

CHEMISTRY MDCAT

UNIT-6 (A + SERIES)

TOPIC:-

✓ **CHEMICAL BONDING**

- Q.1 What is the exact value of angle in BF_3
 A. 90° B. 104.5°
 C. 119.5° D. 120°
- Q.2 Which of the following sets constitutes of all the molecules and ions of non-planar geometry?
 A. $\text{SO}_2, \text{C}_2\text{H}_4, \text{BF}_3, \text{NO}_2$ B.
 C. $\text{CH}=\text{CH}, \text{H}_2\text{O}, \text{BeCl}_2, \text{H}_2\text{S}$ D. $\text{PH}_3, \text{NH}_3, \text{SO}_2, \text{Benzene}$
- Q.3 When the two partially filled atomic orbital overlap in such a way that the probability of finding the electron is maximum around the line joining the two nuclei, the result is the formation of
 A. Sigma bond B. Hydrogen bond
 C. Pi-bond D. Metallic bond
- Q.4 The angle between un-hybridized p-orbital and three sp^2 hybrid orbitals of each carbon atom is
 A. 120° B. 109.5°
 C. 90° D. 180°
- Q.5 Fe^{+2} will form the most ionic bond with
 A. N^{3-} B. S^{2-}
 C. P^{3-} D. F^{-1}
- Q.6 AB_4 type with no lone pairs geometry enables to form which shape of molecule?
 A. Trigonal B. Regular octahedral
 C. Regular tetrahedral D. Regular pyramidal
- Q.7 Which of the following has greatest difference of electronegativity?
 A. HF B. HCl
 C. HBr D. HI
- Q.8 Identify the compound given below which has bond formed by overlapping of sp^2 and p orbital:
 A. BeCl_2 B. BF_3
 C. H_2O D. NH_3
- Q.9 During the formation of chemical bond
 A. Energy decreases B. Energy increases
 C. Energy does not change D. Energy first decreases then increases
- Q.10 Which of the following is not a primary bond?
 A. Ionic bond B. Hydrogen bond
 C. Dative bond D. Covalent bond
- Q.11 All of the following are co-planar molecules except
 A. Propyne B. Ethyne
 C. Benzene D. Ethene
- Q.12 Which of the following types of bonds has the least electronegativity difference between the bonding atoms?
 A. Ionic bond B. Polar covalent bond
 C. Nonpolar covalent bond D. Hydrogen bond
- Q.13 Which of the following has lowest first ionization energy
 A. Ne B. F
 C. N D. O
- Q.14 The percentage of ionic and covalent character in HF is
 A. 20, 80 B. 80, 20
 C. 57, 43 D. 43, 57

- Q.15** Which of the following is non-polar but contains polar bonds?
 A. HCl
 B. H₂O
 C. CCl₄
 D. SO₂
- Q.16** The compromised distance between two hydrogen atoms in hydrogen molecule is
 A. 75.4 pm
 B. 134 pm
 C. 139 pm
 D. 120
- Q.17** The radius of an atom cannot be measured precisely because
 A. Atom has no sharp boundary
 B. Size of atom changes from one compound to other
 C. Finding probability of electrons never becomes zero
 D. All of the above
- Q.18** The half of _____ bond between two similar atoms covalently bonded in a molecule is called covalent radius
 A. Single
 B. Double
 C. Triple
 D. All of these
- Q.19** The ionization energies of III-A and VI-A show abnormal trend while moving left to right in a period, can be best explained by
 A. Atomic radius
 B. Nuclear charge
 C. Shielding effect
 D. Mode of electronic configuration
- Q.20** The elements of _____, _____ and _____ show abnormally low values of electron affinity in every period
 A. II-A, V-A, VIII-A
 B. I-A, V-A, VI-A
 C. III-A, VI-A, VIII-A
 D. I-A, II-A, III-A
- Q.21** The tendency of an atom to _____ is called electronegativity
 A. Donate electron pair
 B. Share electron pair
 C. Gain electron pair
 D. Attract shared electron
- Q.22** In ammonium ion the bond angle is equal to
 A. NF₃
 B. H₂S
 C. CCl₄
 D. CO₂
- Q.23** Which of the following specie contains only sp-hybridized carbon atom
 A. Hydrogen cyanide
 B. Propyne
 C. Vinyl alcohol
 D. 1,3-Butadiene
- Q.24** In which of the following central atom can form dative bond with NH₃
 A. MgCl₂
 B. PH₄⁺
 C. BH₃
 D. CH₄
- Q.25** Which of the following pair has same geometry but different bond angle
 A. SiO₂ and SO₂
 B. H₂S and CS₂
 C. BeCl₂ and CO₂
 D. H₂S and H₂O
- Q.26** Which of the following halogen has almost same bond energy
 A. F₂ and Cl₂
 B. F₂ and I₂
 C. Cl₂ and Br₂
 D. Br₂ and I₂
- Q.27** Which atomic numbers in periodic table represent the elements that generally show abnormal trends in ionization energy
 A. 12 and 16
 B. 13 and 16
 C. 20 and 15
 D. 11 and 12
- Q.28** Which of the following represents the correct arrangement of atoms according to their atomic radii?
 A. Mg < Ca < Sr
 B. Mg < Sr < Ca
 C. Sr < Ca < Mg
 D. Mg < Ca < Be
- Q.29** Which of the following specie has largest ionic radius
 A. F⁻
 B. F
 C. O²⁻
 D. N³⁻
- Q.30** Which one of the following molecules has minimum value of bond angle?
 A. SiH₄
 B. NF₃
 C. BH₃
 D. CO₂

