Al-Aqsa University of Gaza
Faculty of Science
Department of Medical Technology

Biostatistics
Final Exam
Time:120 mins.

First Semester 2018-2019

Instructor: Dr. Issam Atef Dawoud Date: 15-1-2019 (الفترة الأولى)

الاسم:_____ الرقم الجامعي:_____

SECTION I: TRUE OR FALSE
(20 points)

1. ( ) Statistics is the study of numerical measures of the values associated with variables.
2. ( ) Secondary source data is better than primary source data.
3. ( ) The number of patients in a hospital is a quantitative variable.
4. ( ) Qualitative variables are restricted to exactly two responses.
5. ( ) Numerical values for the arithmetic mean may be negative.
6. ( ) If the median is less than the mean, then the distribution is skewed to the left.
7. ( ) A data set may only have one mode, or multiple modes.
8. ( ) The median is more sensitive to outliers than the mean.
9. ( ) The second quartile is equivalent to the median.
10. ( ) The empirical rule and the Chebyshev Rule apply to the different types of distributions.
11. ( ) A Z score of (- 2.0) indicates that the value is located two standard deviations to the right of the mean.
12. ( ) The "box" portion of the boxplot represents the middle half of the values.
13. ( ) Sample covariance is as useful as the coefficient of correlation as a measure of the strength of the linear relationship between two variables.
14. ( ) The measure of central tendency in which all values in the sample data set play an equal role in the calculation is called the arithmetic mean.
15. ( ) A geometric mean is the geometric center of all values.
16. ( ) For a highly skewed distribution, the empirical rule approximates that 95% of the values are between $(\mu - 2\sigma, \mu + 2\sigma)$.
17. ( ) Extreme values are likely to occur in a normal distribution.
18. ( ) A sampling frame might only be a partial listing of items in a population but should represent the population as a whole.
19. ( ) Data from a collection of samples may be used to draw conclusions about an entire population from which the sample data are drawn.
20. ( ) The concept of a variable implies that the values of every characteristic of an item are different.

SECTION II: MULTIPLE-CHOICE

(28 points)

1 **A statistics professor surveys the students in his class and finds that 55% are female and 45% are male. This is an example of:**

a Descriptive statistics.
b Inferential statistics.
c Secondary data.
d Nominal data.

2 **The grades that a random sample of students received over the last years represent what statistical concept?**

a The grades are a statistic.
b The grades are a sample.
c The grades are a population.
d The grades are a parameter.

3 **Which one of the following is from the measures of central tendency?**

a Geometric mean
b Range
c Standard deviation
d Interquartile range

4 **Which one of the following is an appropriate measure of central tendency for nominal data?**

a Coefficient of Variation
b Median
c Mode
d Mean

5 **Which one of the following measures of central tendency is affected by extreme values in the sample data set?**

a Median
b Mean
c Mode
d Median and Mode

6 **What is the percentage of the values between the first and third quartiles in any data set?**

a 25%
b 75%
c 100%
d 50%

7 **Which of the following measures become larger as the data is more dispersed?**

a Mean and Median
b Mean, Variance, and Standard Deviation
c Range, Variance, and Standard Deviation
d Median and Range

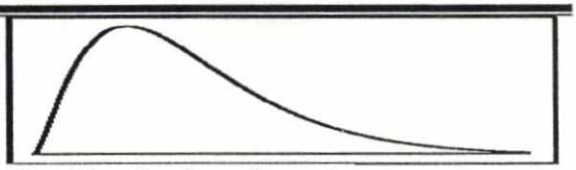
8 **The sum of deviations about the arithmetic mean is always equal to _____.**

a 1
b Variance
c Geometric Mean
d Zero

9 **The Chebyshev Rule indicates that the percentage of values that will be found within four standard deviations of the mean will be _____.**

a At least 88.89%
b At least 93.75%
c At least 96%
d At least 75%

10



The distribution above is:

a skewed to the left
b normally distributed
c Symmetric
d skewed to the right

11 **Which one of the following is required for the construction of a boxplot?**

a Mean
b Interquartile range
c Range
d Largest value

12 **A numerical measure for the strength of the linear relationship between two variables is?**

a Dispersion
b Standard deviation
c Covariance
d Correlation coefficient

13	**How is the median related to the variance?**	14	**The difference between a data value and the arithmetic mean of a sample divided by its standard deviation is called:**
a	Variance is not related to the median, but standard deviation is.	a	Z score
b	Variance has the square of the median in its formula.	b	the empirical rule
c	Variance measures the variability of values about the median.	c	Coefficient of correlation
d	They are not related. One is a measure of central tendency, and the other is a measure of variation.	d	Mean variation
15	**The area to the right of the mean in a normal distribution is indicated by which of the following?**	16	**A standard normal distribution has which of the following properties?**
a	1	a	The mean is equal to the variance.
b	the standard deviation of the distribution	b	The mean and the variance both equal 1.
c	0.5	c	The mean is equal to the standard deviation.
d	the variance of the distribution	d	The mean is equal to 0 and the variance is equal to 1.
17	**Let z be a normal random variable with a mean of 0 and a standard deviation of 1. Determine $p(z \geq 0.04)$.**	18	**Let x be a normal random variable with a mean of 50 and a standard deviation of 3. A z score was calculated for x, and the z score is 0.2, what is the value of x?**
a	0.5160	a	53.6
b	Zero	b	46.4
c	0.6554	c	50.6
d	0.4840	d	49.4
19	**Let X be a normal random variable with a mean of 35 and a standard deviation of 4. Determine $p(30 \leq X \leq 37)$.**	20	**What percentage of a normal distribution is found within a range of z scores from -3 to +3?**
a	0.5859	a	90%
b	0.6915	b	95%
c	0.2971	c	99.7%
d	0.1056	d	85%
21	**Suppose you are working with a data set that is normally distributed with a mean of 50 and a standard deviation of 10. Determine the value of x such that 85% of the values are greater than x.**	22	**Which one of the following sampling techniques will result in a probability sample?**
a	29.6	a	Judgment
b	59.6	b	Convenience
c	49.6	c	Random
d	39.6	d	Quota

23	**The standard deviation of a sampling distribution is commonly called which of the following?**	**24**	**The Central Limit Theorem states that if n is large enough, the distribution of sample means follows which distribution?**
a	Standard margin	a	Uniform
b	Statistical range	b	Random
c	Sampling deviation	c	Exponential
d	Standard error	d	Normal
25	**Increasing the standard deviation causes the standard error of the proportion to:**	**26**	**If a population has a mean of 350 and a standard deviation of 5, determine the probability that a random sample of 25 will have a mean between 349 and 351.**
a	remain the same	a	0.8413
b	decrease	b	0.6826
c	increase	c	0.1587
d	become less normal	d	0.9987
27	**Which one of the following is not from the five number summary measures?**	**28**	**The coefficient of correlation will be a value in which of the following ranges?**
a	Minimum value	a	[-1, 0]
b	Median	b	[-1, 1]
c	Mean	c	[0, 1]
d	Maximum value	d	$(-\infty, +\infty)$

SECTION III: FREE RESPONSE QUESTIONS

(22 points)

1. (8 points) Suppose you select a sample of (36) infants, such that the mean weight = 100 kg and standard deviation = 25 kg

   a. (1 points) What is the standard error of this sample?

   b. (2 points) Find $p(\overline{X} \geq 100)$

   c. (5 points) Find the values of c and d if $p(c \leq 105 - \overline{X} \leq d) = 0.68$

2. (6 points) We develop a multiple regression model to estimate the total amount of sleep (sleep) required by a mammal species, based on the following variables Body weight, Brain weight, lifespan, Gestation.

Let $\alpha = 0.05$. **Answer the following Questions.**

(ملاحظة: النتائج في الصفحات 8-9)

a. (1 points) Find the determination coefficient of a model? Comment.

b. (2 points) Is the model good for prediction or not? Explain by giving full comment.

c. (2 points) Are the independent variables good in the model or not? Explain.

d. (1 points) Write the estimated multiple linear regression equation.

3. (4 points) We collected data on hours that spent in watching TV per day of two groups (Males and Females). We wish to test each of the following questions at $\alpha = 0.05$.

(ملاحظة: النتائج في الصفحات 8-9)

a) (2 points) Are the two variances equal? Interpret your answer with full comment.

b) (2 points) Is there any significant difference between the two means at $\alpha = 0.05$? Interpret your answer with full comment.

4. (4 points) Write the four types of survey errors and explain them.

النتائج

Group Statistics

	RESPONDENTS SE	N	Mean	Std. Deviation	Std. Error Mean
HOURS PER DAY WATCHING TV	MALE	810	2.71	1.810	.064
	FEMALE	1155	2.90	2.179	.064

Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.662[a]	.438	.389	3.6581

a. Predictors: (Constant), Gestation time (days), Max lifespan (yrs), Body weight (kg), Brain weight (grams)

b. Dependent Variable: Total sleep (hrs/day)

One-Sample Test

	Test Value = 50					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Time	-3.064	149	.003	-5.54000	-9.1124	-1.9676

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.029[b]	1	.864		
Continuity Correction[a]	.000	1	1.000		
Likelihood Ratio	.029	1	.865		
Fisher's Exact Test				1.000	.512
Linear-by-Linear Association	.029	1	.865		
N of Valid Cases	150				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 10. 60.

