Dow University of Health Sciences

Examinations Department

Medical Universities of Sindh

MDCAT Test – 2022

Time Allowed: Three Hours and 30 Minutes

BIOLOGY

1) **Hepatitis is caused by:**
   a) Protozoans
   b) Algae
   c) Bacteria
   d) Fungi
   e) Virus

2) **Syphilis is caused by a bacteria called as:**
   a) Bacilli
   b) Trichomonas
   c) Neisseria gonorrhea
   d) Genital herpes
   e) Treponema palladium

3) **Presence of remnant of pelvic girdle in whale and snake although they never have legs, shows evidence from:**
   a) Biochemical evidenc
   b) Paleontology
   c) Vestigial organs
   d) Embryology
   e) Taxonomy

4) **Photosynthetic bacteria liberate:**
   a) CO_2
   b) H_2S
   c) Sulphur
   d) Hydrogen
   e) O_2

5) **Plasma membrane is**:
   a) Permeable
   b) Selective permeable

c) impermeable
d) Sub permeable
c) Non permeable

6) **Water is the most abundant compound in living organism its amount varies from:**
a) 30% to 60%
b) 50% to 60%
c) 10% to 20%
d) 70% to 90%
c) 40% to 50%

7) **The phase in which bicuspid and tricuspid valves open & semilunar valve close which produces a 2nd heart sound (dub or dup). This the phase is known as:**
a) Atrial diastole
b) Ventricular diastole
c) Ventricular systole
d) Contraction of heart
e) Systole

8) **Phenotypic ratio of law of independent assortment of genes:**
a) 9 : 7
b) 13 : 3
c) 9 : 3 : 3 : 1
d) 15 : 1
e) 12 : 3 : 1

9) **Triose and glycerol is used in the synthesis of**:
a) Carbohydrate
b) Protein
c) Lipid
d) Fatty acid
e) Phospholipid

10) **They are inhibitors of key enzymes in the nervous system:**
a) Calcium and Potassium
b) Substrate and activators
c) Hexokinase and glucose
d) Magnesium and manganese
e) Pesticides DDT and parathione

11) **Plant hormone associated with apical dominance is:**
a) Auxin
b) Gibberellin
e) Cytokinin

d) Ethene
e) Abscisic acid

12) **Bolus enters the esophagus not the trachea due to presence of:**
a) Roof palate
b) Mouth
c) Epiglottis
d) Buccal cavity
e) Tongue

13) **Net ATP produced at the end of glycolysis:**
a) 2 ATP
b) 4 ATP
c) 6 ATP
d) 3 ATP
c) 8 ATP

14) **Class turbellaria, Trematoda, Cestoda belongs to phylum:**
a) Echinodermata
b) Porifera
c) Aschelminthes
d) Cnidaria
e) Platyhelminthes

15) **Spikelet inflorescence is the characteristic of family:**
a) Solanaceae
b) Rosaceae
c) Fabceae
d) Poaceae
e) Mimosaceae

16) **Each myosin is surrounded by:**
a) Motor nerves
b) Myosin head
c) 6-actin filaments
d) 2-actin filaments
e) 4-actin filaments

17) **Synthesis of disaccharide by condensation two glucose joined by glycosidic linkage to form:**
a) Galactose
b) Lactose
c) Fructose
d) Phosphate
e) Maltose

18) **White eyed trait in drosophila is due to:**
a) Linkage
b) Mutation
c) Crossing over
d) Genome

e) Gene pool

19) **Enzymes are generally inactivated rapidly by exposure to UV high and also a, ß rays because it alters the:**
a) Quantity of enzyme
b) pH of enzyme
c) Shape of enzymes
d) Temperature of enzyme
e) Nature of enzyme

20) **In frog New air drawn into bucco-pharyngeal cavity through nostrils and old air retained under pressure in:**
a Lungs
b) Nasal
e Glottis
d) Trachea
e) Nostrils

21) **Genetic information in DNA is stored in the form of:**
a) Genetic code
b) Chromosome
c) Amino acid
d) Helix
e) Hydrogen bond

22) **Pyruvic acid is acid of:**
a) 4 carbon compound
b) 5 carbon compound
c) 6 carbon compound
d) 7 carbon compound
e) 3 carbon compound

23) **Plant cell wall is made up of:**
a) Lignin
b) Hemicellulose
s) Cuin
d) Chitin
e) Cellulose

24) **Plant like character found in Euglena:**
a) Pyrenoid
b) Cilia
c) Photoreceptor
d) Flagellum
e) Pellicle

25) **It has neurosecretory cells that secrete releasing & inhibiting hormone:**
a) Pituitary gland
b) Thyroid gland
c) Adrenal gland
d) Master gland

e) Hypothalamus

26) **It is the seat of all conscious activity:**
a) Hind brain
b) Cortex
c) Spinal cord
d) Mid brain
e) Medulla oblongata

27) **The common energy currency of the cell is:**
a) NHDP
b) ADP
c) ATP
d) NADH
e) PEPS

28) **Scorpoid cyme is found in:**
a) Cotton
b) Mulberry
c) Sunflower
d) Sundew
e) Banana

29) **Bacteria having flagella all over the surface:**
a) Lophotrichous
b) Peritrichous
c) Atrichous
d) Monotrichous
e) Diplotrichous

30) **A hormone secreted from the duodenal mucosa that changes the inactive trypsinogen into trypsin is:**
a) Peptone
b) Ecdysone
c) Enterokinase
d) Amylase
e) Protease

31) **Cell become dead due to the deposition of:**
a) Cellulose
b) Cutin
c) Chitin
d) Lignin
e) Hemicellulose

