

Biochemistry.

Archive – Final (Wateen).



1- A 3-year-old child was brought to you with bow legs, protruding forehead, and presence of osteoid tissue (knobs) on ribs. This disorder is due to deficiency of which vitamin and what is the most active form?

Select one:

- a. Vitamin A -- beta-carotene
- b. Vitamin A-11-cis-retinal
- c. Vitamin D-25 hydroxy-cholecalciferol
- d. Vitamin D 1,25 dihydroxy-cholecalciferol
- e. Vitamin E- γ -tocopherol

2- Regarding Lactose Intolerance, one of the following is

correct? Select one:

- a. It is caused by deficiency of the sugar lactose in milk
- b. It has symptoms like constipation and fever
- c. due to deficiency of lactase enzyme, the lactose found in milk will be absorbed from the wall of small intestine intact
- d. GIT disturbances are resulted from undegraded lactose reaching the colon intact
- e. Small babies are given the milk formula AR

3- This test is semiquantitative and can indicate the amount of sugar present in urine of diabetic patient depending on the resulting colour?

Select one:

- a. Iodine test
- b. Molisch test
- c. Benedict's Test
- d. Seliwanoff Test
- e. Fisher Test

4- This polysaccharide is hetero, natural, linear and mainly found in mast cells?Select one:

- a. Glycogen
- b. Hyaluronic acid
- c. Dermatan sulphate
- d. Heparin
- e. Chitin



5- The route by which iron is transported in the circulation from the intestine to the sites of metabolism in the body?

Select one:

- a. As simple Fe^{2+} in the serum
- b. Bound to albumin
- c. Bound to ferritin
- d. Bound to transferrin
- e. As simple Fe^{3+} in the serum

6- The main components of vegetable oil is?Select one:

- a. Phosphoglycerolipids
- b. Gangliosides
- c. Sphingomyelin
- d. Cholesterol
- e. Triglycerides

7- Which of the followings does not contain glycerol?Select one:

- a. Phosphoglycerides
- b. Phosphatidylinositol
- c. Sphingomyelins
- d. Triacylglycerols

e- Phosphatidate

8- One of the following compounds is not considered as modified sugar?Select one:

- a. glucuronic
- b. acidglycerol
- C. deoxyribose
- d. glyceraldehyde
- e. glucosamine



9- One of the following is not deficient in milk?Select one:

- a. Vitamin D
- b. Vitamin C
- c. Vitamin K
- d. Vitamin A
- e. Copper

10- The normal PH of human milk is?Select one:

- a. 5.5-7
- b. 6.8-7.4
- c. 4.7-7.5
- d. 6.6 6.8
- e. 5.5 7.4

11- Which of the following vitamins best matches its underlying mechanism of activation to coenzymeform? Select one:

- a. Thiamin by oxidation
- b. Niacin by adenylation
- c. Riboflavin by methylation



- d. Cobalamin by reduction
- e. Folate by phosphorylation

12- Actin filaments are? Select one:

- a. also known as microtubules
- b. able to assemble and disassemble from component proteins
- c. found in the center of flagella and cilia
- d. intermediate in size between microtubules and microfilaments
- e. made of different kinds of components in different tissues

13- Urine may contain lactose during last third of pregnancy, it could be differentiated from glucose in urine in the diabetics by? Select one:

- a. Osazon test
- b. Electrophoresis
- c. Bradford method
- d. Fehling test
- e. Benedict test

14- Which of the following is TRUE as regards water-soluble vitamins? Select one:

- a. They act mainly as coenzymes
- b. They are excreted mainly in faeces
- c. All of them are heat- and light- stable
- d. They require chylomicrons to be transported to chyle
- e. Excess dietary intake causes toxicity

15- Many factors affect calcium absorption, Which of the following carbohydrate is effective in promoting the calcium absorption? Select one:

- a. Sucrose
- b. Maltose
- c. Lactose
- d. Xylose
- e. Galactose

16- Standard amino acid with secondary amino group attached to alpha carbon? Select one:

- a. Proline
- b. Tyrosine
- c. Alanine
- d. Glycine
- e. Lysine



17- As regard eye tears, all the following sentences are true except? Select one:

- a. Eye lubricant
- b. It becomes hypertonic with profound flow
- c. Have protective function against infection
- d. Protein content is 0.6 to 0.18g/dl
- e. PH 7 to 7.6