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	479.295	4	119.824	8.954	.000[a]
	Residual	615.573	46	13.382		
	Total	1094.867	50			

a. Predictors: (Constant), Gestation time (days), Max lifespan (yrs), Body weight (kg), Brain weight (grams)

b. Dependent Variable: Total sleep (hrs/day)

Gender * Type Crosstabulation

Count

		Type		Total
		Type A	Type B	
Gender	Men	78	42	120
	Women	19	11	30
Total		97	53	150

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									5% Confidence Interva of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
HOURS PER DA WATCHING TV	Equal variances assu	11.989	.001	-2.103	1963	.036	-.196	.093	-.379	-.013
	Equal variances not assumed			-2.172	1907.484	.030	-.196	.090	-.373	-.019

Coefficients[a]

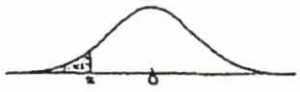
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	14.074	.907		15.517	.000
	Body weight (kg)	-.001	.002	-.122	-.323	.748
	Brain weight (grams)	.002	.002	.452	1.052	.298
	Max lifespan (yrs)	-.007	.042	-.029	-.170	.866
	Gestation time (days)	-.029	.007	-.880	-4.411	.000

a. Dependent Variable: Total sleep (hrs/day)

One-Sample Statistics

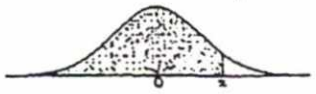
	N	Mean	Std. Deviation	Std. Error Mean
Time	150	44.4600	22.14220	1.80790

Have a nice semester



Cumulative Normal Probability $P(Z \leq z)$

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
−3.9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
−3.8	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
−3.7	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
−3.6	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
−3.5	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
−3.4	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002
−3.3	0.0005	0.0005	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0003
−3.2	0.0007	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006	0.0005	0.0005	0.0005
−3.1	0.0010	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008	0.0008	0.0007	0.0007
−3.0	0.0013	0.0013	0.0013	0.0012	0.0012	0.0011	0.0011	0.0011	0.0010	0.0010
−2.9	0.0019	0.0018	0.0018	0.0017	0.0016	0.0016	0.0015	0.0015	0.0014	0.0014
−2.8	0.0026	0.0025	0.0024	0.0023	0.0023	0.0022	0.0021	0.0021	0.0020	0.0019
−2.7	0.0035	0.0034	0.0033	0.0032	0.0031	0.0030	0.0029	0.0028	0.0027	0.0026
−2.6	0.0047	0.0045	0.0044	0.0043	0.0041	0.0040	0.0039	0.0038	0.0037	0.0036
−2.5	0.0062	0.0060	0.0059	0.0057	0.0055	0.0054	0.0052	0.0051	0.0049	0.0048
−2.4	0.0082	0.0080	0.0078	0.0075	0.0073	0.0071	0.0069	0.0068	0.0066	0.0064
−2.3	0.0107	0.0104	0.0102	0.0099	0.0096	0.0094	0.0091	0.0089	0.0087	0.0084
−2.2	0.0139	0.0136	0.0132	0.0129	0.0125	0.0122	0.0119	0.0116	0.0113	0.0110
−2.1	0.0179	0.0174	0.0170	0.0166	0.0162	0.0158	0.0154	0.0150	0.0146	0.0143
−2.0	0.0228	0.0222	0.0217	0.0212	0.0207	0.0202	0.0197	0.0192	0.0188	0.0183
−1.9	0.0287	0.0281	0.0274	0.0268	0.0262	0.0256	0.0250	0.0244	0.0239	0.0233
−1.8	0.0359	0.0351	0.0344	0.0336	0.0329	0.0322	0.0314	0.0307	0.0301	0.0294
−1.7	0.0446	0.0436	0.0427	0.0418	0.0409	0.0401	0.0392	0.0384	0.0375	0.0367
−1.6	0.0548	0.0537	0.0526	0.0516	0.0505	0.0495	0.0485	0.0475	0.0465	0.0455
−1.5	0.0668	0.0655	0.0643	0.0630	0.0618	0.0606	0.0594	0.0582	0.0571	0.0559
−1.4	0.0808	0.0793	0.0778	0.0764	0.0749	0.0735	0.0721	0.0708	0.0694	0.0681
−1.3	0.0968	0.0951	0.0934	0.0918	0.0901	0.0885	0.0869	0.0853	0.0838	0.0823
−1.2	0.1151	0.1131	0.1112	0.1093	0.1075	0.1056	0.1038	0.1020	0.1003	0.0985
−1.1	0.1357	0.1335	0.1314	0.1292	0.1271	0.1251	0.1230	0.1210	0.1190	0.1170
−1.0	0.1587	0.1562	0.1539	0.1515	0.1492	0.1469	0.1446	0.1423	0.1401	0.1379
−0.9	0.1841	0.1814	0.1788	0.1762	0.1736	0.1711	0.1685	0.1660	0.1635	0.1611
−0.8	0.2119	0.2090	0.2061	0.2033	0.2005	0.1977	0.1949	0.1922	0.1894	0.1867
−0.7	0.2420	0.2389	0.2358	0.2327	0.2296	0.2266	0.2236	0.2206	0.2177	0.2148
−0.6	0.2743	0.2709	0.2676	0.2643	0.2611	0.2578	0.2546	0.2514	0.2483	0.2451
−0.5	0.3085	0.3050	0.3015	0.2981	0.2946	0.2912	0.2877	0.2843	0.2810	0.2776
−0.4	0.3446	0.3409	0.3372	0.3336	0.3300	0.3264	0.3228	0.3192	0.3156	0.3121
−0.3	0.3821	0.3783	0.3745	0.3707	0.3669	0.3632	0.3594	0.3557	0.3520	0.3483
−0.2	0.4207	0.4168	0.4129	0.4090	0.4052	0.4013	0.3974	0.3936	0.3897	0.3859
−0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247
−0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641



Cumulative Normal Probability $P(Z \leq z)$

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5753
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	0.6331	0.6368	0.6406	0.6443	0.6480	0.6517
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736	0.6772	0.6808	0.6844	0.6879
0.5	0.6915	0.6950	0.6985	0.7019	0.7054	0.7088	0.7123	0.7157	0.7190	0.7224
0.6	0.7257	0.7291	0.7324	0.7357	0.7389	0.7422	0.7454	0.7486	0.7517	0.7549
0.7	0.7580	0.7611	0.7642	0.7673	0.7704	0.7734	0.7764	0.7794	0.7823	0.7852
0.8	0.7881	0.7910	0.7939	0.7967	0.7995	0.8023	0.8051	0.8078	0.8106	0.8133
0.9	0.8159	0.8186	0.8212	0.8238	0.8264	0.8289	0.8315	0.8304	0.8365	0.8389
1.0	0.8413	0.8438	0.8461	0.8485	0.8508	0.8531	0.8554	0.8577	0.8599	0.8621
1.1	0.8643	0.8665	0.8686	0.8708	0.8729	0.8749	0.8770	0.8790	0.8810	0.8830
1.2	0.8849	0.8869	0.8888	0.8907	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9032	0.9049	0.9066	0.9082	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9192	0.9207	0.9222	0.9236	0.9251	0.9265	0.9279	0.9292	0.9306	0.9319
1.5	0.9332	0.9345	0.9357	0.9370	0.9382	0.9394	0.9406	0.9418	0.9429	0.9441
1.6	0.9452	0.9463	0.9474	0.9484	0.9495	0.9505	0.9515	0.9525	0.9535	0.9545
1.7	0.9554	0.9564	0.9573	0.9582	0.9591	0.9599	0.9608	0.9616	0.9625	0.9633
1.8	0.9641	0.9649	0.9656	0.9664	0.9671	0.9678	0.9686	0.9693	0.9699	0.9706
1.9	0.9713	0.9719	0.9726	0.9732	0.9738	0.9744	0.9750	0.9756	0.9761	0.9767
2.0	0.9772	0.9778	0.9783	0.9788	0.9793	0.9798	0.9803	0.9808	0.9812	0.9817
2.1	0.9821	0.9826	0.9830	0.9834	0.9838	0.9842	0.9846	0.9850	0.9854	0.9857
2.2	0.9861	0.9864	0.9868	0.9871	0.9875	0.9878	0.9881	0.9884	0.9887	0.9890
2.3	0.9893	0.9896	0.9898	0.9901	0.9904	0.9906	0.9909	0.9911	0.9913	0.9916
2.4	0.9918	0.9920	0.9922	0.9925	0.9927	0.9929	0.9931	0.9932	0.9934	0.9936
2.5	0.9938	0.9940	0.9941	0.9943	0.9945	0.9946	0.9948	0.9949	0.9951	0.9952
2.6	0.9953	0.9955	0.9956	0.9957	0.9959	0.9960	0.9961	0.9962	0.9963	0.9964
2.7	0.9965	0.9966	0.9967	0.9968	0.9969	0.9970	0.9971	0.9972	0.9973	0.9974
2.8	0.9974	0.9975	0.9976	0.9977	0.9977	0.9978	0.9979	0.9979	0.9980	0.9981
2.9	0.9981	0.9982	0.9982	0.9983	0.9984	0.9984	0.9985	0.9985	0.9986	0.9986
3.0	0.9987	0.9987	0.9987	0.9988	0.9988	0.9989	0.9989	0.9989	0.9990	0.9990
3.1	0.9990	0.9991	0.9991	0.9991	0.9992	0.9992	0.9992	0.9992	0.9993	0.9993
3.2	0.9993	0.9993	0.9994	0.9994	0.9994	0.9994	0.9994	0.9995	0.9995	0.9995
3.3	0.9995	0.9995	0.9995	0.9996	0.9996	0.9996	0.9996	0.9996	0.9996	0.9997
3.4	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9998
3.5	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998
3.6	0.9998	0.9998	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999
3.7	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999
3.8	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999
3.9	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