32) **Rabies is caused by:**
a) Paramyxovirus
b) Rhinovirus
c)Arbovirus
d) Rhabdovirus

e) Poliovirus

33) **In AIDS "D" stands for:**
a) Different
b) Difficult
e) Deficiency
d) Degenerate
e) Decompose

34) **It is a loop or set or response shown by the effectors that weaken the affect of the initial stimuli:**
a) Negative feed back
b) Neutral condition
e) Positive feed back
d) Static state
e) Thermal state

35) **Crossing over in meiosis occurs during the following stage:**
a) Diakinesis
b) Diplotene
c) Leptotene
d) Zygotene
e) Pachytene

36) **A co-enzyme constitutes about certain % of portion of entire enzyme:**
a) 5%
b) 1%
c) 2%
d) 3%
e) 4%

37) **Each chain of DNA is formed by the union of many nucleotides by means of:**
a) Double bond
b) Phosphodiester bonds
c) Covalent bond
d) Hydrogen bond
e) Single bond

38) **Mimosa pudica shows:**
a) Thermonastic
b) Haptonastic
c) Nyctinastic
d) Seismonastic
e) Photonastic

39) **Mendel's for his research selected:**
a) Edible-pea
b) Garden pea
c) Bean plant
d) Wild pea

e) Pea-nut

40) **This lipid is most common abundant richest source of energy in plant, and animal body:**
a) Phospholipid
b) Carotenoids
c) Terpenoids
d) Terpenes
e) Acylglycerol

41) **The organs perform same functions in different groups of organism but are different in this internal structure called as:**
a) Homologous organs
b) Bisymmetry
c) Analogous organs
d) Radial symmetry
e) Asymmetry

42) **The hard parts of the seeds is, due to the presence of:**
a) Collenchyma
b) Sclerenchyma
e) Sclereids
d) Fibres
e) Parenchyma

43) **Virus is a latin word meaning:**
a) Sweet
b) Sour
c) Poison
d) Toxic
e) Acidic

44) **In the heart the thick-walled chambers are located at the:**
a) Apex
b) Lower side
c) Lateral side
d) Dorsal side
e) Ventral side

45) **Extremely thin appendages helping during conjugation in bacteria:**
a) Pili
b) Membrane
c) Flagella
d) Tentacle
e) Cilia

46) **Colourless plastid is called:**
a) Leucoplast
b) Chromoplast
c) Cyanoplast
d) Erythroplast

e) Chloroplast

47) **Evolution is the transformation of the form & mode of existence of an organism in such manner that the descendants differ from their ancestor, according to:**
a) Weismann
b) Lamark
c) Charles
d) Zimmermann
c) Darwin

48) **Uterus opens to the vagina by a narrow opening bounded by muscular sphincter at its bottom known as:**
a) Urinary bladder
b) Cervix
c) Oviduct
d) Labia
e) Vagina

49) **Skeleton of marine shelled sarcodians give clues to possible deposit of:**
a) Potassium
b) Magnesium
c) Petroleum
d) Chromium
e) Calcium

50) **Spinal cord comes out from the cranium though a opening known as:**
a) Foramen magnum
b) Lumen
c) Ganglion
d) Acetabulum
e) Glanoid cavity

51) **Endocytosis which involve ingestion of solid material is called:**
a) Solidocytosis
b) Phagocytosis
c) Exocytosis
d) Pinocytosis
e) Autocytosis

52) **Plant like prototista called:**
a) Bryophytes
b) Bacteria
c) Fungi
d) Tracheophytes
e) Algae

53) **When substrate combines the active site of an enzyme it induces a conformational change that enable enzyme to perform:**
a) Analytic function
b) Metabolism
c) Meosis

d) Mitosis
e) Catalytic function

54) **Mendel's selected following pair(s) of contrasting character:**
a) One/single pair
b) Seven pairs
c) Three pairs
d) Four pairs
e) Two pairs

55) **Powerhouse of the cell is:**
a) Ribosomes
b) Endoplasmic reticulum
c) Chloroplasts
d) Mitochondria
e) Chromoplasts

56) **The tidal volume of lungs at rest or during normal breath is:**
a) 4 liters
b) 6 liters
c) 5 liters
d) 3 liters
e) 2 liters

57) **They detect pain and tissue damage:**
a) Baroreceptors
b) Chemoreceptor
c) Photoreceptor
d) Nocireceptors
e) Mechanoreceptor

58) **Phenotypic ratio of single trait inheritance:**
a) 1:21
b) 3:1
c) 1:2
d) 1:3:2
e) 1:1

59) **Artificial selection in breeding provides evidence for evolution is known as:**
a) Domestication
b) Deme
c) Gene pool
d) Desire trait
e) Genetic death

60) **Molecules of amylose consists of unbranched chains of hundreds of glucoses sub** units, join together by:
a) 1-2 glycosidic linkage
b) 2-3 glycosidic linkage
o) 1-4 glycosidic linkage
d) 1-3 glycosidic linkage

e) 1-6 glycosidic linkage

61) **It provides protection of coastline from storm, shelter for marine organisms, assist in carbon & nitrogen fixing:**
a) Polyps
b) Coral reefs
c) Medusa
d) Aurelia
e) Hydra

62) **Each enzyme has a dimple or groove at a specific side called:**
a) Co-factor
b) Active site
c) Non active site
d) Substrate
e) Prosthetic group

63) **Light reaction of photosynthesis takes place in:**
a) Cristae
b) Stroma
c) Cisternac
d) Matrix
e) Thylakoid