- Q.31 The correct ascending order of electron affinity is
 A. $I > F > Cl$ B. $I < F < Cl$
 C. $I > Cl > F$ D. $I < Cl < F$
- Q.32 Which one of the following species shows maximum types of van der waal's repulsions?
 A. H_2S B. NF_3
 C. H_3O^+ D. NH_4^+
- Q.33 According to VSEPR theory _____ does not belong to AB_4 type
 A. H_2S B. BF_3
 C. BH_4^- D. NH_4^+
- Q.34 H_3O^+ contains
 (I) Electrovalent bond
 (II) Dative bond
 (III) Covalent bond
 A. I, II and III B. I and II
 C. II only D. II and III
- Q.35 The bond angle 107° is present in
 A. NH_3 B. AlH_3
 C. NF_3 D. NH_4^+
- Q.36 Which order of IE is incorrect
 A. $Ba < Sr < Ca$ B. $Al < Si < P$
 C. $B < Be < C$ D. $Si < N < O$
- Q.37 The energy gap between 2nd ionization energy and 3rd ionization energy is very large, it is true for an element having _____ Z values belonging to _____
 A. 11, I-A B. 12, II-A
 C. 13, III-A D. 14, IV-A
- Q.38 Select the specie that have different shape than others
 A. H_3O^+ B. NH_3
 C. BF_3 D. NF_3
- Q.39 The central atom of which of the following class of molecules carries bond pair – bond pair repulsions only
 A. AB_2 B. AB_3
 C. AB_4 D. AB_5
- Q.40 The percentage of s-character in hybrid orbital which indicates longest bond length
 A. 25% s-character B. 33.4% s-character
 C. 50 % s-character D. 75% s-character
- Q.41 What is the hybridization of carbon number 1 in 1-Propene
 A. sp^3 B. sp^2
 C. sp D. dsp^2
- Q.42 If a molecule has 3 bond pair and 1 lone pair then its molecular geometry will be
 A. Linear B. Tetrahedral
 C. Trigonal planar D. Trigonal pyramidal
- Q.43 The shape of carbonate ion is
 A. Square planar B. Trigonal pyramidal
 C. Trigonal planar D. Tetrahedral
- Q.44 Select the specie that contains maximum number of bond pairs
 A. CO_2 B. H_2O
 C. NH_3 D. BeH_2
- Q.45 Which one of the following species contains no lone pair?
 A. NH_4^+ B. H_3O^+
 C. NH_3 D. Both A and B
- Q.46 The high value of first ionization energy of nitrogen than that of oxygen is due to its
 A. High value of Z B. Low value of mass number
 C. Increased shielding effect D. Half-filled p – subshell



- Q.47 Choose the true statement.
A. Along a period from left to right, atomic radius increases.
B. Along a period from left to right, ionization energy decreases.
C. Electronegativity of elements increases from left to right along a period.
D. None of the above
- Q.48 Ammonia (NH₃) can form bond with boron trifluoride (BF₃). For the bond formation, the electrons are most likely supplied by
A. Nitrogen
B. Boron
C. Hydrogen
D. Mutual shared by B and N
- Q.49 The bond between carbon and oxygen in CO₂, is most likely to be a / an
A. Ionic bond
B. Covalent bond
C. Hydrogen bond
D. Dative bond
- Q.50 The strength of bond between two atoms depends upon
A. Electronegativity difference
B. Bond length
C. Atomic radius
D. All of the above
- Q.51 The shortening of bonds is due to the predominant participation of _____ orbital in hybridization
A. s
B. p
C. d
D. f
- Q.52 Which of the following element has highest electronegativity
A. O
B. F
C. N
D. Cl
- Q.53 Which of the following electronegativity difference suggests that the bond would be ionic in nature
A. 0 – 0.4
B. 0.5 – 1.6
C. Greater than 1.7
D. Cannot be predicted
- Q.54 Select the specie that has highest ionic character
A. CsF
B. NaCl
C. HF
D. KCl
- Q.55 The bond in fluorine molecule is formed by the overlapping of _____ on each atom of fluorine atom
A. sp³ – orbital
B. sp² – orbital
C. s – orbital
D. 2p_z – orbital
- Q.56 The carbon-carbon sigma bond in ethyne molecule, is formed by overlapping between orbitals of carbon atoms
A. sp²
B. sp
C. sp³
D. 2p_z
- Q.57 H–O–H bond angle in H₂O is 104.5° and not 109° because of more space occupied by
A. High electronegativity of oxygen
B. Bond pair – bond pair
C. Lone pair – lone pair
D. Lone pair – bond pair
- Q.58 % age of ionic character in the compound can be calculated by
A. $\frac{\mu_{\text{ionic}}}{\mu_{\text{obs}}} \times 100$
B.
C. $\frac{\mu_{\text{ionic}}}{\mu_{\text{obs}}} \times 1000$
D. $\frac{\mu_{\text{obs}}}{\mu_{\text{ionic}}} \times 1000$
- Q.59 Total number of sigma and pi bonds in vinyl alcohol are
A. 5 sigma and 1 pi
B. 6 sigma and 1 pi
C. 5 sigma and 2 pi
D. 6 sigma and 2 pi
- Q.60 Which of the following will have the highest bond energy?
A. A carbon-carbon bond in ethane
B. A carbon-carbon bond in ethene
C. A carbon-carbon bond in ethyne
D. A carbon-carbon bond in benzene

	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D
1	○	○	○	●	16	●	○	○	○	31	○	●	○	●	46	○	○	○	●
2	○	●	○	○	17	○	○	○	●	32	●	○	○	○	47	○	○	●	○
3	●	○	○	○	18	●	○	○	●	33	●	●	○	○	48	●	○	○	○
4	○	○	●	○	19	○	○	○	●	34	●	○	○	●	49	○	●	○	○
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6	○	○	●	○	21	○	○	○	●	36	●	○	○	●	51	●	●	○	○
7	●	○	○	○	22	○	○	●	○	37	○	●	○	○	52	○	●	○	○
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9	●	○	○	○	24	○	○	●	○	39	●	○	●	○	54	●	○	○	○
10	○	●	○	○	25	○	○	○	●	40	●	○	○	○	55	○	○	○	●
11	●	○	○	○	26	○	●	○	○	41	○	●	○	○	56	○	●	○	○
12	○	○	●	○	27	○	●	○	○	42	○	○	○	●	57	○	○	●	○
13	○	○	○	●	28	●	○	●	○	43	○	○	●	○	58	○	●	○	○
14	○	○	○	●	29	○	○	○	●	44	●	○	●	○	59	○	●	○	○
15	○	○	●	○	30	○	●	○	○	45	●	○	○	●	60	●	○	●	○

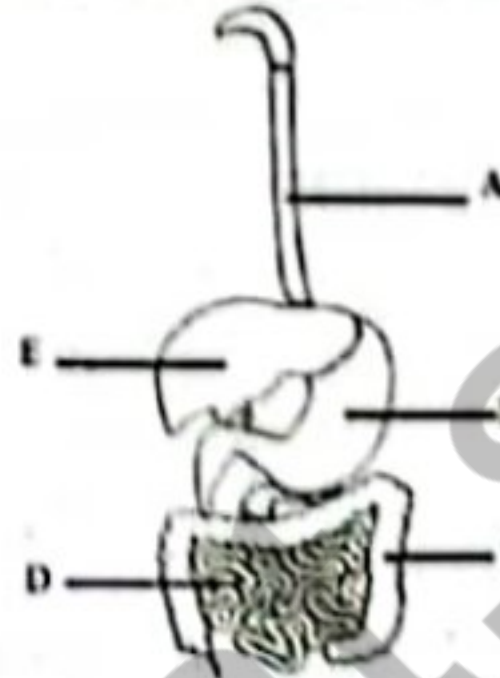
BIOLOGY MDCAT

UNIT-6 (A+ Series)

