Min

Paper -E: MATHEMATICS (For pre-Engg Students)

Date: 17 Jun 2019

Total Marks: 100

Q. No. 1 Fill in the blanks with appropriate words given in brackets (2 x 5 = 10)

- i. If $6:m :: 9:12$, the value of m will be
 - a. 8
 - b. 9
 - c. 18
 - d. 4
- ii. The length of each side of a regular octagon is 3cm, its perimeter is
 - a. 24cm
 - b. 9cm
 - c. 27cm
 - d. 18cm
- iii. Angle inscribed in a semi-circle is
 - a. $\pi/2$
 - b. $2\pi/3$
 - c. $\pi/3$
 - d. $\pi/4$
- iv. If $b=0$ in a quadratic equation $ax^2+bx+c=0$, the equation is called
 - a. Standard
 - b. Exponential
 - c. Pure
 - d. Reciprocal
- v. If two circles of radii 6cm and 2cm touches externally then the distance between their centers equal to
 - a. 8
 - b. 6
 - c. 4
 - d. 2

Q. No. 1 B Fill in the blanks. (2 x 5 = 10)

- i. $\sin^2 3\theta/2 + \cos^2 3\theta/2 =$ _____
- ii. The number of methods to solve a quadratic equation are _____
- iii. If $b^2 - 4ac=0$, then roots of $ax^2 + bx + c=0$ are _____
- iv. If $\alpha\beta$ are the roots of $5x^2+3x-9=0$, then product of roots is _____
- v. A line which has two points in common with a circle is called _____

Q. No. 2 Resolve $\frac{x-11}{(x-4)(x+4)}$ into partial fraction. (10)

Q. No. 3 Solve the equation $5^{1+x} + 5^{1-x} = 26$ (15)

Q. No. 3 Use synthetic division, solve the equation $3x^3 - 11x^2 + 5x + 3 = 0$ when 3 is the root of equation. (10)

Q. No. 5 Find a & b of $(3-2a, b-1) = (a-7, 2b+5)$ (10)

Q. No. 6 Solve $\frac{(x+5)^3 - (x-3)^3}{(x+5)^3 + (x-3)^3} = \frac{13}{4}$ (15)

Q. No. 7 If $U=N$, then verify De-Morgan's Law by using $A = \phi$ and $B = P$. (10)

Q. No. 8 In a circle of radius 12m. Find the length of an arc which subtends a central angle $\theta = 1.5$ radian. (10)



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Entrance Examination - 2019 for Admission to 1st Class

Time Allowed: 45 Min

Paper - B: CHEMISTRY

Total Marks: 100

Date: 17 Jun 2019

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

(2 × 15 = 30)

- i. Recognize the and exist in MgO
 - a. Covalent
 - b. H-Bonding
 - c. Coordinate
 - d. Ionic
- ii. The H Point of water at mount Everest is
 - a. 50°C
 - b. 65°C
 - c. 60°C
 - d. 70°C
- iii. Sodium react with cold water and forms.
 - a. Na₂O
 - b. Na₂CO₃
 - c. NaOH+H₂
 - d. NaH
- iv. Which of the following halogen is strong oxidizing agent?
 - a. I₂
 - b. Cl₂
 - c. Br₂
 - d. F₂
- v. Which of the following is an alcohol?
 - a. CH₃-CH₂-O-CH₃
 - b. CH₃-CH₂-OH
 - c. C₆H₅-OH
 - d. CH₃-CH₂-COOH
- vi. For reversible reaction $Kc = \frac{[C]}{[A][B]}$ which substance is produced of reaction
 - a. A
 - b. Both A and B
 - c. B
 - d. C
- vii. In the following reaction which species is donating an electron pair?
 $NH_3 + BF_3 \rightarrow H_3N-BF_3$
 - a. H
 - b. N
 - c. B
 - d. BF₃
- viii. Which is reddish brown gas
 - a. NO₂
 - b. SO₂
 - c. NO
 - d. O₃
- ix. A physical and chemical reaction that occurs by itself is called
 - a. Non-Spontaneous
 - b. Exothermic
 - c. Spontaneous
 - d. Endothermic
- x. Lowest temperature is stratosphere is
 - a. -5°C
 - b. 5°C
 - c. -55°C
 - d. -55°C
- xi. Which of the following group contain alkaline earth metals?
 - a. I A
 - b. VII A
 - c. II A
 - d. VIII A
- xii. Numbers of neutron in $^{27}_{13}M^{2+}$ are
 - a. 13
 - b. 27
 - c. 14
 - d. 15
- xiii. Bromine has melting point of -7°C and boiling point 59°C. What is physical state of bromine at 100°C
 - a. Gas
 - b. Solid
 - c. Liquid
 - d. Cannot be predicted
- xiv. What is mass of 5 moles of Hydrogen gas?
 - a. 5g
 - b. 10.08g
 - c. 5.04g
 - d. 10.089g