64) **The vacated vesicular follicle forms a fatty yellow structure on ovary called as:**
a) Graafian luteum
b) Corpus luteum
c) Ruptured ovum
d) Follicle
e) Progestron

65) **Achatina fulica is an African giant snail that is dangerous:**
a) Agricultural pest
b) For silk worm
c) For paper industry
d) Apiculture pest
e) Sericulture pest

66) **The enzyme which is used in calvin cycle is:**
a) Oxidase
b) Reductase
c) Isomerase
d) Rubisco
e) Pepsin

67) **The flexible articulating cartilage between the joints becomes denatured by the deposition of calcium which makes the bone hard. The disease is:**
a) Disc slip
o) Rickets
c) Spondylosis
d) Arthritis

e) Sciatica

68) **HB molecules in each RBCs:**
a) 280 millions
b) 150 millions
c) 380 millions
d) 170 millions
e) 180 millions

Chemistry

69) **In exothermic reaction, by decreasing the temperature, equilibrium constant:**
a) Same
b) Sometimes decreases sometimes increases
c) Reaction moves backward
d) Decreases
e) Increases

70) **Viscosity is the measure of:**
a) Volume
b) Resistance in the flow of a liquid
c) Fluidity of liquid
d) Mass
e) Density

71) **Acetone gives:**
a) Fehling solution test positive
b) Silver mirror test positive
c) Lucas test positive
d) Iodoform test positive
e) Benedicts test positive

72) **The equation $\bar{v} = RH\{1/2^2 - 1/n^2\}$ where n > 2 is the equation of H spectrum for.**
a) Paschen series
b) Pfund series
c) Bracket series
d) Lyman series
e) Balmar series

73) **The equation of the first law of thermodynamics q= ΔE + *W*, will reduce at constant volume to:**
a) ΔE + W
b) qv = ΔE + PAV
c) qv = ΔE + W
d) qv = ΔE
e) qv = PΔGV

74) **The electrolysis of dilute acid solution gives:**
a) Cl_2 at cathode & H_2 at anode
b) H_2 at cathode & Cl_2 at anode
c) H_2 at cathode & O_2 at anode
d) H_2 at anode & Na at cathode
e) H_2 at anode & O_2 at cathode

75) **Oswald's process is the oxidation of**
a) H_2S
b) NH_3
c) HNO_3
d) H_2SO_4
e) Cl_2

76) **The dipolar moment of CO_2 is zero because it is:**
a) Angular
b) Linear
c) Triatomic
d) Pyramidal
e) CO_2 is polar

77) **The two crystals Na NO_3 & $CaCO_3$ are both trigonal, they are:**
a) Isomers
b) Polymorphs
c) Allotropes
d) Enantiomers
e) Isomorph

78) **Nylon^{66} is a:**
a) Addition polymer
b) Condensation polymer of hexandioic acid & 1,6 diamino hexane
c) It is an ester
d) Condensation polymer
e) It is a carboxylic acid

79) **Ehene ($H_2C = CH_2$) has hybridization of C-atom:**
a) dsp^3
b) sp
c) sp^3
d) d^2sp^3
e) sp^2

80) **The kinetic molecular theory of gases explains:**
a) Mass number
b) Atoms number
c) The behavior of gases
d) Electron
e) Neutron

81) **2-chloropropane is heated with Na metal product is 2.3-dimethyl butane, reaction is.**
a) Dehydrohalogenation
b) Wurtz reaction
c) Dehydration
d) Catalytic hydrogenation
e) Dehalogenation

82) **At equilibrium in a reversible reaction:**
a) The rate of backward reaction > rate of forward reaction
b) The rate of forward reaction > rate of backward reaction
c) The rate of forward reaction is same as rate of backward reaction
d) The concentration of reactants & products becomes constant & the rate of forward reaction is same as the rate of backward reaction
e) The concentration of reactant & products becomes constant

83) **Rate of reaction increases by the addition of catalyst because:**
a) Catalyst reacts with reactant
b) Catalysts reacts with product
c) Energy of activation decreases
d) Energy of activation increases
e) Energy of activation remains same

84) Reaction H_2+Cla→ 2HCl is a:
a) Second order
b) First order
c) Half order
dy Third order
e) Zero order

85) The comparison of rate of diffusion of H_2 & O_2 is in the ratio of:
a) 2 :1
b) 1 : 4
c) 3 : 2
d) 4 : 1
e) 1 : 2

86) **Grignard reagent, eg Methyl magnesium halide reacting with Methyl halide, product is:**
a) N - propyl chloride
b) Butane
e) Iso - propyl chloride
d) Methane
e) Ethene

87) **HOOC - COOH has IUPAC name:**
a) Acetic acid
b) Oxalic acid
c) diethanoic acid
d) ethandioic acid
e) Benzoic acid

88) Pulverized $CaCu_3$ reacts faster because of the increase in:
a) Pressure

b) Surface area
c) Volume
d) Surface tension
e) Temperature

89) Oxidation of K_2MnO_4 by Cl_2 is to manufacture
a) K_2CrO_4
b) MnO_2
c) $K_2 Cr_2 O_4$
d) $KMnO_4$
e) O_2

90) Aldehyde reacts with:
a) Ketones are more easily oxidized
b) It is always difficult to oxidase aldehyde
Mild oxidizing agent & strong oxidizing agent both
d) Only strong oxidizing agent
e) Only mild oxidizing agent

91) **Benzene is subjected to alkylation nitration & oxidation the product is:**
a) o & p nitro toluene
b) m-nitro benzoic acid
c) m-nitro toluene
d) o & p nitro benzoic acid
e) o-nitro benzoic acid