TOPIC:

✓ **Life Processes in Animals and Plants (Nutrition and Gaseous Exchange)**

- Q.1 Leaf is bilobed with row of long stiff bristles along the margins of each lobe are present in:
 A. *Dionaea mucipula* B. *Cassia fistula*
 C. *Drosera intermedia* D. *Sarracenia purpurae*
- Q.2 The elastic cartilage covering the opening of windpipe is called:
 A. Epiglottis B. Fundus
 C. Orifice D. Glottis
- Q.3 Inspiratory and expiratory centers are located in:
 A. Medulla oblongata B. Pons
 C. Cerebrum D. Hypothalamus
- Q.4 Find out the structure/s which is/are not involved in enzymatic digestion of food:



- A. Both B and D B. Both B and C
 C. Both E and A D. Only E
- Q.5 Associated glands of the digestive tract include all except:
 A. Crypts of Lieberkühn B. Liver
 C. Pancreas D. Salivary glands
- Q.6 There are about _____ alveoli present in each human lung.
 A. 350 million B. 350 billion
 C. 700 million D. 700 billion
- Q.7 Human air passageway is made up mostly of _____ cartilage while epiglottis consists of _____ cartilage.
 A. Hyaline, fibro B. Fibro, elastic
 C. Fibro, hyaline D. Hyaline, elastic
- Q.8 Trypsinogen is released from which of the following part of human digestive system?
 A. Oral cavity B. Stomach
 C. Small intestine D. Pancreas
- Q.9 The dental formula of human beings is as follows:
 A. $I_2C_1P_2M_3$ B. $I_1C_2P_3M_4$
 C. $I_3C_1P_2M_3$ D. $I_2C_2P_3M_3$
- Q.10 Lower respiratory tract starts from _____ in humans.
 A. Respiratory bronchiole B. Pharynx
 C. Trachea D. Alveolar sac
- Q.11 Which of the following accessory gland is involved in digestion of all principal food items?
 A. Salivary glands B. Stomach
 C. Pancreas D. Liver
- Q.12 The stomach is situated _____ the diaphragm and _____ of the abdominal cavity.
 A. Below, left side B. Above, right side
 C. Below, upper side D. Above, lower side

- Q.13 Which of the following hormone is secreted by duodenal mucosa in response to fats and proteins?
 A. Gastrin
 B. Enterokinase
 C. Bile
 D. Cholecystokinin
- Q.14 Which of the following function is performed by the stomach only?
 A. Absorption of food
 B. Discontinuous feeding
 C. Mechanical digestion of food
 D. Peristalsis
- Q.15 Bile juice secreted by liver is _____ in nature.
 A. Slightly acidic
 B. Alkaline
 C. Neutral
 D. Highly acidic
- Q.16 The optimum pH value for digestive activity of salivary amylase is:
 A. 4.50
 B. 5.50
 C. 6.80
 D. 7.60
- Q.17 The approximate length of human alimentary canal:
 A. 10 ft
 B. 20 ft
 C. 30 ft
 D. 50 ft
- Q.18 Bilirubin present in bile is _____ pigment formed due to the breakdown of _____.
 A. Yellow, RBCs
 B. Red, haemoglobin
 C. Green, haemoglobin
 D. Green, WBCs
- Q.19 Which type of digestion is performed by liver?
 A. Chemical only
 B. Mechanical only
 C. Both chemical and mechanical
 D. Mechanical and enzymatic
- Q.20 Most important vitamin produced by *E. coli* in colon is:
 A. Vitamin 'D'
 B. Vitamin 'C'
 C. Vitamin 'K'
 D. Vitamin 'A'
- Q.21 Parietal cells produce intrinsic factor that helps in absorption of:
 A. Vitamin 'D'
 B. Vitamin 'B₁₂'
 C. Vitamin 'A'
 D. Vitamin 'K'
- Q.22 Proteins and lipids in chylomicrons are present as _____, respectively.
 A. 1% and 99%
 B. 50% and 50%
 C. 10% and 90%
 D. 40% and 60%
- Q.23 Pyloric sphincter of stomach remains _____ closed because of _____.
 A. Fully, spasmodic contraction
 B. Partially, mild tonic contraction
 C. Fully, relaxation
 D. Partially, relaxation
- Q.24 Which of the following best describes the shape of the stomach?
 A. Y-shaped in all conditions
 B. J-shaped while empty
 C. J-shaped while filled
 D. S-shape while filled
- Q.25 Fatty acids and glycerols recombine to form fats for transportation purposes in:
 A. Hepatocytes
 B. Epithelial cells of villi
 C. Adipose tissues
 D. Blood vessels
- Q.26 Total carbohydrate digestion in oral cavity is approximately:
 A. 10%
 B. 3-5%
 C. 40%
 D. 10-20%
- Q.27 Which of the following salivary gland is not involved in digestion of starch?
 A. Parotid
 B. Sub-maxillary
 C. Sublingual
 D. All major salivary glands are involved
- Q.28 Hunger pangs are contractions involving:
 A. Smooth muscles
 B. Skeletal muscles
 C. Cardiac muscles
 D. Striated muscles
- Q.29 Digestion in human alimentary canal starts in _____ while completes in _____.
 A. Oral cavity, small intestine
 B. Buccal cavity, ileum
 C. Oral cavity, colon
 D. Stomach, ileum