State Of Palestine
Al-Aqsa University
College of Medical Sciences
Dep. of Medical Laboratory Sciences

دولـة فلسطين
جامعـــة الأقصـــى
كليـة العلـوم الطبية
قســـم العلوم الطبية المخبرية

الفصل الأول: 2018 - 2019 | الاختبار النهائي لمساق Immunology | التاريخ: 3 / 1 / 2019م
محاضر المساق: د. منصور اليازجي | الزمن : 2 ساعة
اسم الطالب : | الرقم الجامعي :

Q 1. Choose the correct answer for each of the following questions (40Marks)

1. antigenic substances of molecular weight less than 5000 are : a. active antigens b. specific antigens c. non antigenic d. polyclonal antigens		**2. The alternative pathway of complement activation is proceeded by:** a. Binding of C1q to CH2 domain of IgG b. Activation of C1r &C1s c. Activation of complement components beyond C3 d. All of the above
3. Which of the following can be attributed to antigen stimulated T cells ? a. humoral response b. plasma cells c. cytokines d. antibody		**4. which of the following is not produced by stimulated T- Cells:** a. Interleukin -2 b. chemotactic factor c. INF-γ d. IL-4
5. Immunoglobulins are secreted from: a. B cells b. T cells c. Plasma cells d. T- B cooperation's		**6. The MHC complex proteins functions to ?** a. Degrade CD4& CD8 polypeptide b. Bind antibody for cytokine production c. Bind to complement for cell lysis d. Bind antigen fragments for presentation to T-cell
7. The heavy chains of IgD are: a. alpha chains b. mu chains c. gamma chains d. delta chains		**8. The T-cell receptor for antigen is :** a. formed of a single chain b. expressed on macrophages as well as T-cells c. formed of two chains d. all of the above
9. T and B cells are alike in that : a. both may differentiate into plasma cells b. both become mature in thymic environment c. both express either IgM or IgD as receptor for antigen d. both express MHC class I molecules		**10. T-cell antigen receptors are distinguished from antibodies by which of the following** a. T-Cell receptors are glycosylated b. T-cell receptors must interact with antigen uniquely presented by other cells but not with free antigen c. T-Cell receptors bind various cytokines d. T-Cell receptors bind complement to lyse cells

11. Removal of thymus results in : a. a markedly decreased number of circulating plasma cells b. anemia c. delayed grafts rejection d. low serum levels of antibodies		**12. One principal function of complement is to** a. inactivate perforins b. mediate the release of histamine c. Bind antibodies attached to cell surfaces and to lyse these cells d. phagocytize antigens
13. MHC antigens are associated with which of the following : a. graft rejection b. autoimmune diseases c. determining which antigens an individual responds to d. all of the above		**14. Immunoglobulins that activate the first component of complement (C1q) via Fc portion include:** a. IgE b. IgM c. IgD d. IgA
15. CD8+ Cells kills their targets: a. following recognition of peptides on MHC class II. b. by insertion of perforin molecules into target membrane. c. by activation of alternative complement pathway. d. all of the above		**16. The major role of the complement system is to work in conjunction with** a. antibodies to lyse cells via the C8 and C9 components b. the major histocompatibility complex for cell recognition c. antibodies to opsonize cells d. the T-cell receptor for production of lymphokines
17. T-helper cells recognize peptides bound to a. MHC class I b. MHC class II c. MHC class III d. None of the above		**18. Two cytokines, produced by macrophages, that are involved in fever production,** a. IL 2 and IL-3 b. IL-3 and IL-4 c. IL-1 and TNF alpha d. IL-10 and IL-8.
19. IL-2 is : a. secreted from activated Th-1 b. secreted from activated macrophages c. induces class switch to IgE d. induces class switch to IgG2a		**20. T-helper Cells:** a. Can help B cells make antibody b. bind with MHC class I c. Can release IL-1 d. all of the above
21. Receptor editing: a. Has been described for antibody but not TCR. b. Is associated with reexpression of RAG-1 in germinal centers. c. Can involve V genes which are 3' of the initially selected V gene. d. Involves the S (switch) sequences.		**22. MHC class I and class II share the following features except :** a. they are both integral membrane proteins b. they both serve to restrict responses of T-cells c. they are both co-dominantly expressed on cells d. they are both expressed on all nucleated cells

23. Autocrine means that : a. the effect of two cytokines increases the response b. cytokine affects on adjacent cells c. cytokines have different activity on different cells d. cytokines may affects on the same cells		**24. The cell membrane molecules that the B-cell receptor requires to start signal transduction.** a. Igα and Igβ b. MHC I and II c. IL2 and IL4 d. CD4 and CD3
25. Interferons a. activate B cells to make virus-specific antibodies. b. are Th2 cytokines. c. are virus proteins that interfere with activation of cytotoxic T cells. d. inhibit virus replication by infected cells.		**26. Which of following is NOT true of interleukins?** a. They are cytokines which can be produced by various cells of the immune system. b. They are hormones which allow one cell to communicate with another cell. c. They are in need of receptors on the target cell in order to mediate their effects. d. They are able bind antigen with a high level of specificity.
27. Which immunoglobulin is mostly found in secretions such as milk : a. IgG b. IgE c. IgA d. IgM		**28. An example of an anti-apoptotic molecule is:** a. Bcl-2 b. Fas c. Fasl d. Caspase 8
29. Cells bearing MHC class I plus peptide are targets for specific: a. B- cells b. Cytotoxic T – cells c. Th1 cells d. Th2 cells		**30. The initial complement component that is bound by complement-fixing antibodies is:** a. C1q b. C1s c. C3b d. C5a
31. Several of the complement components acts as an : a. Glycolipids b. Cytokines c. Enzymes d. Hormones		**32. The lectin and alternative pathways meet at complement component:** a. C1 b. C4b c. C5 d. C3
33. Immunological unresponsiveness to self-antigens is called: a. Tolerance b. Memory c. Acquired immunity d. Tolerogen		**34. The CD3 complex of the T-cell receptor** a. probably functions to transduce a signal to the cell's interior following binding of complexed antigen b. binds complement c. causes the histamine d. mediates Immunoglobulin class switching

35. All of following are TRUE for IgE Except: a. An allergy associated immunoglobulin b. The least abundant immunoglobulin in the plasma c. Binds to basophile d. Can cross the placenta		**36. The class of immunoglobulin is determined by:** a. Light chain b. Variable regions c. Heavy chain d. Plasma cells
37. The MHC class I alpha chain consists of: a. Three Ig-type domains b. A truncated MHC class II heavy chain c. Three globular domains d. Two globular domains.		**38. All of the following are true with respect to IgM antibodies EXCEPT which one** a. They fix complement b. They occur on the surface of lymphocytes c. They predominate in the primary response to antigen d. They mediate allergic reaction
39. The T-cell ligand binding B7 on a professional APC is: a. CD28 b. CD2 c. LFA-1 d. ICAM-1		**40. Hormone like peptide used for communications in innate and adaptive immunity are :** a. Cell adhesion molecules . b. Immunoglobulins . c. Cytokines. d. All of the above

❖ Put the answers in the following table.

MCQ	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	31	32	33	34	35	36	37	38	39	40					

Q 2. Put True (T) or False (F) (15 Mark)

1. ( ) The complement system is not responsible for the production of neutrophil chemoattractants
2. ( ) CD antigens are used to identify cell types and their functions.
3. ( ) The MHC class II heavy chain consists of a single chain.
4. ( ) Lectin pathway may be activated in the absence of an antibody/antigen reaction
5. ( ) Prior entry to the thymus, T cells are double – ve & contains TCR.
6. ( ) Exogenous antigens are presented with MHC class I molecules.
7. ( ) IL-5 plays an important role against helminthes.
8. ( ) Complement system consists of a group of serum protein in an activated form.
9. ( ) T- cell receptor consists of α -chain & β2 microglobulin.
10. ( ) MHC class II is ahomodimeric molecules.
11. ( ) NK- cells matures in the thymus gland.
12. ( ) IL-1 is produced by macrophages
13. ( ) Dendritic cells are antigen presenting cells
14. ( ) TNF is a principle mediator in the host inflammatory response
15. ( ) IgE & eosinophils are potent against parasites

❖ Put the answers in the following table.