92) **In Castner Kellner cell:**
a) NaOH + H_2 are produced at cathode
b) Cl_2 is produced at anode
c) NaOH + H_2 are produced at anode
d) NaOH + H_2 are produced at cathode & Cl_2 is produced at anode
e) Cl_2 is produced at cathode

93) **Bakelite is polymer of:**
a) Two glucose molecules
b) Formaldehyde & acetone
c) Two amino acid molecule
d) Formaldehyde & phenol
e) Acetone & carboxylic acid

94) Phenol when subjected to nitration product is:
a) o - nitro phenol
b) p - nitrophenol
c) o - nitro phenol & m - nitrophenol
d) o - nitro phenol & p - nitro phenol
e) m - nitro phenol

95) Heating a mixture of chromite are (FeOCr.Os) & KCO; in air is to manufacture:
a) KzMnO
b) K2CrO
c) KMnO

d) KI
e) K2CrO

96) A strong electrolyte is one that _____ completely in solution:
a) Reacts
b) Decomposes
c) Disappears
d) Ionizes
e) Never ionizes

97) **Cation & Anion formed which combines to form crystal lattices:**
a) Only cation is isoelectronic to nearest noble gas
b) Cation & anion both are isoelectronic to nearest noble gas
c) Cation & anion both are isoelectronic to nearest noble gas & No of electron lost by metal & no of electron gained by non metal are equal
d) Only anion is isoelectronic to nearest noble gas
e) No of electron lost by metal & no of electron gained by non metal are equal

98) Secondary alcohols have:
a) One **βc**
b) Three **βc**
c) No **βc**
d) Two **βc**
e) Four **βc**

99) **Small diffusion in solid is due to:**
a) Very fast motion of its particle
b) Vibrational motions of its particle
c) Rotational motion of its particle
d) Translational motion of its particle
e) Diffusion into solid is not present

100) Gases deviate from ideal behavior more:
a) Gases do not deviate from ideal behavior
b) Both temperature & pressure low
c) Both temperature & pressure high
d) At high pressure & low temperature
e) At low pressure & high temperature

101) **3.0 g of C on combustion gives**
$C + O_2 \rightarrow CO_2$
a) 5.5 g of CO_2
b) 22 g of CO_2
c) 6.02×10^{23} molecules of CO_2
d) 3.01×10^{23} molecules CO_2
e) 1.505×10^{23} molecules of CO_2

102) Alkyl halide, on reaction with NaOH, product is an alkane. Mechanics of reaction is:
a) S_n
b) Elimination

c) Decomposition
d) Electrophilic substitution reaction
e) Addition

103) The first organic compound manufactured from inorganic compound was:
a) Ethyl acetate
b) Urea
c) Acetic acid
d) Methane
e) Acetone

104) The ionization energy increases along a period in periodic table due to increase in:
a) No. of positron
b) No. of neutron
c) Nuclear charge
d) No. of electron
e) Atomic size

105) Reaction taking place in one stop or in several stops have same ΔH, it is statement of:
a) Lussac's law of combining volume
b) Hess's law
c) Boyle's law
d) Charle's law
e) Avogadro's law

106) Oxidation of primary alcohol gives:
a) Aldehyde
b) Ketone
c) Alkane
d) Alkene
e) Alkaloids

107) Primary alcohol when react with a halogen acid, the product is:
a) Secondary alcohol
b) Tertiary alcohol
c) Primary alcohol
d) Primary alkyl halide
e) Secondary alkyl halide

108) Acetophenone is an:
a) Aliphatic ketones
b) Phenol
c) Carboxylic acid
d) Aldehyde
e) Aromatic ketones

109) **SN_1 mechanism is a:**
a) Formation of carbocation is fast step
b) Single step mechanism

c) Two step mechanism
d) Attack of nucleophile an carbocation is slow step
e) Primary alkyl halide follows Sul mechanism

110) Hexanoic acid is IUPAC name:
a) Adipic acid
b) Propionic acid
c) Formic acid
d) Caproic acid
e) Butyric acid

111) **The option having all the properties of γ-rays:**
a) Neutron highly penetrating, velocity is equal to that of light. Remain un deflected in magnetic filed
b) Most penetrating, velocity is equal to that of light no deflection in magnetic field, short wave length, shorter than x-rays
c) Least penetrating, velocity of light deflects in magnetic field helium nucleus
d) Proton least penetrating, deflects like negative particle in magnetic field
e) Most penetrating power, velocity less than that light of deflects in magnetic filed they are electron

112) The solubility product Ksp predicts whether:
a) Diffusion
b) Solubility
c) Precipitation will take place or not
d) Boiling point
e) Melting point

113) In protein, amino acid molecules are linked by:
a) Glucosidic linkage
b) Glycosidic linkage
e) Peptide linkage
d) Ethane linkage
e) Ester linkage

114) Ratio of atomic mass of hydrogen to atomic mass of C is:
a) One xixth
b) One twelfth
c) Half
d) Double
e) Equal

115) Reforming:
a) Increases knocking of internal combustion engine
b) Increases octane number
e) More is the knocking, better is the fuel
d) To produce a fuel of less octane number
e) Decreases octane number

116) Addition product of formaldehyde & ethyl alcohol is:
a) Aldehyde

b) Acetal
c) Carboxylic acid
d) Acctone
e) Ketone

117) Down cell is for the:
a) Metallurgy of Na
b) Metallurgy of Mg
c) Metallurgy of Al
d) Metallurgy of Fe
e) Metallurgy of Ca