18- Which of the following vitamins CORRECTLY matches an important cause of its deficiency? Select one:

- a. Vitamin B9 in obstructive jaundice
- b. Vitamin B3 in anticoagulant therapy overdose
- c. Vitamin B2 if boiling of food
- d. Vitamin C in vegetarian
- e. Vitamin B1 in chronic alcoholism

19- Covalent modifications that increase the activity of allosterically regulated enzymes do so by? Select one:

- a. Adding phosphate groups to essential amino acids in the active site
- b. Causing the enzyme to fold into a more active configuration
- c. The involvement of the main source of cellular energy
- d. Increasing the amount of total enzyme present
- e. Increasing the rate of enzyme degradation

20- Regarding Lactose Intolerance, one of the following is correct? Select one:



- a. It is caused by deficiency of the sugar lactose in milk
- b. It has symptoms like constipation and fever
- c. due to deficiency of lactase enzyme, the lactose found in milk will be absorbed from the wall of small intestine intact
- d. GIT disturbances are resulted from undegraded lactose reaching the colon intact
- e. Small babies are given the milk formula AR

21- As regard points of differentiation between human milk and cow milk, all the following are true EXCEPT? Select one:

- a. Human milk contain less mineral elements than cow's milk
- b. Cow's milk contains higher free cholesterol while human milk contain mainly ester form
- c. Phospholipids in cow's milk twice that of human milk
- d. Cow's milk is sweeter than human milk
- e. Human's and cow's milk contain the same amount of fat

22- The structure of GM2 is different from cerebrosides by? Select one:

- a. Number of fatty acids
- b. Type of alcohol
- c. Presence of choline
- d. Number of carbohydrate molecules
- e. Presence of serine group

23- Gluconic acid results from? Select one:

- a. oxidation of aldehyde group of glucose
- b. reduction of aldehyde group of glucose
- c. oxidation of terminal OH of glucose
- d. reduction of terminal OH of glucose
- e. oxidation of chiral carbon number 5 of glucose

24- The process of separation of mixture into its components by partition between two phases is called? Select one:

- a. Electrophoresis

- b. Chromatography
- c. Dialysis
- d. Chemical precipitation
- e. Centrifugation

25- Fatty acids, choose the wrong statement? Select one:

- a. carbon number 3 is called B-carbon
- b. most of the fatty acids found in nature have an even number of carbon atoms
- c. At pH 9 fatty acids are not ionized
- d. Stearic fatty acid is a saturated fatty acid
- e. Unsaturated fat has less energy than saturated fat

26- What is the proportion of glycine residues in collagenous regions?

Select one: a. Half

- b. One-tenth
- c. One-fourth
- d. One-third
- e. One-sixth

27- Which of the following best describes vitamin D? Select one:

- a. 24,25 dihydroxy-cholecalciferol is the most active form
- b. Calcitriol increases renal calcium reabsorption
- c. At low calcium level 1,25dihydroxy-cholecalciferol enhances bone mineralization
- d. Excess vitamin D is excreted in urine
- e. Hypervitaminosis D occurs most commonly due to exposure to sunlight

28- The most common cause of familial hypercholesterolemia is? Select one

- a. A high cholesterol diet
- b. Defective cholesterol
- c. Genetically defective LDL receptor synthesis
- d. Accumulation of chylomicrons in the blood

e. Defect in HDL

29- Which of the following components is found in all sphingolipids? Select one:

- a. A carbohydrate
- b. A negative charge
- c. A phosphate group
- d. An amino alcohol
- e. Cholesterol

30- Which of the characteristics below apply to free cholesterol? Select one:

- a. It consists of 17 carbon atoms.
- b. It has three hydroxyl groups.
- c. It is completely hydrophobic structure.
- d. It increases the rigidity of cell membrane.
- e. Low levels may lead to atherosclerosis.