√ or X	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Q 3. Fill the following spaces with a suitable word or sentence (15 Mark)

1. Interleukin 2 is produced by .....
2. When ..... is attached to a larger carrier molecule, it becomes immunogenic.
3. IL-12 has role as a proinflammatory duo to .....

.....

.....

4. MHC restriction means that .....

.....

.....

.....

5. IL-1 is a cytokine secreted from ....., its functions.....

.....

6. IL-5 mediate parasites killing via .....

.....

.....

7. Molecules which have antigen recognition are .....

.....

.....

8. ..... enhances class switching to IgG, whereas IL-4 enhances switching to.....
9. The T-cell ligand ..... binding B7 on a professional antigen-presenting cell.
10. Tolerance is divided into .....

.....

11. The physiological role of MHC molecules are .....

.....

.....

.....

12. CD4+ T cells are differentiated into ..... ,according to.....

Which secretes .....

13. CD4+ cells recognizes antigens binded with .....

14. CD8+ cells recognizes antigens binded with .....

15. Functions of Complement components .....

.....

.....

.....

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.....

.....

انتهت الأسئلة

With best wishes

Dr. Mansour S. El-Yazji

جـامعـة الأقـصى

Alaqsa University
Dpt. Laboratory Medical Sciences

Question	Marks
1	
2	
3	
4	
Total	

Medical Genetics Final Exam
1st semester, 2018/2019
6/1/2019
Dr. Basim Mohammad Ayesh
8 pages **Time: 2 hrs.**

Answer the first question in this table

1.	A B C D	2.	A B C D	3.	A B C D	4.	A B C D	5.	A B C D
6.	A B C D	7.	A B C D	8.	A B C D	9.	A B C D	10.	A B C D
11.	A B C D	12.	A B C D	13.	A B C D	14.	A B C D	15.	A B C D
16.	A B C D	17.	A B C D	18.	A B C D	19.	A B C D	20.	A B C D
21.	A B C D	22.	A B C D	23.	A B C D	24.	A B C D	25.	A B C D
26.	A B C D	27.	A B C D	28.	A B C D	29.	A B C D	30.	A B C D
31.	A B C D	32.	A B C D	33.	A B C D	34.	A B C D	35.	A B C D
36.	A B C D	37.	A B C D	38.	A B C D	39.	A B C D	40.	A B C D
41.	A B C D	42.	A B C D						

First Question — 40 degree

Circle only ONE best choice

Choose and answer **40** questions only

1. **Medical genetics aims at _____.**
   a. Analyzing the molecular mechanisms through which genes cause disease
   b. Studying the inheritance of diseases in families,
   c. Assess possible modes of inheritance
   d. All of the above

2. **Characteristic of meiosis include_____.**
   a. Each daughter cll has 23 chromosomes
   b. All the daughter cells have identical chromosomes
   c. Recombination occurs in prophase II
   d. The duration is longer in males than in females.

3. **The following are examples of aneuploidy**
   a. 46,XY
   b. 69,XXY
   c. 47,XYY
   d. 92,XXXX

4. **The following chromosome complements or rearrangements are balanced:**
   a. 47,XY,+21
   b. 45,XY,rob(14;21)(q10;q10)
   c. A ring chromosome
   d. A deletion

5. **Which of the following karyotypes is not compatible with survival to birth?**
   a. 47,XY,+13
   b. 47,XX,+18
   c. 47,XY,+21
   d. 45,Y

6. **Routine chromosome analysis would be expected to show an abnormality in**
   a. The mothers of most children with Down syndrome
   b. Approximately 50% of spontaneous first trimester abortions
   c. All children with Angelman syndrome
   d. Children with ambiguous genitalia

7. **If one parent is carrier of 21q21q isochromosome, ___.**
   a. All gametes will be 21q21q
   b. All offspring will be Down syndrome
   c. All gametes will have no chr 21.
   d. All of the above.

8. **Terminal or interstitial deletion of part of 5p result in ___.**
   a. Cat eye syndrome
   b. Angelman syndrome
   c. Severe mental retardation and heart defects.
   d. DiGeorge syndrome

9. **A newborn child with Down syndrome is found to have an unbalanced Robertsonian 14q;21q translocation and you are asked to counsel the parents. It would be correct to tell them that___.**
   a. Down syndrome is less severe when caused by a translocation as compared with full trisomy
   b. Both parents should be offered chromosome analysis as one of them could carry the translocation in a balanced form
   c. If the mother is found to be carrier then the recurrence risk is 50%
   d. The average life expectancy is less than 10 years

10. **A couple have lost a baby soon after birth because of multiple abnormalities. The father is found to have a balanced reciprocal translocation involving chromosomes 4 and 11. The parents should be told that ___.**
    a. All of their future babies will be abnormal
    b. It is very unlikely that this finding is relevant to their baby's abnormalities
    c. There is a risk that the family will have another abnormal baby
    d. The rearrangement in the father occurred as a result of nondisjunction.

11. **Parental origin of genetic material can have a profound effect on the clinical expression of a defect.**
    a. Prader-Willi syndrome may result from fertilization by a sperm carrying an abnormally persistent female imprint
    b. Angelman syndrome may result from mutations in the maternal copy of E3A gene.
    c. 30% of Prader-Willi syndrome have uniparental disomy of the maternal chr. 15.
    d. All of the above

12. **X-chromosome inactivation is different from imprinting in that ___.**
    a. Unlike imprinting, the choice of the X chromosomes to be inactivated is random.
    b. X inactivation is mediated by DNA methylation, while genomic imprinting is mediated by acetylation.
    c. Unlike imprinting, the active X is enriched with macroH2A histone variant
    d. All of the above.

13. **A nonpenetrant carrier of a genetic defect is represented in the pedigree with the symbol ____.**
    a. 
    b. 
    c. 
    d. 

14. **The proportion of genes shared by first cousins is on average ___.**
    a. 1/2
    b. 1/4
    c. 1/8
    d. 1/16

15. **Consanguinity shows a strong association with which pattern of inheritance?**
    a. Autosomal dominant
    b. Autosomal recessive
    c. X-linked dominant
    d. X-linked recessive

16. **Which of the following is the most common type of matings that can lead to homozygous offspring affected with an autosomal recessive disease?**
    a. RR X RR
    b. Rr X RR
    c. Rr X Rr
    d. rr X rr

17. **Autosomal disorders are distinguished by ____.**
    a. Males and females are usually equally affected
    b. Inherited from the mother only, regardless of the sex of the offspring
    c. Absence of male to male transmission
    d. Males are hemizygous, females can be heterozygous or homozygous

18. **Autosomal dominant disorders are usually more severe in homozygotes than in heterozygotes. Hence, they are known as ___.**
    a. Codominant alleles
    b. Incompletely dominant alleles
    c. Pure dominant alleles
    d. Recessive alleles

19. **Autosomal recessive phenotypes, that are expressed in both sexes but with different frequencies or severity, are known as ____.**
    a. Sex-linked disorders
    b. Sex limited disorders
    c. Sex-Influenced disorders
    d. Disorders of sex development

20. **Patients with recessive disorders will express the phenotype in ____.**
    a. Hemizygotes
    b. Homozygotes
    c. Compound heterozygotes
    d. All of the above

21. **The effect of consanguinity is that ___.**
    a. In more common recessive conditions, most cases of the disorder result from mating between unrelated persons
    b. It is more frequently found in patients with very common recessive conditions than in more rare
    c. At the level of second cousins or more risk of abnormal offspring is negligible
    d. All of the above

22. **In Achondroplasia all heterozygotes show marked short stature. Inheritance is autosomal dominant. Parents of normal stature have two affected children. The most likely explanation for recurrence is_____.**
    a. Variable expression
    b. Reduced penetrance
    c. New mutations
    d. Germline mosaicism

23. **The genetic defect that leads to male-limited precocious puberty is in the gene that encodes ___.**
    a. The Fibroblast growth factor receptor 3.
    b. The androgen receptor
    c. The LDL receptor
    d. The receptor for luteinizing hormone

24. **Characteristics of cystic fibrosis include**
    a. X-Linked recessive
    b. No variable expressivity exists
    c. The gene encodes a transcription factor
    d. Mutations exert a loss-of-function effect

25. **A manifesting heterozygote is ____ who shows phenotypic expression of the disease.**
    a. A carrier female for an X-linked recessive disorder
    b. A carrier male for an X-linked recessive disorder
    c. A carrier female for an autosomal recessive disorder
    d. A carrier male for an autosomal recessive disorder

26. **A woman is found to be affected with the common X-linked recessive form of colour blindness. This could be because____.**
    a. Her mother is carrier and her father is affected
    b. She has uniparental disomy for her father's chromosome
    c. She has a skewed X-inactivation
    d. All of the above

27. **Serum phosphate level is less depressed and the rickets less severe in heterozygous females than in affected males of vitamin D-resistant rickets. Why?**
    a. Because the disease is sex-influenced
    b. Because the disease has male-lethality
    c. Because of X-chromosome inactivation
    d. Because females loose phosphate during the menstruation.