- Q.30** Which of the following is incorrectly matched?
 A. Stomach-Muscular bag
 B. Colon-Absorption
 C. Small Intestine-Site of emulsification
 D. Liver-Chemical digestion
- Q.31** Digestion of proteins into polypeptides in alkaline medium is more likely to occur in:
 A. Stomach
 B. Small intestine
 C. Pancreas
 D. Colon
- Q.32** The structure and nature of internal anal sphincter is _____ and _____.
 A. Striped, voluntary
 B. Striped, involuntary
 C. Unstriped, voluntary
 D. Unstriped, involuntary
- Q.33** Find out the correct blood vessel carrying 14.6ml/100ml of O₂ and 54ml/100ml of CO₂:
 A. Pulmonary vein
 B. Hepatic portal vein and umbilical vein
 C. Umbilical vein
 D. Pulmonary artery
- Q.34** How much carbon dioxide gas is generally transported by hemoglobin?
 A. 5%
 B. 20%
 C. 70%
 D. 90%
- Q.35** CO is more toxic than CO₂ because it:
 A. Damages lungs
 B. Form acid with H₂O
 C. Affect the nervous system
 D. Reduces the O₂ carrying capacity of Hb
- Q.36** In humans, when blood leaves the capillary bed, most of the carbon dioxide is in the form of:
 A. Carbonic acid
 B. Carboxyhaemoglobin
 C. Bicarbonate ions
 D. Carbaminohaemoglobin
- Q.37** At the level of lungs _____ combine with _____.
 A. Bicarbonate ions, hydrogen ions
 B. Bicarbonate ions, hydroxyl ions
 C. Oxygen with bicarbonate ions
 D. Carbon dioxide with potassium ions
- Q.38** The minimum amount of air that would be present in lungs even after forceful expiration is:
 A. 4500 ml
 B. 500 ml
 C. 3500 ml
 D. 1500 ml
- Q.39** Which of the following is always increased in exhaled air than inhaled air?
 A. Water vapours and dust
 B. Dust and temperature
 C. Carbon dioxide and water vapors
 D. Nitrogen and oxygen
- Q.40** In which organ of the human body, oxyhaemoglobin tends to be more stable than the others:
 A. Heart
 B. Liver
 C. Kidneys
 D. Lungs
- Q.41** Find out the structure which is not present in respiratory tract:
 A. Alveoli
 B. Epithelial tissues
 C. Cartilage
 D. Pleura
- Q.42** Myoglobin loses O₂ at which level of PO₂?
 A. 100 mmHg
 B. 115 mmHg
 C. 60 mmHg
 D. 20 mmHg
- Q.43** From alveoli to hemoglobin, one oxygen molecule has to cross how many lipid bilayers?
 A. 2
 B. 5
 C. 1
 D. 4
- Q.44** Among the following, maximum amount of carbon dioxide is transported through/ in the form of:
 A. Plasma proteins
 B. Carboxyhaemoglobin
 C. Carbaminohaemoglobin
 D. Calcium carbonate
- Q.45** In human respiratory tract, smooth muscles are present in all parts except:
 A. Alveoli
 B. Bronchi
 C. Trachea
 D. Bronchioles



- Q.46** Mark the true statement about haemoglobin:
A. It has 2 haem groups
B. It is a dipeptide present in RBCs
C. It is present in RBCs plasma membrane
D. It can carry 8 oxygen atoms
- Q.47** It is a severe respiratory problem that causes abnormal release of inflammatory chemicals such as histamine into the circulatory system which ultimately cause severe contraction of the bronchioles:
A. Asthma
B. RDS
C. Emphysema
D. Tuberculosis
- Q.48** The respiratory surfaces exhibit following characteristic:
A. It must be permeable
B. It should have low ventilation mechanism
C. It should be non-vascularized
D. It must be thick for low diffusion
- Q.49** Which of the following is not a respiratory pigment?
A. Haemoglobin
B. Haemocyanin
C. Myoglobin
D. Phycocyanin
- Q.50** Dissociation of HbO_2 will be maximum at:
A. 60 mmHg
B. 50 mmHg
C. 40 mmHg
D. 30 mmHg
- Q.51** During expiration, the diaphragm becomes:
A. Remains unchanged
B. Less dome-shaped
C. Flattened
D. More dome-shaped
- Q.52** The longest part of the large intestine is:
A. Ileum
B. Colon
C. Jejunum
D. Oesophagus
- Q.53** Vermiform appendix is the part of:
A. Liver
B. Rectum
C. Intestine
D. Stomach
- Q.54** Which of the followings is not the reason of pyrosis?
A. Eating fatty food
B. Consuming too much alcohol
C. Consuming food having more dietary fibers
D. Lying immediately after a meal
- Q.55** Secretin increases the production of _____ and decreases the production of _____, respectively.
A. Bile juice, gastric juice
B. Gastric juice, bile juice
C. Gastric juice, pancreatic juice
D. Pancreatic juice, bile juice
- Q.56** _____ is activated to _____ by enterokinase in small intestine.
A. Trypsinogen, trypsin
B. Chymotrypsinogen, chymotrypsin
C. Pepsinogen, pepsin
D. Pepsinogen, trypsin
- Q.57** The number of lobes in right and left lung of a man are _____ and _____, respectively.
A. 2, 3
B. 3, 2
C. 4, 2
D. 2, 4
- Q.58** Extra carbon dioxide produced during exercise is removed by:
A. Slow and shallow breathing
B. Deep and fast breathing
C. Shallow and fast breathing
D. Deep and slow breathing
- Q.59** Which of the following is not compulsory to be present for the gaseous exchange in any organism?
A. Blood
B. Respiratory surface
C. Respiratory gases
D. All are compulsory
- Q.60** Exchange of gases between blood and alveoli occurs by:
A. Active transport
B. Simple diffusion
C. Osmosis
D. Facilitated diffusion

A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D				
1	●	○	○	○	16	○	○	●	○	31	○	●	○	○	46	○	●	○	●
2	●	○	○	○	17	○	●	●	○	32	○	○	●	○	47	●	○	○	○
3	●	○	○	○	18	○	○	●	○	33	○	○	○	●	48	●	○	○	○
4	●	○	●	○	19	○	●	○	○	34	○	●	○	○	49	○	○	○	●
5	●	○	○	○	20	○	○	●	○	35	○	○	○	●	50	○	○	○	●
6	●	○	○	○	21	○	●	○	○	36	○	○	●	○	51	○	○	○	●
7	○	●	○	●	22	●	○	○	○	37	●	○	○	○	52	○	●	○	○
8	○	○	○	●	23	○	●	○	○	38	○	○	●	●	53	○	○	●	○
9	●	○	○	○	24	○	●	○	○	39	○	○	●	○	54	○	○	●	○
10	○	○	●	○	25	○	●	○	○	40	○	○	○	○	55	●	○	○	●
11	○	○	●	○	26	○	○	○	○	41	○	○	○	●	56	●	○	○	○
12	●	○	○	○	27	○	○	○	○	42	○	○	○	●	57	●	●	○	○
13	○	○	○	●	28	○	○	○	○	43	○	●	●	○	58	○	●	○	○
14	○	●	○	○	29	●	●	○	○	44	○	○	○	○	59	●	○	○	●
15	○	●	○	○	30	○	○	○	●	45	●	○	●	○	60	○	○	○	○