118) Falling drop of liquid is spherical due to its:
a) Evaporation on exposure
b) Surface tension
e) Atomic structure
d) Viscosity
e) Vapor pressure

119) Catalytic hydrogenation of oil gives:
a) Alkene
b) Alkyne
e) Soap
d) Alkyl halides
e) Fat

120) Benzyl alcohol $C_6H_5CH_2OH$ is a:
a) Aromatic alcohol
b) Phenol
c) Aromatic ketone
d) Aliphatic alcohol
e) Alicyclic alcohol

121) Ammonia Solvay process is an industry for manufacture of:
a) HNO_3
b) HCL
c) Soda Ash (Na_2CO_3)
d) H_2SO_4
e) $CaCO_3$

122) **The quantum number allows the following orbitals in M shell:**
a) s - orbital
b) s, p, d & f orbital
c) s & p orbital
d) All options correct
e) s, p & d orbitals

PHYSICS

123) When different resistors are connected across the terminal of a battery:

a) both emf and terminal potential difference gradually change
b) both emf and terminal potential difference change
c) its emf changes but terminal potential difference remain same
d) both emf and terminal potential difference remain same
e) its emf remain the same but terminal potential difference changes

124) **The minimum energy of photon for pair production is:**

4) 1023
b) 1026V
c) 102MeV
d) 102Gev
4) 102keV

125) The mathematical equation representing Faraday's law is:

a) E = $N\frac{\Delta I}{\Delta t}$
b) E = $-\frac{N\Delta\emptyset}{\Delta t}$
c) E = $\frac{N\Delta I}{\Delta t}$
d) E = $-\frac{\Delta\emptyset}{\Delta t}$
e) E = $-(\Delta\emptyset)\Delta I$

126) **A cyclist moving on a circular track skids because:**

a) The limiting friction is perpendicular to the centripetal force
b) The limiting friction is greater than the required centripetal force
c) The limiting friction is opposite to the centripetal force
d) The limiting friction is equal to the required centripetal force
e) The limiting friction is less than the required centripetal force

127) A body is dropped from certain height and falls freely, its velocity after 5 seconds will be:

a) 94m/s
b) 9.4m/s
c) 0.49m/s
d) 4.9m/s
e) 49m/s

128) Two transverse travelling waves are presented by these equations.

$y_1 = A_o$ Sin $(kx - wt)$ **and** $y_2 = A_o$ Sin $(kx - wt - \emptyset)$. **These two waves differ in:**

a) Amplitude
b) Frequency
c) Wavelength
d) Phase
e) Direction of propagation

129) **In equations** E= $-\frac{\Delta V}{\Delta r}$**, Negative sign indicates that:**

a) 'E' points towards increasing '*V*'

b) 'E' points towards decreasing '*V*'
c) 'E' is perpendicular to '*V*'
d) 'E' is parallel to ΔV
e) 'E' is opposite to ΔV

130) The path of a neutron moving perpendicular to magnetic field is:
a) Curve
b) Straight line
c) Circle
d) Ellipse
e) Parabola

131) A battery of emf 'E' has an internal resistance Y. If current 'I' is drawn then terminal potential 'V_1' is given by:
a) $V_1 = E + Ir$
b) $V_1 = E - Ir$
c) $V_1 = \frac{E}{I-r}$
d) $V_1 = Er$
e) $V_1 = \frac{E}{I+r}$

132) The instantaneous emf generated by alternating current generator is written as:
a) $E = BINA\sin\omega t$
b) $E = BNA\cos\sin\omega t$
c) $E = BINA$
d) $E = E_o/BINA$
e) $E = BNA\omega$

133) A bullet is fired horizontally with 20m/s. In the absence of air friction, its horizontal velocity after 2 second will be:
a) 10 m/s
b) 05 m/s
c) 60 m/s
d) 40 m/s
e) 20 m/s

134) If Rydberg constant for hydrogen is R_H then wave length 'λ' of first line in Lyman series is:
a) $\frac{4R_H}{3}$
b) $\frac{R_H}{4}$
c) $\frac{4}{R_H}$
d) $\frac{4}{3R_H}$
e) $\frac{R_H}{2}$

135) The ratio of molar specific heat of a gas at constant pressure to its molar specific heat at constant volume is:
a) Equal to minus one
b) Equal to zero

c) Greater than one
d) Less than one
e) Equal to one

136) If mass and speed of a moving object is doubled, the kinetic energy will be:
a) Eight times
b) Four times
c) Doubled
d) Sixteen times
e) Six times

137) The electric field intensity between two uniformly, oppositely charged parellel plates is:
a) $\frac{\sigma}{2\varepsilon_\circ}$
b) $\frac{\varepsilon_\circ}{\sigma}$
c) $\frac{2\sigma}{\varepsilon_\circ}$
d) $\frac{\sigma}{\varepsilon_\circ}$
e) $\frac{\varepsilon_\circ}{2\sigma}$

138) A box of mass m = 6kg slides with speed v = 4m/s across a frictionless floor, it suddenly explodes into two pieces. One piece, with mass m_1 = 2 kg moves in the same direction with speed v_1 = 8 m/s, the velocity of the second piece is:
a) 6 m/sec
b) 3 m/sec
c) 1 m/sec
d) 2 m/sec
e) 4 m/sec

139) The intensity level (sound level) of faintest audible intensity:
a) 160 decibel
b) Zero decibel
c) 140 decibel
d) 120 decibel
e) 60 decibel

140) **If 2μF and 4μF capacitors are connected in series. Their equivalent capacitance will be:**
a) 8 μF
b) 0.75 μF
c) 1.33 μF
d) 6 μF
e) 2 μF