31- Iron deficiency anaemia is less common in breast feeding babies due to? Select one:

- a. Breast milk contain the required amount for the baby
- b. The newborn are not requiring high iron
- c. They store iron in their liver during prenatal life that is sufficient till weaning time
- d. The mothers always give them iron supplementation
- e. The iron is highly absorbed due to high content of calcium in milk

32- The iron is oxidized to ferric form (Fe^{3+}) by which of the following? Select one:

- a. Ferritin
- b. HCL
- c. Transferrin
- d. Hemosidrin
- e. Ceruloplasmin

33- One of the following is not correct regarding cellobiose? Select one

- a. It is a reducing sugar
- b. This disaccharide results from degradation of cellulose
- c. It consists of two B-glucose units
- d. The monomers in cellobiose are found in the D-configuration and as cyclic pyranose rings
- e. The glucose units are joined together by a-1,4 glycosidic bond

34- can affect the catalytic activity of the enzyme. Which of the following statements concerning that effect is correct? Select one:

- a. An increase in temperature can stop the reaction by denaturing the enzyme
- b. An increase in temperature can increase the reaction rate by increasing the speed at which molecules move
- c. An increase in temperature to the optimum temperature maximizes reaction rate
- d. More than one correct response
- e. No correct response

35- Deformity of the bones that occurs due to vitamin D deficiency in growing children is called? Select one:

- a. Hemosidrosis
- b. Osteomalacia
- c. Osteoporosis
- d. Ricketss
- e. Hemochromatosis

36- Which of the following is FALSE as regards vitamin A metabolism? Select one:

- a. In light, rhodopsin is dissociated to 11 cis-retinal and opsin
- b. Retinal can be reduced to retinol
- c. Retinol-binding protein transthyretin complex is important for its transport in plasma
- d. Excess vitamin A is stored in liver in the form of retinyl ester
- e. Retinoic acid can regulate the level of expression of certain genes

37- A 20-year-old woman was admitted to hospital complaining from bilateral burning sensation of the lower extremities and difficulty to walking. Laboratory investigation revealed macrocytic anemia and high plasma and urine L-methylmalonic acid. What is the probable deficient vitamin? Select one

- a. B12
- B. B1
- c. B2
- d.B3
- C.B9

38- Which of the following molecules is not a fatty acid? Select one

- a. $\text{CH}_3(\text{CH}_2)_{14}\text{COOH}$
- b. $\text{CH}_3(\text{CH}_2)_7\text{CH}=\text{CH}(\text{CH}_2)_7\text{COOH}$
- c. $\text{CH}_3\text{CH}_2(\text{CH}=\text{CHCH}_2)_3(\text{CH}_2)_6\text{COOH}$
- d. $(\text{CH}_3)_4\text{CH}(\text{CH}_2)_3\text{OH}$
- e. $\text{CH}_3(\text{CH}_2)_7\text{CH}=\text{CH}(\text{CH}_2)_9\text{COOH}$

39- All the following factors decrease calcium absorption except? Select one:

- a. Lysine
- b. Phytate and oxalate
- C. Free fatty acids
- d. High PH
- e. High phosphate diet

40- Choose the correct statement Select one:

- a. myosin is a tetramer protein
- b. tropomyosin protein binds head to tail with actin thin filament
- C. troponin complex contains five subunits
- d. myoglobin protein has the quaternary structure level
- e. the heavy chain of myosin contains four domains

41- The normal PH of sweat is?

- Select one:
- a. 2.7-4
 - b.5.7-7
 - c. 6.7-7.5

d. 3.7 to 4.7

e. 4.7 to 7.5

42- Which of the following conversions best matches its required vitamin? Select one:

- a. Proline → hydroxyl proline (Menaquinone)
- b. Glutamate gamma → carboxy glutamate (Tocopherol)
- c. Deoxy UMP → deoxy TMP (Thiamin)
- d. Tryptophan → Niacin (Retinol)
- e. Homocysteine → Methionine (Cobalamin)

43- The highest phospholipids content is found in? Select one:

- a. Chylomicrons
- b. Very low density lipoprotein
- c. Low density lipoprotein
- d. High density lipoprotein
- e. Intermediate density lipoprotein

44- After the cyclic sugar formation, the carbonyl carbon will be converted to? Select one:

- a. anomeric carbon
- b. achiral carbon
- c. alcoholic carbon
- d. carboxylic acid
- e. ketonic group

45- Which of the following vitamins contains sugar acid in its structure? Select one:

- a. Riboflavin
- b. Thiamin
- c. L-ascorbic acid
- d. Niacin
- e. Folic acid



46- One of the regulatory mechanisms of enzymatic activity is the covalent modification, which statement is false about such a mechanism? Select one

