

## Medical Science

- Q.1 All of the following structures are supplied by ulnar nerve except
- (A) dorsal interossei
  - (B) first lumbrical
  - (C) abductor digiti minimi
  - (D) flexor carpi ulnaris
- Q.2 All of the following are true of *Helicobacter pylori* except
- (A) It is urease positive and obligate aerobe
  - (B) It resides in mucus layers overlying gastric mucosa
  - (C) Urease test is used in diagnosis
  - (D) Its genome shows extensive diversity
- Q.3 All of the following statements regarding collagen are true except
- (A) It is the most abundant fibrous protein in human body
  - (B) It forms a unique double helix
  - (C) It is synthesized as a large precursor
  - (D) Its biosynthesis is defective in scurvy
- Q.4 The principal site in nephron where vasopressin acts is
- (A) proximal convoluted tubule
  - (B) distal convoluted tubule
  - (C) ascending Loop of Henle
  - (D) collecting duct
- Q.5 Which of the following is a polypeptide ?
- (A) Dopamine
  - (B) Insulin
  - (C) Adrenalin
  - (D) Histamine
- Q.6 Mikulicz giant cell is found in
- (A) Neuroblastoma
  - (B) Rhinoscleroma
  - (C) Wilm's tumor
  - (D) Hepatoblastoma
- Q.7 All of the following statements about warfarin are true except
- (A) bleeding is the major adverse effect
  - (B) it is safe in pregnancy
  - (C) it is almost completely bound to plasma proteins
  - (D) treatment monitoring is done with INR measurement
- Q.8 Which of the following is an autosomal recessive disease ?
- (A) Spinocerebellar ataxia
  - (B) Huntington's disease
  - (C) Friedrich's ataxia
  - (D) CATASIL

- Q.9 The general anesthetic potency is measured in MAC units. One MAC is defined as the minimum alveolar concentration that
- (A) prevents movement in response to surgical stimulation in 50% of subjects
  - (B) causes unconsciousness in 50% of subjects
  - (C) produces amnesia in 50% of subjects
  - (D) results in attenuation of autonomic responses to noxious stimulus in 50% of subjects
- Q.10 Which of the following neurological side effects of neuroleptic drugs is NOT amenable to treatment with anticholinergic drugs ?
- (A) dystonia
  - (B) akathisia
  - (C) rabbit syndrome
  - (D) neuroleptic malignant syndrome
- Q.11 Which of the following is a major determinant of operability of VSD ?
- (A) size of VSD
  - (B) age of patient
  - (C) location of VSD
  - (D) pulmonary vascular resistance
- Q.12 Which of the following pancreatic tumors has the least malignant potential ?
- (A) Intraductal papillary mucinous neoplasm
  - (B) Serous cystadenoma
  - (C) Mucinous cystadenoma
  - (D) Vaterial adenocarcinoma
- Q.13 The element used for intracavitary radiotherapy in carcinoma of cervix is
- (A) cobalt-60
  - (B) cesium
  - (C) strontium
  - (D) radio-iodine
- Q.14 Acute angle closure glaucoma is treated with all of the following except
- (A) acetazolamide
  - (B) timolol
  - (C) prostaglandin analogues
  - (D) atropine
- Q.15 The most common cause of sensorineural hearing loss in adults is
- (A) Meniere's disease
  - (B) trauma
  - (C) presbycusis
  - (D) drugs

- Q.16 A 22-year male presented with pain in the right femur. The pain subsides on taking NSAIDs and worsens at night. Examination reveals no abnormality. Plain X-ray of right femur shows osteoblastic reaction with a small central lucency (nidus). What is the likely diagnosis ?
- (A) Osteosarcoma
  - (B) Brodie's abscess
  - (C) Ewing's tumor
  - (D) Osteoid osteoma
- Q.17 Fetal abnormalities associated with increased maternal serum alfa-fetoprotein are all of the following except
- (A) spina bifida
  - (B) hydrocephalus
  - (C) omphalocele
  - (D) bladder exstrophy
- Q.18 The infant of a diabetic mother is NOT at risk for
- (A) hypocalcemia
  - (B) hyperglycemia
  - (C) neural tube defects
  - (D) macrosomia
- Q.19 Period of isolation required for measles is
- (A) from onset of catarrhal stage to 6<sup>th</sup> day of rash
  - (B) from onset of catarrhal stage to 3<sup>rd</sup> day of rash
  - (C) one week from onset of rash
  - (D) three weeks from onset of rash
- Q.20 Which of the following is an absolute contraindication to the use of oral contraceptive pill ?
- (A) fibroadenoma of breast
  - (B) pelvic inflammatory disease
  - (C) liver disease
  - (D) iron deficiency anemia
- Q.21 A 4-year old previously healthy unimmunized boy presents with high fever, inspiratory stridor and refusal to drink. The most probable diagnosis is
- (A) epiglottitis
  - (B) croup
  - (C) foreign body aspiration
  - (D) vascular ring
- Q.22 The ideal therapy for a 40-year old man with chronic myeloid leukemia would be
- (A) allogenic stem cell transplant
  - (B) imatinib mesylate
  - (C) interferon -  $\alpha$
  - (D) leukapheresis and splenectomy
- Q.23 Infective endocarditis prophylaxis is recommended for all of the following except
- (A) bicuspid aortic valve
  - (B) isolated secundum ASD
  - (C) mitral valve prolapse with regurgitation
  - (D) hypertrophic cardiomyopathy

Q.24 Which of the following intestinal parasite is located in the caecum ?