141) The experimental proof of particle nature of light is:
a) Pair - production
b) Photo electric effect
e) Davison Germer experiment

d) de - Broglie concept
e) Compton's effect

142) The electrical energy dissipated as heat in a resistor is:
a) V^2R
b) V^2Rt
c) I^2R
d) I^2Rt
e) IR

143) One kilowatt hour is equal to:
a) $36x10^6J$
b) $36x10^{-6}J$
c) $3.6x10^5J$
d) $36x10^{-5}J$
e) $36x10^5J$

144) Unit, joule per coulombs is equal to:
a) Volt
b) Ampere
c) henry
d) Tesla
e) Newton

145) According to the law of radioactive decay, the rate of disintegration is directly proportional to:
a) Pressure
b) Density of substance
c) Volume of substance
d) Number of atoms present
e) Temperature

146) **The Eddy current loss in a transformer can be reduced by:**
a) Using thick copper core
b) Using thick non magnetic core
c) Using iron core
d) Using laminated iron core
e) Using non conducting cre

147) The absolute gravitational potential energy "U" of an object of mass 'm' on earth's surface is given by:
4) $U = \frac{-GmM_E}{R_E}$
a) $U = \frac{GmM_E}{R_E}$
c) $U = \frac{GmM_E}{R_E^2}$
d) $U = \frac{GM_E}{R_E^2}$
e) $U = \frac{-GM_E}{R_E^2}$

148) The speed of a photon in free space is:

a) $\frac{1}{\sqrt{\mu_\circ \varepsilon_\circ}}$
b) $\frac{1}{2}\mu_\circ \varepsilon_\circ$
c) $\frac{1}{\mu_\circ \varepsilon_\circ}$
d) $\sqrt{\mu_\circ}\varepsilon_\circ$
e) $\mu_\circ \varepsilon_\circ$

149) A charge 'q' is moving with velocity "v", parallel to a magnetic field B. The magnetic force (F) on charge "q" is

a) F = qvB sinθ
b) F = qvB
c) F = -qvB
d) F = 0
e) F = $\frac{qB}{v}$

150) **Resistors of 5Ω and 10Ω are connected parallel. If the potential difference across the 5Ω resister is 20 volts then the current through 10Ω will be:**

a) 0.5 ampere
b) 20 ampere
c) 4 ampere
d) 10 ampere
e) 2 ampere

151) A helicopter of weight "W" ascending with zero acceleration. The upwar force "F" on it is:

a) F > W
b) F = $\sqrt{w}$
c) F = O
d) F = W
e) F < W

152) **A sound wave travels from one medium be another, which one of the characteristic of sound remain unchanged?**

a) Amplitude
b) Velocity
c) Pitch
d) Quality
e) Wavelength

153) For efficient transfer of electricity through cables over the long distance:

a) Both the current and voltage must be low
b) The current must be low and voltage high
c) Both the current and voltage must be high
d) The voltage must be zero and current low
e) The voltage must low and current high

154) When a body moves with uniform velocity then its:

a) Average velocity is zero
b) Instantaneous velocity is greater than average velocity
e) Instantaneous velocity is zero
d) Instantaneous velocity is equal to average velocity
4) Instantaneous velocity is less than average velocity

155) Every particle of a rotating disc moves with:

a) Constant linear velocity
b) Constant angular velocity
4) Constant tangential velocity
d) Constant linear displacement
e) Constant linear moment

156) A proton of charge 1.6×10^{-19}C is moved through a potential difference of 20 volt. The energy gained by the proton is:

a) -32×10^{-19}J
b) 32×10^{-19}J
c) -32×10^{19}J
d) 32×10^{19}J
e) Zero

157) Distance between two consecutive antinodes in standing wave is

a) $\frac{\lambda}{4}$
b) λ
c) $\frac{\lambda}{2}$
d) 2λ
e) $\frac{3}{2}\lambda$

158) A conducting wire of resistivity " ρ " is cut into two equal parts. The resistivity of each part will be:

a) The same
b) One fourth
e) $\sqrt{2}$ times
d) Halved
e) Doubled

159) If the given spring of spring constant K is cut into three identical segments the spring constant of each segment is:

a) 1K
b) K/2
c) K/3
d) 3K
e) 4K

160) Four cells of emf 3volt are connected in series to form a battery. Net emf of the combination is:

a) 12volt
b) 1.33volt

c) 9volt
d) 7volt
e) 3volt

161) **The rate of change of linear momentum of a body is equal to:**
a) Net force
b) Net displacement
c) Net torque
d) Net inertia
e) Net velocity

162) The most appropriate mathematical expression representing simple harmonic motion is:
a) $a \propto x$
b) $a \propto -x$
c) $a = x$
d) $a = kx$
e) $a = -x$

163) A body is moving in a circle with constant speed, with radius of circle is 'r' and time period 'T' the centripetal acceleration is given by:
a) $a_c = \frac{4\pi r^2}{T^2}$
b) $a_c = \frac{4\pi^2 r}{T^2}$
c) $a_c = \frac{4\pi r}{T}$
d) $a_c = \frac{4\pi^2 r^2}{T}$
e) $a_c = \frac{4\pi r^2}{T}$

164) The kinetic energy of an electron in first Bohr radius of H - atom is:
a) 13.6J
b) 13.6eV
c) -13.6eV
d) 13.6keV
e) 13.6kJ

165) Lenz' law is a form of the:
a) Law of conservation of momentum
b) Law of conservation of charge
c) Law of conservation of angular momentum
d) Law of conservation of energy
e) Law of conservation of mass