- a. It is reversible
- b. It is slower than allosteric regulation
- c. It is irreversible
- d. Phosphorylation is a common covalent modification
- e. It is requiring the activity of two enzymes

47- $C_6H_{12}O_6$ is the molecular formula of all of the following sugars EXCEPT? Select one:

- a. Glucose
- b. Fructose
- c. Galactose
- d. Mannose
- e. Ribose

48- Which of the following vitamins CORRECTLY matches its deficiency state? Select one:

- a. L-ascorbate deficiency -> Neural tube defects
- b. Riboflavin deficiency -> Pernicious anemia
- c. Thiamine deficiency -> Beri beri
- d. Folate deficiency -> Scurvy
- e. Cobalamin deficiency -> Rickets

49- Chylomicron, IDL, LDL and VLDL all are serum lipoproteins. What is the correct ordering of these particles from the lowest to the greatest density? Select one:

- a. LDL, IDL, VLDL, Chylomicron
- b. Chylomicron, VLDL, IDL, LDL
- c. VLDL, IDL, LDL, Chylomicron
- d. Chylomicron, IDL, VLDL, LDL
- e. IDL, chylomicron, LDL, VLDL

50- If the OH group at ONLY one chiral carbon in the linear structure of monosaccharides is located on the right or the left, then the resulting stereoisomer is assigned as? Select one:

- a. L-sugar
- b. D-sugar
- c. Epimer
- d. a-sugar
- e. B-sugar

51- Which one of the following steroids contains 19 carbon atoms? Select one:

- a. Estradiol
- b. Cortisol
- c. Cholesterol
- d. Testosterone
- e. Progesterone



52- Which of the following is FALSE as regards antioxidant vitamins? Select one:

- a. Vitamin E protects cell membranes from oxidative stress
- b. Tocopherols prevent oxidation of low densitylipoprotein (LDL)
- c. L-ascorbic acid converts ferric to ferrous iron for better absorption
- d. Provitamin-A is effective antioxidant
- e. Vitamin D decreases the rate of glutathione reductase synthesis

53- Upon adding an inhibitor to an enzyme-catalyzed reaction, the rate of reaction is markedly decreased, then, the rate does not show any increase upon increasing the substrate concentration. What is your conclusion about the inhibitor? Select one:

- a. That it is a kinase
- b. That it is a competitive or noncompetitive inhibitor
- c. That it binds the enzyme's active site only
- d. That it is an inorganic or competitive inhibitor
- e. That it is a noncompetitive or uncompetitive inhibitor

54- There are different mechanisms for regulating enzyme activity including the allosteric one. which of the following would usually be found in such a mechanism? Select one:

- a. The need for cofactors
- b. The enzyme is a monomeric molecule
- c. Both activating and inhibitory activity by one modulator
- d. Feedback inhibition by the reaction end product is not existing
- e. Cooperativity

Enzymes



- 1- In enzyme chemistry, the active site concept means that? :
 - a. There may be a covalent bond between enzyme and substrate
 - b. Functional groups on the enzyme participate directly in the reaction
 - c. All enzymes are having the flexible model of the active site
 - d. For all enzymes, no catalysis in the absence of cofactors
 - e. All enzymes are having the rigid model of the active site
- 2- A plot of enzyme activity (y-axis) versus substrate concentration (x-axis) with other variables constant is a?:
 - a. Straight line with an upward slope.
 - b. Line parallel to the y-axis
 - c. An upward line slope followed by a downward slope.
 - d. Straight horizontal line.
 - e. Line with an upward slope and a long flat top.
- 3- If one continues to increase the temperature in an enzyme-catalysed reaction, the rate of the reaction?
 - a. Does not change.
 - b. Increases and then levels off.
 - c. Decreases and then levels off.
 - d. Increases and then decreases rapidly.
 - e. Decreases and then increases rapidly.
- 4- Which of the followings is not true regarding Ninhydrin test?
 - a. It is used to detect free amino acid and proteins
 - b. All the amino acids give the same results on reaction with Ninhydrin
 - c. This reaction provides an extremely sensitive test for amino acids
 - d. Amino acids react with ninhydrin at pH-4
 - e. It requires Boiling over a water bath for 2-5 minutes
- 5- LDH1 and LDH2 isoenzymes of lactate dehydrogenase enzyme are elevated in?
 - a. Myocardial infarction
 - b. Liver disease
 - c. C. Kidney disease
 - d. Brain disease
 - e. Lung diseases