- (A) roundworm
- (B) hook worm
- (C) *Strongyloides Stercoralis*
- (D) *Trichuris trichura*

Q.25 Heberden's nodes occur at

- (A) first carpometacarpal joint
- (B) first metatarsophalangeal joint
- (C) proximal interphalangeal joint
- (D) distal interphalangeal joint

#### CHEMISTRY

Q.26  $K_4[Ni(CN)_4]$  is

- (A) Potassium tetracyanonickelate (0)
- (B) Potassium tetracyanonickelate (II)
- (C) Potassium tetracyanonickelate (IV)
- (D) Potassium tetracyanonickelate (II) ion

Q.27 Carboxypeptidase A is

- (A) a metalloenzyme and uses Mg(II)
- (B) a metalloenzyme and uses both Mg(II) and Zn(II)
- (C) a pyridoxal phosphate dependent enzyme
- (D) a metalloenzyme and uses Zn(II)

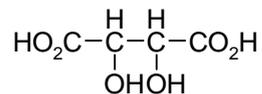
Q.28 Which one of the following statements is *correct*?

- (A) Both aldehydes and ketones react with ammoniacal silver nitrate to produce metallic silver.
- (B) Only aldehydes react with ammoniacal silver nitrate to produce metallic silver.
- (C) Only ketones react with ammoniacal silver nitrate to produce metallic silver.
- (D) Both aldehydes and ketones react with ammoniacal silver nitrate to produce alcohols.

Q.29 DNA is made of thymine instead of uracil because

- (A) methyl group of thymine contributes to the stability of DNA by interacting with the internucleotide phosphate.
- (B) the presence of thymine instead of uracil in DNA prevents potentially lethal mutation.
- (C) uracil would stabilize the double-helix far too much and prevent unwinding when required.
- (D) in cells thymine is more easily synthesized than uracil.

Q.30 How many stereoisomers are possible for the following compound?



- (A) 0
- (B) 2
- (C) 3
- (D) 4

### PHYSICS

Q.31 A body of mass  $m$  collides against a rigid wall with velocity  $U$  and rebounds with the same velocity. Its change in momentum is

- (A) Zero
- (B)  $mU$
- (C)  $2mU$
- (D)  $-mU$

Q.32 The body temperature of a patient is  $40^\circ\text{C}$ . In Fahrenheit scale it will be

- (A)  $104^\circ\text{F}$
- (B)  $72^\circ\text{F}$
- (C)  $96^\circ\text{F}$
- (D)  $100^\circ\text{F}$

Q.33 There are three copper wires of lengths and cross-sections  $(L, A)$ ,  $(2L, A/2)$ ,  $(L/2, 2A)$ . In which case is the resistance minimum?

- (A) wire of cross-section  $A/2$
- (B) wire of cross-section  $A$
- (C) wire of cross-section  $2A$
- (D) same in all three cases

Q.34 A source of light is placed at a distance of 1 meter from a photo-cell and the cut-off potential is found to be  $V_0$ . If the distance is doubled, the cut-off potential will be

- (A)  $V_0$
- (B)  $2V_0$
- (C)  $V_0/2$
- (D)  $V_0/4$

Q.35 In radioactivity, the mass number and the atomic number of a radioactive nucleus does not change when it emits

- (A) an alpha particle
- (B) a beta particle
- (C) gamma rays
- (D) all the above three

MATHEMATICS

Q.36 If  $|z| = 2$ , then the points representing the complex numbers  $-1 + 5z$  will lie on

- A) a straight line
- B) a hyperbola
- C) a parabola
- D) a circle

Q.37 If  $\alpha$  and  $\beta$  are the roots of  $x^2 - (a - 3)x - a - 1 = 0$  then  $\alpha^2 + \beta^2$  is least when the value of  $a$  is

- A) -2
- B) 2
- C) 1
- D) -1

Q.38 The values of  $x$  for which  $\frac{1}{1+\sqrt{x}}$ ,  $\frac{1}{1-x}$ ,  $\frac{1}{1-\sqrt{x}}$  are in A.P, lie in

- A)  $[0, 1]$
- B)  $[0, 1) \cup (1, \infty)$
- C)  $(-\infty, 0) \cup (2, \infty)$
- D)  $[0, 1) \cup (1, 2)$

Q. 39 The value of  $\int e^x \frac{(1 + \sin x)}{(1 + \cos x)} dx$  is

- A)  $e^x \tan (x/2) + C$
- B)  $e^x \cot (x/2) + C$
- C)  $e^x \sin (x/2) + C$
- D)  $e^x \cos (x/2) + C$

Q. 40 If  $f(x) = \frac{\cos ax - \cos bx}{x^2}$ ,  $x \neq 0$ . Then for  $f(x)$  to be continuous at  $x = 0$ , the value of  $f(0)$  should be

- A)  $\frac{b-a}{2}$
- B)  $\frac{b^2 - a^2}{2}$
- C)  $\frac{b+a}{2}$
- D)  $\frac{b^2 + a^2}{2}$