PHYSICS MDCAT

UNIT-6 (A+ SERIES)

TOPICS:

✓ **Electrostatics**

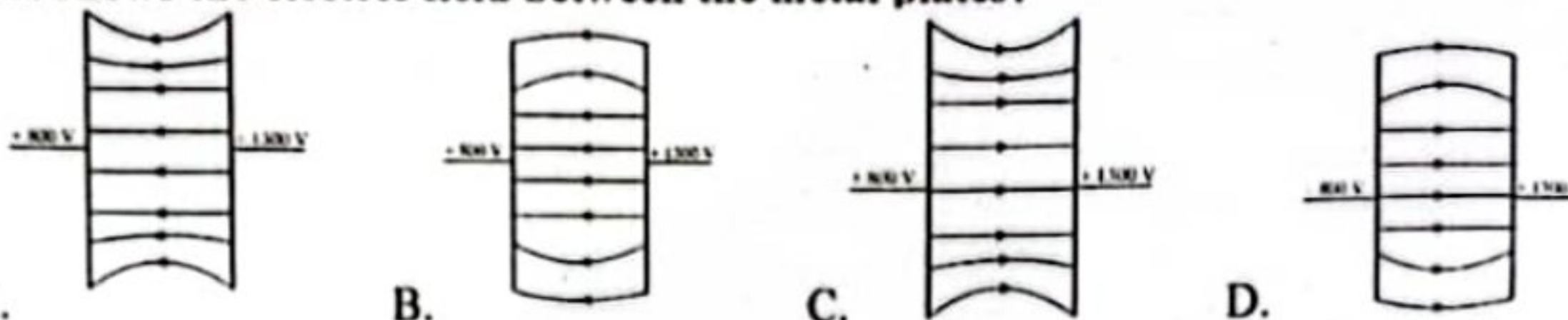
- Q. 1 A parallel plate capacitor is charged and the charging battery is then disconnected. If the plates of the capacitor are now moved apart by means of insulated handles _____
 A. The charge on the capacitor increases
 B. The voltage across the plates decreases
 C. The electrostatic energy stored in the capacitor increases
 D. The capacitance increases
- Q. 2 The work done in placing a charge of 8 micro coulombs on a capacitor of capacity 100 nF is _____
 A. $16 \times 10^{-3} \text{ J}$
 B. $32 \times 10^{-6} \text{ J}$
 C. $3.2 \times 10^{-4} \text{ J}$
 D. $16 \times 10^{-4} \text{ J}$
- Q. 3 Two charge conducting spheres of radii R_1 and R_2 , separated by a large distance, are connected by a long wire. The ratio of the charges on them is _____
 A. $\frac{R_1}{R_2}$
 B. $\frac{R_1^2}{R_2^2}$
 C. $\frac{R_2}{R_1}$
 D. $\frac{R_2^2}{R_1^2}$
- Q. 4 Two plates are 2cm apart. If a potential difference of 10 volts is applied between the plates. The electric field between the plates will be _____
 A. 20 N/C
 B. 250 N/C
 C. 500 N/C
 D. 1000 N/C
- Q. 5 A particle of mass m and charge q is released from rest in a uniform electric field E . The K.E attained by the particle after moving a distance d is _____
 A. $\frac{Ed}{q}$
 B. qEd
 C. qE^2d
 D. $\frac{qE}{d^2}$
- Q. 6 Two charged spheres are separated by 2mm. Which of the following would produce the greatest attractive force?
 A. $+1q$ and $+4q$
 B. $+2q$ and $+2q$
 C. $-1q$ and $-4q$
 D. $+2q$ and $-2q$
- Q. 7 A charge of 10^{-10} C between two parallel plates 1cm apart experiences a force of 10^{-5} N . The potential difference between the plates is _____
 A. 10 V
 B. 10^3 V
 C. 10^2 V
 D. 10^5 V
- Q. 8 The potential difference between two points is 100 V. If a particle with a charge of 2 C is transported from one of these points to the other, the magnitude of the work done is:
 A. 200 J
 B. 100 J
 C. 50 J
 D. 100 J
- Q. 9 Charge $2Q$ and $-Q$ are placed as shown in figure. The point at which electric intensity is zero will be _____



- A. Somewhere between $-Q$ and $+2Q$
 B. Somewhere on the left of $-Q$
 C. Somewhere on the right of $+2Q$
 D. Somewhere on the right bisector of line joining $-Q$ and $+2Q$
- Q. 10 The quantity $(1/2)\epsilon_0 E^2$ has the significance of:
 A. Energy/farad
 B. Energy/coulomb
 C. Energy
 D. Energy/volume
- Q. 11 Two-point charges $+4 \text{ mC}$ and -1 mC are separated by a distance of d . The ratio of force acting on them will be _____
 A. 1:4
 B. 1:1
 C. 1:16
 D. 1:-1
- Q. 12 Electric potential energy and electric potential difference are related as _____
 A. $\Delta U = \frac{q_e}{q}$
 B. $\Delta U = \frac{\Delta v}{q_e}$
 C. $\Delta U = q_e \Delta V$
 D. $U = \frac{\Delta V}{\Delta r}$
- Q. 13 Electric field lines _____
 A. Always cross each other
 B. Cross each other in the region of strong field
 C. Never cross each other
 D. Cross each other in the region of weak field



- Q. 14 Unit of CV^2 is equivalent to that of ?
 A. Energy B. Work C. Power D. None
- Q. 15 Two equal and opposite $5e$ charges are separated by a distance 10 cm. The electric potential at the midway between them is
 A. Zero B. Constant C. High D. Low
- Q. 16 An electric field can deflect
 A. X-rays B. Neutrons
 C. α -particles D. γ -rays
- Q. 17 A particle carrying a charge of $5e$ falls through a potential difference of 25V. What would be energy acquired by the particle in 'J'.
 A. $125 \times 10^{-19} J$ B. $1.6 \times 10^{-19} J$
 C. $125 \times 1.6 \times 10^{-19} J$ D. 125 J
- Q. 18 Two parallel metal plates are at potentials of +800 V and +1300 V. Which diagram best shows the electric field between the metal plates?