- 6- Different isoenzymes of an enzyme have the same?
- Amino acid sequence
 - Michaelis constant
 - Catalytic function
 - Tissues origin
 - Effect of activators and inhibitors
- 7- If the substrate concentration is much below the K_m of the enzyme, the velocity of the reaction is?
- Directly proportional to substrate concentration
 - Not affected by enzyme concentration
 - Nearly equal to V_{max}
 - Inversely proportional to substrate concentration
 - Nearly equals to $\frac{1}{2} V_{max}$
- 8- For the binding behavior of hemoglobin, choose the INCORRECT answer?
- Hb has a lower affinity for O_2 than Mb
 - The T-state is also known as the "tense" state and it has a high-binding affinity to oxygen
 - Hb binds O_2 in a positive cooperative manner, which enhances the O_2 transport
 - Upon oxygenation, the Fe atom is moved into the porphyrin plane
 - Upon oxygenation, the quaternary structure of Hb changes markedly from (T) to the (R) form
- 9- Why does pH affect enzyme activity?
- Changes in pH affect the concentration of the coenzyme
 - Changes in pH affect the concentration of enzyme
 - Changes in pH affect the concentration of substrate
 - Changes in pH affect the enzyme optimum temperature
 - Changes in pH affect the shape of the enzyme active site
- 10- One of these sets of enzymes can help as biomarkers in diagnosis of myocardial infarction?
- LDH1 and CK-BB
 - LDH2 and CK-MM
 - LDH3 and CK-MB
 - LDH5 and CK-MB
 - LDH2 and CK-MB

- 11- Regarding anemia, choose the INCORRECT answer?
- it is an autosomal recessive disease
 - The shape of the red cells is very irregular
 - Patients symptoms include Cough, fever and headache
 - amino acid sequence is -Val-His-Leu- Thr-Pro-Val-Glu-Lys
 - it is caused by a point mutation in the hemoglobin alpha gene
- 12- Regarding the Tumour suppressor protein 53, choose the CORRECT answer?
- It can induce growth arrest by holding the cell cycle at the G2/S regulation point
 - P53 cannot initiate apoptosis
 - is a tumour suppressor protein that in humans is encoded by the TP53 gene
 - More than 50 percent of human tumours contain a mutation or deletion of the P53 gene
 - The P53 gene cannot be damaged by mutagens
- 13- Why does the rate of an enzyme-catalysed reaction increase as temperature is raised from 0 to 37 °C?:
- Enzyme and substrate molecules have more kinetic energy to get the transition state
 - The shape of the active site changes to be suitable for binding substrate
 - C. The shape of the substrate binding site changes at high temperature
 - Enzymes are denatured at high temperature
 - Enzyme substrate complex will take longer time to be in the transition state
- 14- Regarding the mad cow disease, choose the CORRECT answer?
- Prion is an infectious protein that is similar to bacteria
 - the disease is caused by beta sheets to be converted into alpha-helices
 - the infectious agent in BSE is believed to be a specific type of folded protein called P53
 - the disease is a fatal neurodegenerative disease in cattle
 - mad cow disease is caused a spongy degeneration in the skeletal and cardiac muscles
- 15- For Ligases enzymes?
- They catalyse oxidation/reduction reactions
 - They transfer a functional group
 - They catalyse the hydrolysis of various bonds
 - They catalyse isomerization changes within a single molecule
 - They join two molecules with covalent bonds

- 16- A plot of enzyme activity (y-axis) versus pH (x-axis) with other variables constant is a
- Straight line with an upward slope.
 - Line with an upward slope and a long flat top
 - S shaped line
 - An upward line slope followed by a downward slope
 - Straight horizontal line
- 17- The "lock and key" model of enzyme action illustrates that a particular enzyme molecule?
- Forms a permanent enzyme- substrate complex
 - May be destroyed and resynthesized several times
 - Interacts with a specific type of substrate molecule
 - Reacts at identical rates under all conditions
 - Can allow the binding of substrate molecule whatever its shape
- 18- An uncatalysed reaction requires ?
- A higher activation energy
 - A lower activation energy
 - A Balanced activation energy
 - No activation energy
 - A similar activation energy as the catalyzed reaction
- 19- Active site of an enzyme is ?
- A particular gland that secretes a particular enzyme
 - A portion of the substrate molecule to which the enzyme molecule attaches
 - A portion of the enzyme in which the substrate molecule fits
 - An organ in the body where the enzyme works
 - A portion of the cell in which the enzyme catalysed reaction takes place
- 20- If you added 5 drops of 2% ninhydrine solution to 1 ml of unknown amino acid solution, boiled for 5 minutes. Then the solution turned to a yellow color. The unknown amino acid is suggested to be ?
- Glutamic acid
 - Proline
 - Glycine
 - Histidine
 - Serine