28. **Who of the following may survive the Rett syndrome?**
    a. Klinefelter individual
    b. XX males
    c. A mosaic for a mutation that is absent in most of his/her cells
    d. All of the above

29. **Characteristics of fragile X syndrome include**
    a. The gene is located at the end of the short arm of X and Y
    b. Males and females are affected equally
    c. The mutation involves expansion of a triplet repeat
    d. Anticipation when transmitted by male

30. **Characteristics of Huntington include ___.**
    a. Autosomal dominant inheritance
    b. The mutation involves expansion of a triplet repeat
    c. Anticipation when transmitted by a father
    d. All of the above

31. **Random partitioning of mutant and wild-type mitochondria through multiple rounds of mitosis produces a collection of daughter cells with wide variation in the proportion of mutant and wild-type mitochondria carried by each cell. This known as ___.**
    a. Variable expressivity.
    b. Heteroplasmy.
    c. Homoplasmy.
    d. Pleiotropy.

32. **Heterogeneity is an important cause of clinical variation. Locus heterogeneity may be described by ___.**
    a. Mutations at different loci producing similar phenotypes.
    b. Different mutations at the same locus producing similar phenotypes.
    c. Different mutant alleles in the same locus producing distinct phenotypes.
    d. Different mutant alleles in different loci producing distinct phenotypes.

33. **More than 30% of all single nucleotide substitutions are transitions. What may you conclude?**
    a. Similar mutagenic processes cause one or the other type of substitutions
    b. Deamination is more common than other spontaneous chemical processes affecting nucleotides.
    c. CG doublet is a hotspot for mutation in the human genome
    d. All of the above

34. **Heritability ____.**
    a. Quantifies the role of genetic differences in determining variability of quantitative traits.
    b. Determines the fraction of the total phenotypic variance of a quantitative trait that is caused by genes
    c. Determines how much different alleles at various loci are responsible for the variability in a given quantitative trait.
    d. All of the above.

35. **Multifactorial diseases have polygenic effect that can ___.**
    a. Trigger.
    b. Accelerate.
    c. Exacerbate.
    d. Be synergistic.

36. **The following are correct examples of degrees of relationship;**
    a. Monozygotic twins → first degree
    b. Dizygotic twins → second degree
    c. Parent and child → first degree
    d. First cousins → second degree

37. **Which of the following observations is the strongest evidence for an important genetic component in the causation of type-1 diabetes mellitus (IDDM)?**
    a. Pancreatic b-cell autoantibodies are frequently present.
    b. Onset of disease is usually in childhood.
    c. The concordance rate in monozygotic twins is approximately 30%.
    d. The concordance rate in monozygotic twins is five times that in dizygotic twins

38. **Monozygotic twins ___.**
    a. Result when two sperms fertilize an ovum which then split into two
    b. Would be expected to show 100% concordance for trisomy 21
    c. Would be expected to show a lower concordance for a multifactorial disorder than dizygotic twins
    d. Are more likely to be affected with a multifactorial disorder than dizygotic twins

39. **Multiple sclerosis is a complex disease that is caused by many overlapping causes. These may include ___.**
    a. The action of various genes.
    b. Pathogens.
    c. Exposure to chemicals.
    d. All of the above.

40. **For a given autosomal recessive disease, q = 0.01 (where q is the allele frequency of the mutant allele). Approximately what percentage of the population has two copies of the normal allele?**
    a. 2%
    b. 90%
    c. 95%
    d. 98%

41. **Which of the following factors don't interfere with Hardy-Weinberg equilibrium?**
    a. Large population size
    b. No-random mating
    c. Consanguinity
    d. Heterozygote advantage
    e. Pleiotropy.

42. **If 1 out of every 250,000 people have Disease X, a nonlethal autosomal recessive disorder, what is the approximate carrier frequency of this disease? (Assume Hardy-Weinberg equilibrium.)**
    a. 1/1000
    b. 1/500
    c. 1/250
    d. 1/50

Second Question — 20 degrees

Match by writing the number of the correct option in the empty box

1	**A sporadic case**		A particular position or location on a chromosome
2	**Alleles**		Alternative variants of a gene
3	**An isolated case**		A single prevailing allele, present in the majority of individuals
4	**Compound heterozygote**		A version of the gene that differ from the wild-type allele because of
5	**Consultand**		A permanent change in sequence, or arrangement of DNA.
6	**Expressivity**		A given set of alleles at a locus or cluster of loci on a chromosome
7	**Fitness**		Two or more relatively common alleles at the locus in the population
8	**Genotype**		The set of alleles that make up a person's genetic constitution
9	**Haplotype**		The observable expression of a genotype as a morphological, clinical, cellular, or biochemical trait.
10	**Hemizygous**		The 2 alleles of a locus encoded in nuclear DNA are identical
11	**Heterozygous**		The 2 alleles are different
12	**Homozygous**		Two different mutant alleles of the same gene are present, rather than one normal and one mutant.
13	**Locus**		Male has an abnormal allele for a gene located on the X chromosome and there is no other copy
14	**Mutation**		The probability that a mutant allele or alleles will have any phenotypic expression at all (all or nothing)
15	**Penetrance**		The severity of expression of phenotype among individuals with the same disease-causing genotype.
16	**Phenotype**		The member ascertained if he or she is affected
17	**Polymorphism**		The person who brings the family to attention by consulting a geneticist
18	**Proband**		If there is only one affected member in a family
19	**Variant or mutant alleles**		If the disorder is determined to be due to new mutation in the proband
20	**Wild-type or common allele**		The number of offspring the affected individuals can have who survive to reproductive age, in comparison with an appropriate control group.

Third Question — 20 degrees

Answer the following.

1. **An autosomal recessive disorder in Hardy-Weinberg equilibrium affects 1 in 6400 babies. Answer the following questions.**
   a. **What is the frequency of the allele responsible for the disorder?**

   .....

   b. **What is the propabilty that an individual is a carrier?**

   .....

   .....

   c. **An affected male wishes to marry a phenotypically normal woman and would like to know what is the risk for having an affected child?**

   .....

   .....

2. **Interpret the following DNA variants**

   a. **c.-22T>G**

   .....

   b. **c.121-6C>A**

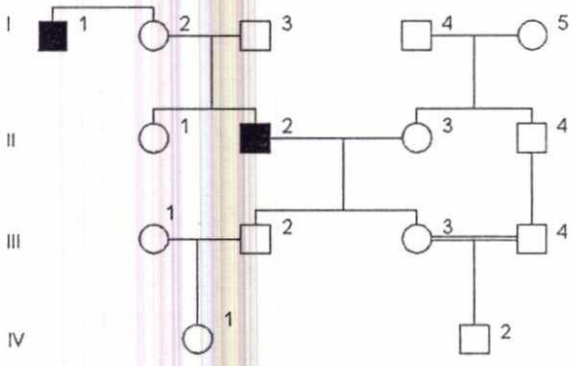
   .....

3. **In the pedigree blow, (I 1) and (II 2) have Becker muscular dystrophy which shows X-linked recessive inheritance. The disease status is unknown for (IV 1) and (IV 2). What is the probability that (III 3) is a carrier of Becker muscular dystrophy?**

   .....

   .....

   .....



4. **The table below shows the concordance in monozygotic (MZ) and dizygotic (DZ) twins in four hypothetical genetic diseases A, B, C and D. Which disease would you estimate to have the HIGHEST heritability and which one has the LOWEST heritability?**

Disease	% Concordance in MZ twins	% Concordance in DZ twins
A	25.5	5.6
B	15.2	11.3
C	7.0	3.0
D	41.0	5.2

The disease with HIGHEST heritability

.....

The disease with LOWEST heritability

.....

Bonus Question — 5 degrees

Selection removes harmful alleles from the population because of reduced biological fitness. For any inherited disorder, the frequency of mutant alleles in the population is usually stable: mutant alleles that are eliminated from the population, and new mutant alleles are created by *de novo* mutation.

Link individual types of single gene disorder (a-e) to one of the values (i-iv) for the percentage of mutant alleles that arise by de novo mutation.