- A. B. C. D.
- Q. 19 Two charges are placed at a certain distance. If the magnitude of each charge is doubled the force will become
 A. 1/4th of its original value B. 1/8th of its original value
 C. 4 times of its original value D. 8 times of its original value
- Q. 20 A capacitor having a capacity 2.0 micro farad is charged to 200 volts and then the plates of the capacitor are connected to a resistance wire. The heat produced in joules will be
 A. $4 \times 10^4 J$ B. $4 \times 10^{10} J$ C. $4 \times 10^{-2} J$ D. $2 \times 10^{-2} J$
- Q. 21 The slope of the graph shown in figure below is



- A. Capacitance B. Energy density
 C. Energy stored D. Electric intensity
- Q. 22 If the force between two charges when placed in medium of air and then in oil, is 25N and 5N respectively, then the dielectric constant of the oil is.
 A. $\sqrt{5}$ B. 5 C. 5^2 D. $\frac{1}{5}$
- Q. 23 If a unit charge is taken from one point to another over an equipotential surface:
 A. Work is done on the charge B. Work is done by the charge
 C. Work done on the charge is constant D. No work is done
- Q. 24 Which of the following depends on charging and discharging rate of a capacitor?
 A. Time constant B. Current
 C. Power D. Voltage
- Q. 25 The electric charge of 100 C is 13cm apart from another charge 16.9 C electric force between them is
 A. $9 \times 10^7 N$ B. 900N C. $9 \times 10^5 N$ D. $9 \times 10^{14} N$
- Q. 26 Electric intensity being a vector quantity always points
 A. Along the direction of force experienced by a unit positive charge
 B. Opposite to the direction of force experienced by a unit positive charge
 C. Perpendicular to the direction of force experienced by a unit positive charge
 D. Any of above
- Q. 27 If F is the force acting on the test charge q_0 , the electric field intensity E would be given by
 A. $E = F - q_0$ B. $E = F/q_0$ C. $E = F + q_0$ D. $E = q_0/F$
- Q. 28 If three $15 \mu F$ capacitors are connected in series, the net capacitance is
 A. $5 \mu F$ B. $30 \mu F$
 C. $45 \mu F$ D. $50 \mu F$



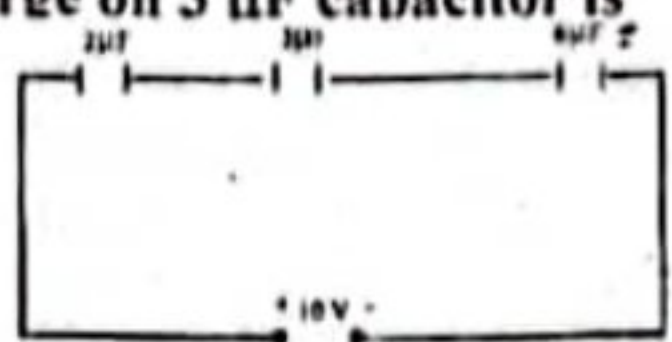
- Q. 29 When the molecules of the dielectric under the action of electric field become dipoles, then the dielectric is said to be
A. Unpolarized
B. Polarized
C. Charged
D. None of these
- Q. 30 When a charge is released in an electric field, it moves from a point of _____ potential
A. In straight line
B. Higher to lower
C. Lower to higher
D. None of these
- Q. 31 A charge Q placed at the centre of two charges $+q$ and $+q$. the system is in equilibrium then net force experienced by Q .
A. Zero
B. F
C. At equilibrium, net force will be zero
D. $F/2$
- Q. 32 Law stating that "force is directly proportional to product of charges and inversely proportional to square of separation between them" is called
A. Newton's law
B. Coulombs law
C. Gauss's law
D. Ohm's law
- Q. 33 An electric charge at rest produces
A. Only a magnetic field
B. Neither electric field nor magnetic field
C. Only an electric field
D. Both electric and magnetic fields
- Q. 34 A capacitor C has a charge Q . The actual charges on its plates are:
A. Q, Q
B. $Q/2, Q/2$
C. $Q, -Q$
D. $Q/2, -Q/2$
- Q. 35 Value of constant K in Coulomb's law has value of
A. 9×10^9
B. 9×10^5
C. 9×10^7
D. 9×10^9
- Q. 36 The charge stored on plates of capacitors is directly proportional to the
A. Potential difference
B. Electric field intensity
C. Electric field
D. Electric field intensity
- Q. 37 The electric lines of force are
A. Imaginary
B. Physically existing everywhere
C. Physically existing near the charges
D. Depends upon the case
- Q. 38 The diagram shows four pairs of large parallel conducting plates. The value of the electric potential is given for each plate. Rank the pairs according to the magnitude of the electric field between the plates, least to greatest.
- | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|
| -20 V | +70 V | +20 V | +70 V | -10 V | +90 V | +30 V | +90 V |
| 1 | 2 | 3 | 4 | | | | |
- A. 1, 2, 3, 4
B. 4, 3, 2, 1
C. 2, 3, 1, 4
D. 2, 4, 1, 3
- Q. 39 The potential at a point, due to a negative charge of $100\mu C$ at a distance of $9m$, is
A. $10^4 V$
B. $-10^5 V$
C. $10^6 V$
D. $10^5 V$
- Q. 40 Two capacitors each of capacitance $2\mu F$ are connected in parallel and this combination is connected in series with a $12\mu F$ capacitor. The resultant capacity of the system will be
A. $16\mu F$
B. $13\mu F$
C. $6\mu F$
D. $3\mu F$
- Q. 41 An object carrying $3C$ of charge is moved 10 cm from point A to point B by an electric field if $V_{AB} = 700\text{ V}$, the work done by the electric field is:
A. 2100 J
B. 210 J
C. 70 J
D. 0.3 J
- Q. 42 A capacitor is a perfect insulator for
A. Direct current
B. Alternating current
C. Both for the direct and alternating current
D. None of the above
- Q. 43 The ratio of electric force between two electrons to two protons separated by the same distance in air is
A. 10^0
B. 10^6
C. 10^4
D. None of these
- Q. 44 Some charge is being given to a conductor. Then its potential
A. Is maximum at surface
B. Is maximum at center
C. Is remain same throughout the conductor
D. Is maximum somewhere between surface and center
- Q. 45 Which of the following is true
A. $\epsilon_r > 1$
B. $\epsilon_r = \frac{\epsilon}{\epsilon_0}$
C. ϵ_r does not have unit
D. All