166) The rate of doing work is zero, when the angle θ between force and velocity is:
a) $\theta = 60°$
b) $\theta = 180°$
c) $\theta = 0°$

d) $\theta = 45°$
e) $\theta = 90°$

167) **Half-life of a radioactive sample is given by:**
a) $T_{1/2} = \frac{(0.693)}{\sqrt{\lambda}}$
b) $T_{1/2} = \sqrt{\frac{(0.693)}{\lambda}}$
c) $T_{1/2} = (0.693)\lambda$
d) $T_{1/2} = \sqrt{0.693}$
e) $T_{1/2} = \frac{0.693}{\lambda}$

168) Two similar point charges, each of 1 coulomb, placed in free space 1m apart. repel each other with a force of:
a) 8.85×10^{-12}N
b) 1.602×10^{-19}N
c) 1N
d) $6{,}67 \times 10^{-11}$N
e) 9×10^{9}N

169) In nuclear reaction $_7N^{14} + _2He^4$ ----> $_8O^{17}$ + _____, the missing particle is:
a) Proton
b) alpha - particle
c) Electron
d) Position
e) Neutron

170) The potential difference applied across a diode to reduce depletion layer is:
a) Reverse biasing
b) Forward biasing
c) Biasing voltage
d) Junction potential
Potential barrier

171) **A charged particle of mass 'm' and charge 'q' is projected in a magnetic field of induction 'B' at an angle 'θ'. The radius of curvature of its curved path is given by:**
a) r = mv / qB
b) r = mv / qB sinθ
c) r = mv cosθ / qB
d) r = mv sinθ / qB
e) r = mvB / q

172) Specific heat capacity of a gas is measured in:
a) $J.kg.K^{-1}$
b) $J.kg^2.K$
c) $J.kg^{-1}.K^{-1}$
d) $J.kg^{-1}.K$

e) J.kg.K

173) First law of thermodynamics is mathematically represented as:

a) $\Delta W = \Delta Q + \Delta U$
b) $\Delta U = \Delta W - \Delta Q$
c) $\Delta Q = \Delta W - \Delta U$
d) $\Delta Q = \Delta U - \Delta W$
e) $\Delta U = \Delta Q - \Delta W$

174) The angular momentum of a particle changes from 0 to 720J.s in 4s. The magnitude of torque is:

a) 2880 N-m
b) 180 N-m
c) 360 N-m
d) 1440 N-m
e) 90 N-m

175) An object moving faster than the speed of sound. This object is called:

a) Sonic
b) Supersonic
c) Hypersonic
d) Ultrasonic
e) Infrasonic

176) **If a slab of dielectric constant $\varepsilon = 2$ is inserted between, the parallel plates of a charged 20 uF capacitor. Its capacitance will:**

a) Remain the same
b) Be four times
c) Be doubled
d) Be halved
e) Become zero

ENGLISH

177) Fill in with appropriate the Preposition: We saw a cricket match _____ school stadium.

a) in
b) over
c) of
d) at
e) on

178) I _____ an appointment with the dentist soon.

a) making
b) had make
c) make
d) made

e) will make

179) **Due to his negligence, he failed in the examination.**
A) he failed
b) in the examination
c) his negligence
d) no error
e) Due to his negligence

180) **Which sentence uses capital letters correctly?**
a) I will be moving To china.
b) I will be moving to China.
c) I will be Moving to china.
d) I will be moving to China.
e) I will be moving to china.

181) **Fill in with appropriate Article: To climb _____ _ tree in not to climb _____ mountain.**
a) a / a
d) a / an
c) a / an
d) the / an
e) an / a

182) Error correction: I've lived in Barcelona since six years.
A) has six years
b) been sex years
e) at six years
d) has been six years
e) for six years

183) Spot the correct spelling
a) Coomitte
b) Commitee
c) Committe
d) Committee
e) Comittee

184) To _____, Anne was on time for her math class.
a) everybody's surprise
b) everybody surprise
e) everybody's surprise
d) every bodys surprise
e) every-body surprise

185) **Find the error.**
a) She showed us five different shades of blue paint
by She was approached, but she declined the offer
There are seven floors in this building
d) This is the best birthday party I have ever hal

e) When I go the museum, I wore comfortable shoes

186) Figure out the error: Scientist now hope that cloning can successfully be conducted in human beings in the near future.
a) can successfully be conducted in
b) Scientist now hope that cloning
c) in near future
d) human beings in near future
e) No error

187) **Fill in with the appropriate Article: _____ apple _____ day keeps _____ doctor away.**
a) the / a / a
b) an / a / an
e) an / the / the
d) a / a / the
e) an / a / the

188) Fill in with appropriate the Preposition: She climbed _____ the ladder to paint the wall?
a) to
b) up
c) of
d) on
e) in

189) Charles _____ his father in the shop until school _____.
a) is helping, starts
b) had help, started
e) helped, was starting
d) has helped, is starting
e) was helping, will start

190) Fill in with a suitable Verb: The teacher _____ completed this chapter.
a) have
b) is
c) are
d) has
e) they

191) **One must consider about any matter before _____ it.**
a) decided
b) decides
c) decide
d) was decide
e) deciding

Read the passage to answer question 192-194:
But man is not destined to vanish. He can be killed, but he cannot be destroyed, because his soul is deathless and his spirit is irrepressible. Therefore, though the

situation seems dark in the context of the confrontation between the super powers, the silver lining is provide by amazing phenomenon that the very nations which have spent incalculable resources and energy for the production of deadly weapons are desperately trying to find out how they might never be used. They threaten each other, intimidate each other and go to the brink, but before the total hour arrives they withdraw from the brink.