Disorder (f = biological fitness of affected person)	Answer ↓	Percentage of mutant alleles arising by de novo mutation
a) A severe autosomal dominant disorder (affected individuals do not have children; $f = 0$)		i) very low ii) 33.3% iii) 80% iv) 100%
b) Achondroplasia (autosomal dominant; $f = 0.2$)		
c) Huntington disease (a late onset autosomal dominant disorder)		
d) A severe X-linked recessive disorder, ($f = 0$)		
e) A severe autosomal recessive disorder ($f = 0$)		

End on questions

STATE OF PALESTINE			دولـــة فلسطيـن
AL-AQSA UNIVERSITY			جامعة الأقصى
FACULTY OF APPLIED SCIENCE- Medical Tech. DEP.			كلية العلوم التطبيقية –قسم العلوم الطبية المخبرية
اسم محاضر المساق: أ. شحدة خليل برهوم		رقم المساق: MEDT4218	اسم المساق: إدارة المختبرات والجودة
عدد الاسئلة: 7	مدة الامتحان: ساعتين	الفصل الدراسي الأول Final Exam. 2018-2019	اسم الطالب/ة:
العلامة: ..... / 60	عدد الصفحات: 7		

Question 1: Quality control processes vary, depending on whether the laboratory examinations use methods that produce quantitative, qualitative, or semi-quantitative determine the type of each result. (2.5 marks)

No.	Result	Result Type
1.	RBCs in urine 3-5/HPF	
2.	Blood Triglycerides 170 mg/dL	
3.	HIV Result "Non Reactive"	
4.	Stool Analysis Ova of H.nana present	
5.	Calcium Oxalate in urine moderate/LPF	

Question 2: You have found all these papers lying on a desk. Which of these are documents and which are records (2.5 marks)

1.	Safety manual	
2.	Patient test report	
3.	Daily maintenance log (completed)	
4.	EQA sample transfer log (completed)	
5.	Temperature log (blank form)	

Question 3: Match between column A and Column B (5 marks)

column A		column B
1. Security	(.....)	Samples must be collected randomly, performing blind recheck
2. Confdentiality	(.....)	The laboratory director is responsible for establishing policies and procedures to safeguard a patient's information
3. Rechecking	(.....)	It means, the laboratory director is responsible for establishing policies and procedures to protect against loss of data
4. Retesting	(.....)	Tested by reference laboratory, performed on dried blood spots or serum, result not blinded
5. Privacy	(.....)	The laboratory director is responsible for establishing policies and procedures to protect laboratory data.

Question 4: Choose the correct answer :- (10 marks)

1. In sample transportation, in order to maintain integrity of the sample, all of steps bellow are true EXCEPT:

a. giving attention to temperature
b. giving attention to preservation needs and special transport containers
c. giving attention to time limitations
d. giving attention to training of transport staff

2. For a good SOP all characterstics bellow should be EXCEPT:

a. detailed, clear and concise
b. easily understood by new personnel or students in training
c. updated once
d. reviewed and approved by the laboratory management

3. When referring samples to other laboratories for testing, carefully monitor samples that are referred by:

a. ensure the sample is labelled correctly, in the correct container
b. record the date of refferal
c. reviewed and approved by the laboratory management
d. turnaround times and record results delivery (from referral laboratory, to requestor, in additiov to any problems encountered
e. name of person referring test

4. **One of the statement bellow is n0t true, A good information management system will:**
   a. ensure that all data—the final product of the laboratory—is well managed;
   b. consider all the ways laboratory data will be used when planning a system;
   c. ensure the accessibility, accuracy, timeliness and security of data;
   d. ensure unconfidentiality and privacy of patient information.

5. **One of the most difficult aspects of the sample management process for the laboratory to monitor is:**
   a. patient identification
   b. controlling time of collection of sample
   c. preservation of samples
   d. reporting results

6. **Which of the following statements is TRUE?**
   a. a sample should be always processed, regardless of its condition
   b. a sample should be rejected if the wrong preservative was used
   c. a sample should never be processed if it is only labeled with the patient's name
   d. a sample with insufficient quantity should always be discarded

7. **The best method to use to communicate sample collection procedures to non-laboratory staff is to:**
   a. provide all stations with the laboratory's quality manual
   b. provide all collection sites with a Laboratory Handbook
   c. provide individual training to each person who collects samples
   d. provide training to all nursing supervisors and ensure they oversee the process correctly

8. **Reference material a material of a substance with values of measurable quantities sufficiently well established to be used for:**
   a. all of the bellow
   b. calibration of a measurement system
   c. assessment of measurement procedure
   d. assigning values to materials

9. **According to ISO 15189 All of the following roles for laboratory PT is true EXCEPT:**
   a. discussion between labs
   b. analyze PT sample and Patient sample with same methods by same personnel.
   c. final PT report must received.
   d. improvement is a goal for PT

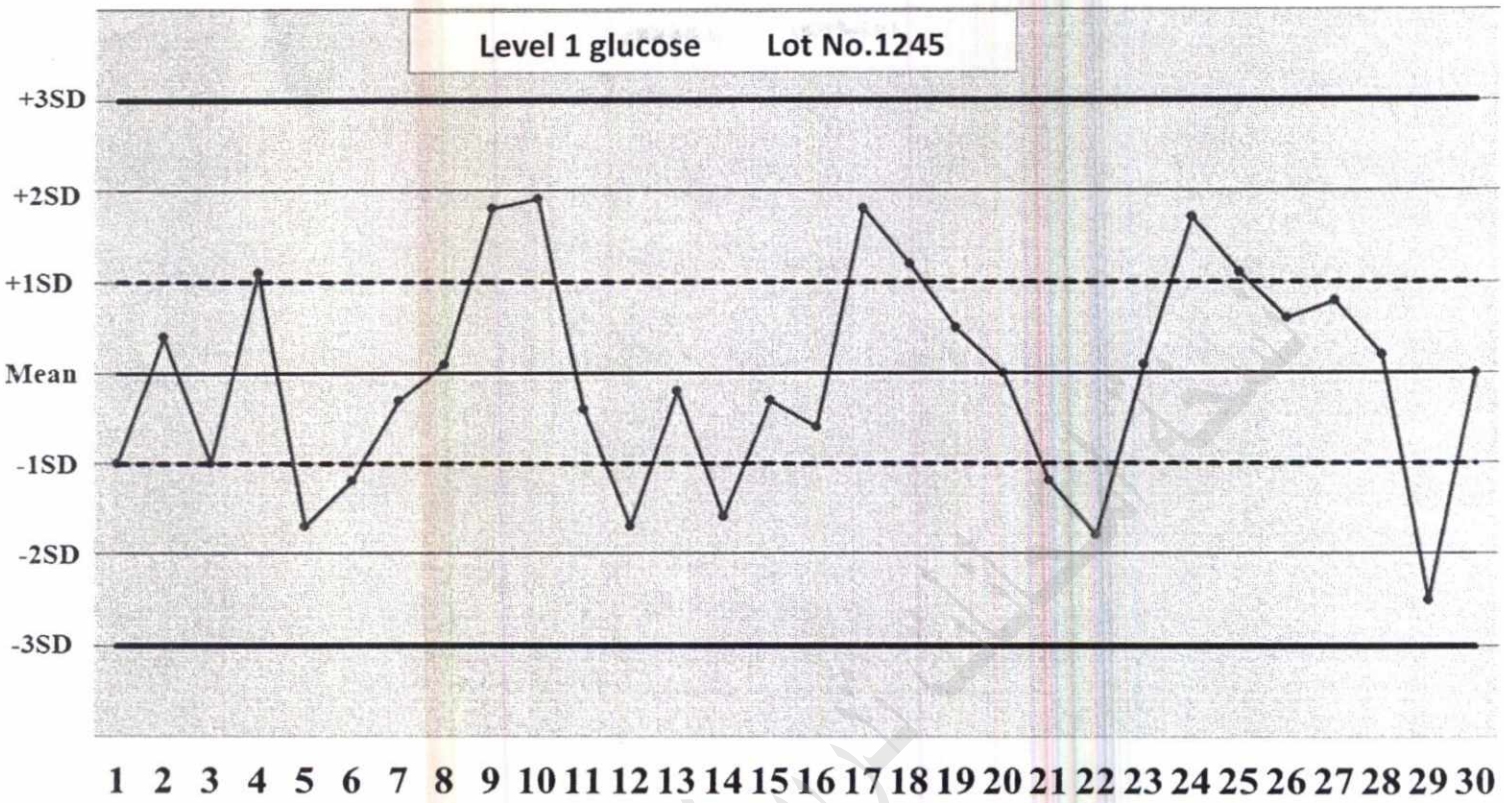
10. **Your laboratory received an unstained blood slide from an EQA provider with a request to look for malaria parasites. Which of the following choices would you do to insure this sample is reported correctly?**
    a. stain the slide with fresh reagents and give to the supervisor to examine
    b. examine the slide in the same way the laboratory routinely handles patients samples
    c. stain the slide with fresh reagents and ask all employees that do malaria smears to examine it and compare answers
    d. stain and read the slide using your best employees, then call neighboring laboratories to confirm results
    e. examine the slide in a different way the laboratory routinely handles patients samples

Question 5: Put (✓) in front of right statement and (×) in front of wrong statement:-

(15 marks)