- Q. 46 SI unit of permittivity of free space is
 A. $C^2 N^{-1} m^{-2}$ B. $N m^2 C^{-1}$
 C. $N m^2 C^{-1}$ D. $N m C^{-2}$
- Q. 47 You have a 12.0 V motorcycle battery that can move 5000 C of charge, the energy deliver by motorcycle
 A. $6 \times 10^4 J$ B. $7 \times 10^{-5} J$
 C. $7 \times 10^5 J$ D. $6 \times 10^{-5} J$
- Q. 48 1 GeV =
 A. $10^9 eV$ B. $10^9 J$ C. $1.6 \times 10^{-9} J$ D. $1.6 \times 10^{10} eV$
- Q. 49 A force of 0.01 N is exerted on a charge of $1 \times 10^{-5} C$ at a certain point. The electric field at that point is
 A. $1 \times 10^6 N/C$ B. $1 \times 10^6 N/C$
 C. $1 \times 10^3 N/C$ D. None of these
- Q. 50 Neutral zone in electric field of two similar charges is region where
 A. Both positive and negative charges are present
 B. Equal quantity of both positive and negative charges are present
 C. An electric dipole exists
 D. No electric field line passes
- Q. 51 Electric field intensity is a
 A. Scalar quantity B. Linear quantity
 C. Vector quantity D. None of these
- Q. 52 Which one of the following statement regarding electrostatics is wrong?
 A. Charge is conserved
 B. Charge is quantized
 C. There is no field near an isolated charge at rest
 D. A moving charge produces both electric and magnetic fields
- Q. 53 From the following figure:



- The time constant of the above circuit is
 A. 4.0 ms B. 2.5 sec C. 25 ms D. 4.0 sec
- Q. 54 A proton has a mass of $1.67 \times 10^{-27} kg$ and charge $1.6 \times 10^{-19} coulomb$. If the proton is to be accelerated through a potential difference of one million volts, then the K.E is:
 A. $1.6 \times 10^{-15} J$ B. $1.6 \times 10^{-13} J$ C. $1.6 \times 10^{-13} J$ D. $3.2 \times 10^{-13} J$
- Q. 55 A capacitor has charge $50 \mu C$ when connected to a battery. When a dielectric is placed between the plates $120 \mu C$ charge flows through the battery. The relative permittivity of dielectric is
 A. 1.4 B. 2.4 C. 3.4 D. 4.4
- Q. 56 A charge Q is divided into two parts q and Q-q and separated by a distance R. The force of repulsion between them will be maximum when:
 A. $q = Q/4$ B. $q = Q/2$
 C. $q = Q$ D. None of these
- Q. 57 In the figure below, the charge on $3 \mu F$ capacitor is



- A. $5 \mu C$ B. $10 \mu C$
 C. $3 \mu C$ D. $6 \mu C$
- Q. 58 A capacitor consists of two
 A. Ceramic plates and one mica disc B. Insulators separated by a dielectric
 C. Silver coated insulators D. Conductors separated by an insulator
- Q. 59 If we measure the intensity of the electric field (E) at various points between the surface and the centre of a uniformly charged spherical conductor we find that the intensity of electric field
 A. Goes on increasing B. Goes on decreasing
 C. Is zero at all points D. Remains the same at all points
- Q. 60 When a capacitor is connected to DC supply a charging current will flow. This current:
 A. Flows through the capacitor's electrostatic field
 B. Will flow through the dielectric on each half cycle
 C. Flows through the insulating material in the circuit
 D. Does not flow through the capacitor

	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D
1	○	●	●	○	16	○	○	●	○	31	○	○	●	○	46	●	○	○	○
2	○	○	●	○	17	○	○	●	○	32	○	●	○	○	47	○	○	○	○
3	●	○	○	●	18	○	●	○	○	33	○	○	●	○	48	●	○	○	○
4	○	○	●	○	19	○	○	●	○	34	○	○	●	○	49	○	○	●	○
5	○	●	○	○	20	○	○	●	○	35	○	○	○	●	50	○	○	○	●
6	○	○	○	●	21	●	○	●	○	36	●	○	○	○	51	○	○	●	○
7	○	●	○	●	22	○	●	○	●	37	●	○	○	○	52	○	○	●	○
8	●	●	○	○	23	○	○	○	●	38	○	○	○	●	53	○	●	○	○
9	○	●	○	○	24	●	○	○	○	39	○	○	○	○	54	○	○	○	○
10	○	○	○	●	25	○	○	○	●	40	○	○	○	○	55	○	○	○	○
11	○	○	○	●	26	●	○	○	●	41	○	○	○	○	56	○	○	○	○
12	○	○	●	○	27	○	●	○	○	42	●	○	○	○	57	○	○	○	○
13	○	○	●	○	28	●	○	●	○	43	○	○	○	○	58	○	○	○	●
14	○	●	○	○	29	○	●	○	○	44	○	○	○	○	59	○	○	●	○
15	●	○	○	○	30	○	●	○	○	45	○	○	○	●	60	○	○	○	●

LOGICAL REASONING MDCAT

UNIT- 4 (A+SERIES)

TOPIC:

✓ **COURSE OF ACTION**

Q.1 Statement:

A lot of unscrupulous and non affiliated colleges have started to lure unsuspecting students by giving attractive advertisements

Courses of Action

I. Students should make appropriate enquiries while enrolling in any course.

II. The government should initiate strict action against such college authorities.

A. If only I is most appropriate

B. If only II is most appropriate

C. If either I or II is most appropriate

D. If neither I nor II is most appropriate

E. If both I and II are most appropriate

Q.2 Statement:

The colony has suffered major thefts and break-ins due to lax security systems

Courses of Action

I. Security should be strengthened in the colony.

II. Residents and regular visitors and their vehicles should be provided with identity cards and stickers for better control of who is coming and going into the colony.

A. If only I is most appropriate

B. If only II is most appropriate

C. If either I or II is most appropriate

D. If neither I nor II is most appropriate

E. If both I and II are most appropriate

Q.3 Statement:

The LESCO has been unable to provide 24 hours electricity leading to tremendous economic loss.

Courses of Action

I. The Government must provide for increasing electricity consumption

II. The government should check the electricity theft cases.

A. If only I is most appropriate

B. If only II is most appropriate

C. If either I or II is most appropriate

D. If neither I nor II is most appropriate

E. If both I and II are most appropriate

Q.4 Statement:

A sting operation conducted by a TV news channel proved to be a total failure as the reporter who carried out the sting was found to have created a fake sting in order to gain publicity and money.

Courses of Action

I. Disciplinary action must be initiated immediately against the reporter.

II. The TV channel should be penalized and taken off air for a short period of time.

A. If only I is most appropriate

B. If only II is most appropriate

C. If either I or II is most appropriate

D. If neither I nor II is most appropriate

E. If both I and II are most appropriate

Q.5 Statement:

There is a shortage of power in Pakistan.