192) A suitable tittle for the above passage is:
a) Cost of living
b) Man's desire to survive inhibits use of deadly weapons
c) Threats and intimidation between super powers
d) Destruction of mankind is inevitable
e) Mounting cost of modern weapons

193) The main point from the author's view is that:
a) Man has come here to live
b) Man's soul and spirit cannot be destroyed by super powers.
c) Man's destiny is not fully clear or visible
d) Man's soul and spirit are immortal
e) Human society will survive despite the serious threat of total annihilation

194) **"Irrepressible" in the second line means:**
a) harmful
b) incompatible
c) strong
d) oppressive
e) unrestrainable

LOGICAL REASONING

195) **P, Q, R, S and T are five people in the family, if P is the daughter of Q is the son of R, R is the father of S, while T is the daughter of P, then which of the following is true:**
a) R is the uncle of P
b) R is the grandfather of P
c) P and R are sisters
d) Q is the daughter of S
e) P is the sister of T

196) **Which would be the next in series?**
7C 10F 14J 19O
a) 23Q
b) 26N
a) 27X
d) 25U
e) 24P

197) **Although most of the lucrative jobs in Pakistan will require a college degree, many of the new jobs require knowledge other than gained in college or university. For workers in those jobs, good basic skills in reading, communication and mathematics play an important role in getting a job & developing a career. From the information given above, what can be validly concluded that in today's economy.**
A) Extra knowledge is an added benefit for career development.
b) People should train their children for technical work.
c) Skalls in reading, communication & mathematics play an important role in developing a successful career.
d) All colleges & universities are worthless.
e) Employment agencies should conduct communication & mathematics classes.

198) **After seven years of suggestion from the environmental department, the Sindh legislation has finally passed an antipollution ordinance. From a reading of the language, the legislation promises to be one of the most effective bills in the history of province. Which of the following can be deducted from the passage?**
a) Pollution is not now a problem in the country.
b) To reduce pollution, the legislation must now be enforced.
c) The pollution will be reduced in the country.
d) The pollution problem will be eliminated in the proce
e) The pollution problem will be reduced in the province

199) **After the declaration of company election, the elected chairperson gave his message to the workers that "The responsibility of the management is to serve and not to dominate the workers. Which of the following is one basic "assumption" underlying chairperson's statement?**
a) The management is capable of dominating the workers.
b) One must be decisive when facing company union for the first time
e) Domination over workers by the management is a virtue.
D) The management, preceding the company administration had been imposible
e) The management chooses to serve rather than dominate the workers

200) **Scientists recently published that influenza spreads around the world more efficiently in the modern era due to commercial air travel. Flu symptoms are severe enough that the sick would likely cancel or reschedule air travel, but an Infected person can travel across the globe before the first signs appear. Further, if symptoms develop while someone is on a plane, the patient's cough can spread the virus easily in the enclosed and closely packed environment. Which of the following would best minimize the role air travel can play in the spread of influenza during a pandemic?**
a) Refusing to allow children, the elderly, or others who are especially vulnerable to the travel by air during a pandemic
b) Requiring all air travelers to wash their hands before bounding a plane
c) Requiring air travelers to receive flu vaccinations far enough in advance of the trip to provide protection against the disease
d) Installing air filtration systems in the planes to kill any flu virus particles flowing though the filters
e) Conducting medical examinations during the bounding process and prohibiting passengers with flu symptoms from flying

THE END

Dow University of Health Sciences Karachi

Examinations Department

Medical Universities of Sindh

MDCAT – Test 2022

Held on 13th November 2022

Code No: B Green Answers KEY

1	E	51	B	101	E	151	D
2	E	52	E	102	A	152	C
3	C	53	E	103	B	153	B
4	B	54	B	104	C	154	D
5	B	55	D	105	B	155	B
6	D	56	E	106	A	156	B
7	B	57	D	107	D	157	D
8	C	58	B	108	E	158	A
9	D	59	A	109	C	159	D
10	E	60	C	110	D	160	A
11	A	61	B	111	B	161	A
12	C	62	B	112	C	162	B
13	A	63	E	113	C	163	B
14	E	64	B	114	B	164	B
15	D	65	A	115	B	165	D
16	C	66	D	116	B	166	E
17	E	67	D	117	A	167	E
18	B	68	A	118	B	168	E
19	C	69	E	119	E	169	A
20	A	70	B	120	A	170	B
21	A	71	A	121	C	171	D
22	E	72	E	122	E	172	C
23	E	73	D	123	E	173	E
24	A	74	B	124	C	174	B
25	E	75	B	125	B	175	B
26	B	76	B	126	E	176	C
27	C	77	E	127	E	177	D
28	A	78	B	128	D	178	E
29	B	79	E	129	B	179	D
30	C	80	C	130	B	180	D
31	D	81	B	131	B	181	A
32	D	82	D	132	B	182	E
33	C	83	C	133	E	183	D
34	A	84	E	134	D	184	C
35	B	85	D	135	C	185	E
36	B	86	E	136	A	186	B
37	B	87	D	137	D	187	E
38	D	88	B	138	E	188	B
39	B	89	D	139	B	189	A
40	E	90	C	140	C	190	D
41	C	91	D	141	B	191	E
42	C	92	D	142	D	192	B
43	C	93	D	143	E	193	E
44	A	94	D	144	A	194	E
45	A	95	E	145	D	195	B
46	A	96	D	146	D	196	D
47	E	97	C	147	A	197	C
48	B	98	D	148	A	198	B
49	C	99	B	149	D	199	A
50	A	100	D	150	E	200	C