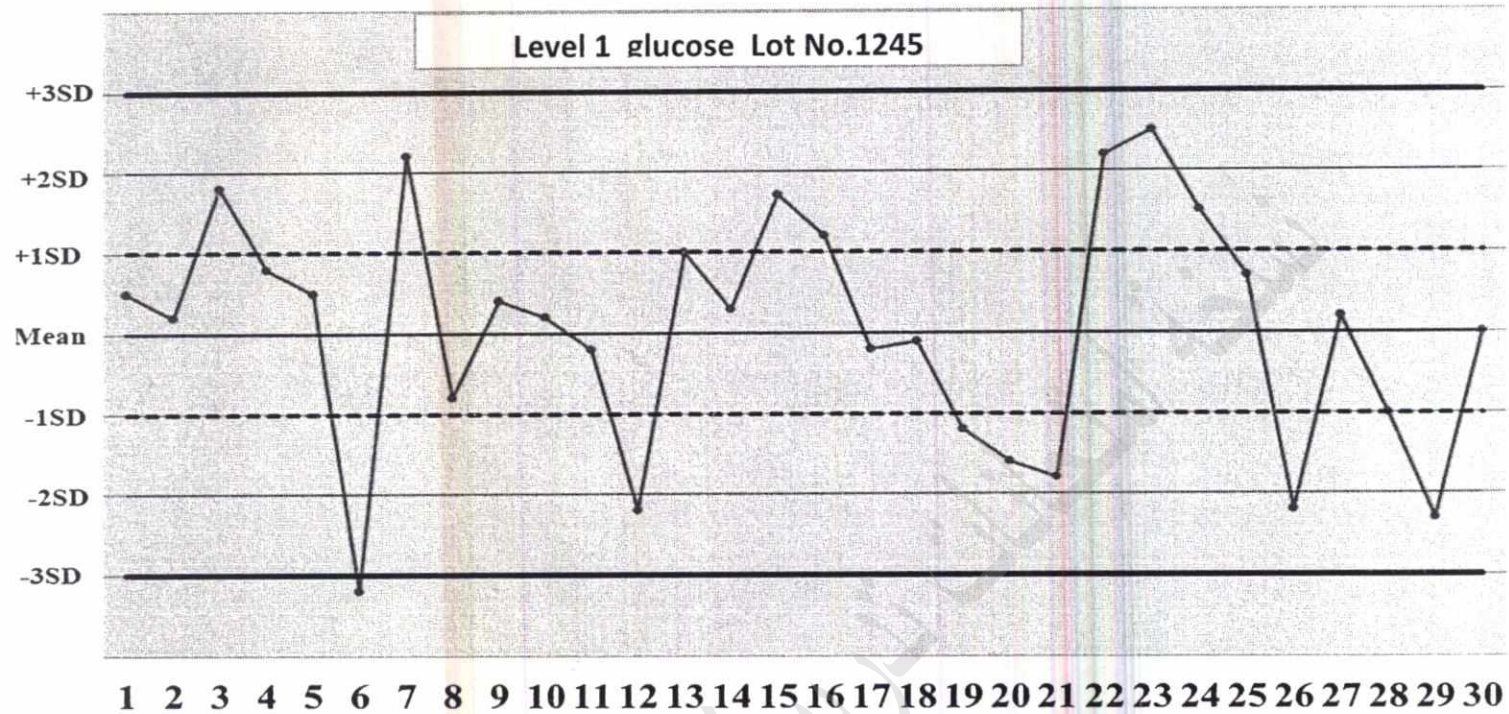
1. (.....) The policies on sample rejection is the same for all laboratories.
2. (.....) Characteristics of records are that they: need to be easily retrieved or accessed; contain information that is permanent, and does not require updating.
3. (.....) SOPs is the same for different laboratories
4. (.....) The performance characteristics of all media used in the laboratory must beverified by the appropriate QC methods, for all commercially prepared media, the performance verification will be performed for each new lot numbe.
5. (.....) Samples that should do not be rejected when the sample label and patient name on the test request form match.
6. (.....) The laboratory should provide training once to health care and laboratory personnel who are responsible for the collection of samples.
7. (.....) Standard material a substance of known purity used as the basis for a comparison of measurements in determination of this substance or another substance in a specimen.
8. (.....) Calibrators a substance with specific concentration, used to ensure the procedure is working properly.
9. (.....) Assayed controls have a pre-determined target value, established by the manufacturer. When using assayed controls the laboratory not necessary to verify the value of using its own methods.
10. (.....) Built-in Controls integrated into the design of a test kit device and automatically run with each test performed.
11. (.....) Standard Operating Procedures (SOPs) are documents that describe how to perform a test using step-by-step instructions.
12. (.....) A major goal of keeping documents and records is to find data whenever it is needed, identify and correct problems
13. (.....) When the QC sample that is used in a test run is out of the acceptable range, the testing process should be stopped, then patient results are reported.
14. (.....) Documents are the collected information produced by the laboratory in the process of performing and reporting a laboratory test
15. (.....) The performance characteristics of all media used in the laboratory must be verified by the appropriate QC methods, for media that is prepared in-house, this evaluation must be conducted for each batch prepared.

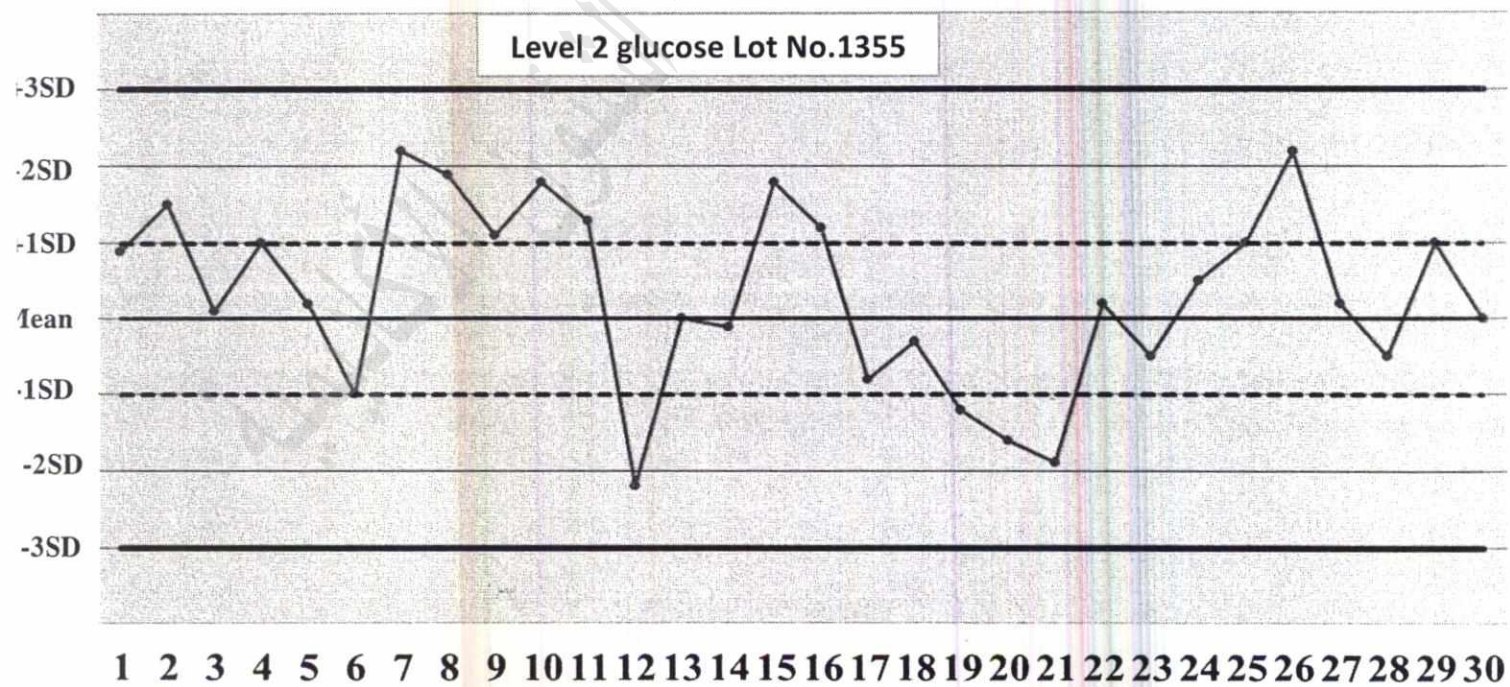
Question 6: Study the following chart that represent the results of quality control Material for glucose test within a month. Identify the type of error most likely associated if present: (10 marks)



Day (Days)	Evaluation	Type of error

Question 7 : The results of two levels quality control materials for glucose test run over a month are represented in Levey-Jennings charts, study, evaluate the charts and indicate which of Westgard Rules are violated. Identify the type of error most likely associated if present: (15 marks)





Day (Days)	Rule Violated	Type of Error

*** انتهت الأسئلة ***

*** *With my best wishes* ***

AL-AQSA UNIVERSITY		جامعة الأقصى
Medical Technology Department		قـــســـــم العلوم الطبية المخبرية
اسم محاضر المساق: د. نبيل العيلة أ. ناهض عبداللطيف		اسم المساق: مادة البكتيريا التشخيصية MEDT2303
مدة الامتحان: ساعتين	الفصل الدراسي الأول 2018-2019	اسم الطالب/ ة:

*Write all of the answers in the following table.