- 21- Regarding Alzheimer Disease, choose the INCORRECT answer?
- the disease is associated with plaques in the gray matter of the brain
 - the disease is caused by mutations in four genes, situated on chromosomes 1,14, 19, and 21
 - C. it is the fourth leading cause of death in adults
 - In Alzheimer Disease, the misfolded proteins are alpha-amyloid
 - Some observed symptoms of the disease include a progressive inability to remember facts and events
- 22- According to the induced fit model of enzyme function, which of the following is CORRECT?
- The active site is not flexible.
 - Some enzymes become denatured when activators bind to the substrate.
 - The binding of the substrate depends on the shape of the active site.
 - The binding of the substrate changes the shape of the enzyme slightly.
 - The active site creates an environment ideal for the reaction.
- 23- The dye used for the colorimetric detection and quantitation of total protein in Bradford method?:
- Benedict's reagent
 - Methylene blue
 - Coomassie brilliant blue
 - Ethidium bromide
 - Gentian violet
- 24- For the Tumor suppressor protein 53, choose the INCORRECT answer?
- More than 50 percent of human tumor's contain a mutation or deletion of the P53 gene
 - The P53 gene cannot be damaged by mutagens
 - It can induce growth arrest by holding the cell cycle at the G2/S regulation point
 - P53 can initiate apoptosis
 - is a tumor suppressor protein that in humans is encoded by the TP53 gene
- 25- For Myoglobin, choose the WRONG statement?
- Myoglobin Can't carry CO₂
 - Myoglobin O₂ affinity is higher than hemoglobin O₂ affinity
 - C. Myoglobin has cooperativity of O₂ binding
 - Myoglobin has No quaternary structure
 - Myoglobin is found in muscles

- 26- For the binding behavior of hemoglobin, choose the CORRECT answer?
- Hb has a higher affinity for O₂ than Mb
 - The T-state is also known as the "tense" state and it has a high-binding affinity to oxygen
 - Hb binds O₂ in a positive cooperative manner, which enhances the O₂ transport
 - Upon oxygenation, the Fe atom is moved out of the porphyrin plane
 - Upon oxygenation, the quaternary structure of Hb changes markedly from (R) to the (T) form
- 27- 75% of Myoglobin structure is a-helix in _____ regions?
- Seven
 - Five
 - Six
 - Nine
 - Eight
- 28- Which of the following is not a way in which enzymes stabilize a transition state?
- Covalent catalysis
 - Metal ion catalysis
 - General acid-base catalysis
 - Environmental temperature increase
 - Catalysis by approximation
- 29- Regarding anemia, choose the CORRECT answer?
- The abnormal HbS clusters together, distorting the RBCs into sickled shapes
 - It is caused by a point mutation found on chromosome 12p15.5
 - C. It is an autosomal dominant disease
 - The shape of the red cells are very regular
 - Amino acid sequence is -Val-His-Leu-Thr-Pro-Ala-Glu-Lys-
- 30- Energy of activation?
- Increases enzymatic activity
 - Decreases enzymatic activity
 - C. Minimum amount of energy for the reaction to occur
 - Maximum amount of energy for the reaction to occur
 - Not needed for the reaction to occur

31- If one continues to increase the temperature in an enzyme-catalysed reaction, the rate of the reaction?

- a. Does not change.
- b. Increases and then levels off.
- c. Decreases and then levels off.
- d. Increases and then decreases rapidly.
- e. Decreases and then increases rapidly



1	D	9	E	17	C	25	C
2	E	10	E	18	A	26	C
3	D	11	E	19	C	27	E
4	B	12	C	20	B	28	D
5	C*	13	A	21	D	29	A
6	C	14	D	22	D	30	C
7	A	15	E	23	C	31	D
8	B	16	D*	24	B		