Courses of Action

- I. There should be more power projects initiated by the government.
 - II. The government should encourage private investment in power projects.
- A. If only I is most appropriate B. If only II is most appropriate
C. If either I or II is most appropriate D. If neither I nor II is most appropriate
E. If both I and II are most appropriate

Q.6 Statement:

The reduction of the tax rates has led to an increase in the tax collection as there has been higher compliance

Courses of Action

- I. It should be made compulsory every Pakistani to pay tax.
 - II. Tax rates should be further reduced and a further increase in tax collections can be expected on doing so.
- A. If only I is most appropriate B. If only II is most appropriate
C. If either I or II is most appropriate D. If neither I nor II is most appropriate
E. If both I and II are most appropriate

Q.7 Statement:

An unacceptable number of children die during the first year of their lives. The high incidence of infant deaths is a major cause for concern for the health ministry

Courses of Action

- I. All government hospitals should be privatized to improve health care facilities.
 - II. Governments should commit higher levels of their budget to health services
- A. If only I is most appropriate B. If only II is most appropriate
C. If either I or II is most appropriate D. If neither I nor II is most appropriate
E. If both I and II are most appropriate

Q.8 Statement:

The cream of Pakistan's cricket team is likely to retire in the next three years leaving a vacuum which the Pakistan cricket team is going to struggle to overcome.

Courses of Action

- I. The PCB should start to induct youngsters into the team and start to give them exposure to pressure situations.
 - II. There should be a rotation policy adopted for senior players in order to prolong their careers and keep them injury free.
- A. If only I is most appropriate B. If only II is most appropriate
C. If either I or II is most appropriate D. If neither I nor II is most appropriate
E. If both I and II are most appropriate



- Q.14** Rice : Cook :: Fish : ?
- A. Bake
B. Fry
C. Sizzle
D. Roast
- Q.15** If in a certain language GRASP is coded as BMVNK, which word would be coded as CRANE?
- A. FUDQH
B. HWFSJ
C. GVERI
D. XMVIZ
- Q.16** Statements:
- Tom puts on his socks before he puts on his shoes.
He puts on his shirt before he puts on his jacket.
Tom puts on his shoes before he puts on his shirt.
If the first two statements are true, the third statement is
- A. True
B. False
C. Uncertain
D. None of these
- Q.17** Statements:
- Some sacks are backs.
All backs are bones.
No bone is muscle.
- Conclusions:
- I. Some sacks are not muscles.
II. Some sacks are not bones.
III. All sacks are bones.
IV. No sack is muscle.
- A. Only I follows
B. None follows
C. Only IV follows
D. None of these
- Q.18** 2, 0, 5, 3, ?, 8, 17
- A. 9
B. 10
C. 6
D. 8
- Q.19** What should come next in the series 12 234 3456?
- A. 45678
B. 6789
C. 34567
D. None of these
- Q.20** Find the one which does not belong to that group
- A. Spider
B. Housefly
C. Mosquito
D. Bee

	A	B	C	D		A	B	C	D	
1						16				
2						17				
3						18				
4						19				
5						20				
6						21				
7						22				
8						23				
9						24				
10						25				
11						26				
12						27				
13						28				
14						29				
15						30				



ENGLISH MDCAT

TEST-6 (A+ SERIES)

TOPICS:

**FUNCTIONAL WORDS (PREPOSITION)
VOCABULARY (51-75)**

Directions:

Spot the Error

- Q.1 The total number of (A) stars in (B) the universe is probably something as (C) the total number of grains of sand on (D) all the seashores of the world.
A. of B. in C. as D. on
- Q.2 The sun and the other stars we see at (A) the sky are all extremely hot - far too hot for (B) life to (C) exist on (D) them.
A. at B. for C. to D. on
- Q.3 We cannot find any (A) sign that life like (B) our own exists anywhere in (C) it except at (D) the earth.
A. any B. like C. in D. at
- Q.4 Many of them situated (A) where human wastes drained (B) wells from (C) which people obtained (D) drinking water.
A. situated B. drained C. from D. obtained
- Q.5 Carried in (A) a pipe line, or aqueduct, a thousand million litres of water (B) are delivered to (C) the district daily. (D)
A. Carried in B. a thousand million litres of water
C. delivered to D. the district daily
- Q.6 I have made a number of (A) very warm enemies with (B) the parents of college students by (C) telling (D) them reality.
A. a number of B. with C. by D. telling
- Q.7 To see (A) boys by the dozen take jobs lasting from (B) six o'clock in (C) the evening by (D) two in the morning is a heartrending spectacle.
A. Too see B. from C. in D. by
- Q.8 If a boy is too much (A) interested with (B) these side shows he ought to (C) get out of (D) the main tent.
A. too much B. interested with C. ought to D. get out of
- Q.9 I believe (A) a school teacher wrote (B) a book some years ago (C) in (D) title "Friday Thank God".
A. believe B. wrote C. ago D. in
- Q.10 These were blessed breaks in routine (A), but not, of course (B), comparable to (C) the holidays we got on Christmas. (D)
A. in routine B. of course C. comparable to D. on Christmas

Directions:

Choose the Correct Option

- Q.11
A. She's been sitting in the waiting room in two-thirty.
B. She's been sitting in the waiting room from two-thirty.
C. She's been sitting in the waiting room for two-thirty.
D. She's been sitting in the waiting room since two-thirty.
- Q.12
A. Mr. Steward will call with you at 8.00 P.M. B. Mr. Steward will call on you in 8.00 P.M.
C. Mr. Steward will call on you on 8.00 P.M. D. Mr. Steward will call out you at 8.00 P.M.
- Q.13
A. They were shot as they launched an attack at the police station.
B. They were shot as they launched an attack the police station.
C. They were shot as they launched an attack on the police station.
D. They were shot as they launched an attack over the police station.
- Q.14
A. The desire for a boy may lead a husband to marry with another woman.
B. The desire for a boy may lead a husband to marry to another woman.
C. The desire for a boy may lead a husband to marry of another woman.
D. The desire for a boy may lead a husband to marry another woman.
- Q.15
A. The next day Mr. Chips was in bed with bronchitis.
B. The next day Mr. Chips was on bed with bronchitis.
C. The next day Mr. Chips was at bed with bronchitis.
D. The next day Mr. Chips was over bed with bronchitis.
- Q.16
A. I ploughed on the mountain with a mule. B. I ploughed the mountain with a mule.
C. I ploughed at the mountain with a mule. D. I ploughed over the mountain with a mule.