MCQ		MCQ		√ or X		Matching	
1		21		41		61	
2		22		42		62	
3		23		43		63	
4		24		44		64	
5		25		45		65	
6		26		46		66	
7		27		47		67	
8		28		48		68	
9		29		49		69	
10		30		50		70	
11		31		51			
12		32		52			
13		33		53			
14		34		54			
15		35		55			
16		36		56			
17		37		57			
18		38		58			
19		39		59			
20		40		60			

AL-AQSA UNIVERSITY		جامعة الأقصى
Medical Technology Department		قسم العلوم الطبية المخبرية
اسم محاضر المساق: د. نبيل العيلة أ. ناهض عبداللطيف		اسم المساق: مادة البكتيريا التشخيصية MEDT2303
مدة الامتحان: ساعتين	الفصل الدراسي الأول 2017-2018	اسم الطالب/ ة:

I- Choose the best answer: (40 marks)

1- Neisseria gonorrhoeae is able to ferment which of the following carbohydrates :
A. Glucose only
B. Glucose and maltose
C. Glucose, maltose, and sucrose
D. Glucose, maltose, sucrose, and lactose
E. None of above

2- Salmonella typhi is causative organism of:
A. Undulent fever
B. Rheumatic fever
C. Dengue fever
D. Enteric fever
E. Q fever

3. BCG vaccine is for the prevention of :
A. Brucellosis
B. Diphtheria
C. Botulism
D. Tuberculosis
E. Tetanus

4- Which organism is responsible for causing fever to a man dealing with goats?
A. Trepanema Pallidum
B. M.tuberculosis
C. Clostridium novyl
D. Brucella melitensis
E. None of these

5- Several pathogens are transmitted either during sexual intercourse or at birth. Which one of the following is NOT likely to be transmitted by these ways?
A. Haemophilis influenza.
B. Treponemna pallidum.
C. Neisseria gonorrohoeae.
D. Chlamydia trachomatis.
E. None of above

6- For diagnosing Yersinia enterocolitica, what can be used to differentiate it when culturing it?
A. Cold enrichment
B. High PH
C. High temperature
D. Warmed enrichment
E. Cannot be cultured

7- Lyme disease caused by:
A. B.vincentj
B. B.recrrentis
C. B. burgidorferi
D. B. pertussis
E. Leptospira interrogans

8. Which of the following is not true about helicobacter pylori
A. It is found closely associated with gastric mucosa
B. It is associated with gastritis
C. It plays role in gastric and duodenal ulceration
D. It is gram positive cocci
E. Human GI tracts are the only reservoirs for H. pylori

9- Infection with these bacteria accompanied by presence of 'sulpher' granules in Gram stain in :
A. Veillonella
B. Propionibacterium species
C. Peptostreptococcus
D. Bifidobacterium
E. Actinomyces

10- All about campylobacter are correct except:
A. Gram negative rods with comma, S or "gull wings" shapes
B. is microaerophilic
C. The optimal temperature for growth is 37°C
D. Neither ferment nor oxidize carbohydrates
E. They are curved, oxidase +, non-spore forming, microaerophilic, Gram-negative rods

11- How are most cases of listeriosis transmitted?
A. Insect vectors
B. Sexual contact
C. Respiratory secretions
D. Contaminated food
E. Transplacental

12- All of the following statements regarding *Treponema pallidum* are true except ?
A. shape - spirochete
B. Gram negative
C. culture - Thayer Martin Selective agar
D. transmission - sexually
E. transmission – *inutero* or during birth

13- What is the reservoir of *Rickettsia rickettsii?*
A. Mites
B. Fleas
C. Tick
D. Wild rodents

14- The preferred medium for the isolation of Bordetella pertussis is
A. Bordet-Gengou plates
B. Buffered Charcol yeast extraxt
C. Thayer Martin medium
D. Xylose Lyine Deoxycholate

15- Spirochetes best seen by :
A- Light Microscope
B- Dark field microscope
C- Electron Microscope
D- Phase contrast microscope

16- Specific organisms that are considered strict anaerobes include:
A. E. coli and Streptococcus pneumoniae
B. Bacteroides and Klebsiella
C. Fusobacterium and Pseudomonas
D. Peptostreptococcus and Clostridium

17- All of the following are typical mycobacteria except:
A. M. tuberculosis
B. M. bovis
C. M. Leprae
D. M. marinum

18- All of the followings are Enterobacteriacea members except:
A- Shigella
B- Yersenia
C- Vibrio
D- Citrobacter

19- All Enterobacteriaceae share all of the following characteristics EXCEPT:
A. Ferment glucose
B. Reduce nitrates to nitrites
C. Oxidase positive
D. Gram negative bacilli

20- *N. gonorrhoeae* is a fastidious pathogen and found in sites often contaminated with normal flora. The best medium for isolation is:
A. Sheep blood agar
B. Löffler's Serum Slope
C. Thayer-Martin agar
D. Thiosulfate citrate bile salts sucrose medium

21- Most humans become infected with legionella by:
A. A water source
B. By tick exposure
C. By mosquito exposure
D. By direct contact with another person who is infected

22- The most effective noninvasive test for the diagnosis of Helicobacter pylori associated gastric ulcer is:
A. Detection of H. pylori antigen in stool
B. Biopsy and Histology
C. Growth of H. pylori in the stool
D. IgM antibodies to H. pylori

23- Which of the following is not a characteristic of Pseudomonas aeruginosa?
A. Ferment carbohydrate
B. Obligate aerobic
C. Produce exopigment on Muller Hinton agar
D. Resistance to antibiotics
E. Oxidase and catalase positive

24- This urinary pathogen "swarms" across agar surfaces and may cause bladder and renal calculi (stones).
A. Citrobacter freundii
B. Enterobacter aerogenes
C. Serratia marcescens
D. Klebsiella oxytoca
E. Proteus mirabilis

25- During the first week of typhoid fever, which samples should be collected:
A. Urine culture
B. Stool culture
C. Blood culture
D. None of above

26- which of the following is Gram variable bacteria?
A. Clostridium perfringens
B. Gardnerella vaginalis
C. Mycobacterium tuberculosis
D. Bacillus cerus

27- Protein A is found in cell wall of::
A. coagulase-negative staphylococci
B. Staphylococcus aureus
C. Micrococci
D. Streptococcus pyogenes
E. Streptococcus agalactiae

28- The terms palisading and chinese letters describe the common arrangement Of:

A. Corynebacterium diphtheria
B. Mycobacterium tuberculosis
C. Borrelia species
D. Clostridium species
E. Listeria species

29- All of the following used for diagnosis of Vibrio cholera except

A. Rice watery school
B. Alkaline peptone water
C. TCBS
D. Selenite F brith
E. Curved bacilli

30- Bacterial species cause Q fecver

A. Chlamydia trachomatis
B. Legionella
C. Rickettsia
D. Coxiella
E. Campylobacter

31- Which of the following is not characteristic of pathogenic Staphylococci?

A. Coagulase production
B. Beta hemolysis
C. Fomentation of mannitol
D. CAMP production
E. DNAse production

32- Which of the following is not true of Mycobacterium turberculosis?

A. cell wall contains mycolic acids/waxy lipids
B. Very slow growing
C. non spore forming non motile
D. Cause pulmonary infection only
E. Grow on Lowenstein Jensen medium

33- Which of the following pathogens causes sterile pyuria?

A. Mycoplasma pneumonia
B. Mycoplasma hominis
C. Ureaplasma urealyticum
D. Chlamydia pneumoniae
E. None of the above

34-What species of the streptococci can be transferred to an infant during delivery?

A. S. pneumoniae
B. S. pyogenes
C. S. agalactiae
D. Enterococcus spp
E. Streptococcus viridans

35- Cause Bacillary dysentery (bloody stools, mucous, and numerous WBC).

A. Salmonella
B. Shigella
C. Proteus
D. Clostridium
E. H. pylori

36- Which of the following organism shares antigenic characters with proteus

A. Klebsiella
B. Rickettesiae
C. Mycoplasma
D. Chlamydia
E. Borrelia

37- All of the followings are Small obligate intracellular parasites except:

A. Chlamydia
B. Legionella
C. Rickettsia
D. Coxiella
E. Campylobacter

38- They are Microaerophilic, thermophilic and capnophilic

A. Treponema
B. Borrelia
C. Campylobacter
D. Helicobacter pylori
E. Leptospirosis

39- Bacterial infection causes Reiter's Syndrome

A. Chlamydia trachomatis
B. Legionella
C. Rickettsia
D. Coxiella
E. Campylobacter

40- For diagnosing Yersinia enterocolitica, what can be used to differentiate it when culturing it?

A. Cold enrichment
B. High PH
C. High temperature
D. Warmed enrichment
E. Cannot be cultured

II. Write T for true statement and F for false statement? (20 Marks)

41	Screening methods for syphilis are based on detecting serum antibodies to cardiolipin in patients (including VDRL test).	
42	Administration of proton pump inhibitors don't effect on Urea Breath Tests (UBT).	
43	Most gastric adenocarcinomas and lymphomas are concurrent with or preceded by an infection with H. pylori.	
44	Pseudomonas aeruginosa is Prefer dry environments and are resistant to many disinfectants and antibiotics.	
45	Pasteurella can cause Localized cellulitis and lymphadenitis following animal bite or scratch	
46	Loeffler's seum slope is used as selective medium for isolation of Listeria monocytogenes.	
47	Haemophilus parainfluenza need x and v factor to grow	
48	C. perfringens Subdivided into types based on the four major lethal toxins they produce. Type C causes most of the human infections.	
49	Mycoplasma is the smallest free-living organisms, lack of a cell wall	
50	Rickettsia have cell wall, bigger than virus but smaller than bacteria	
51	Primary syphilis is characterized by localized granulomatous dermal lesions (gummas).	
52	C. difficile is the most serious cause of antibiotic-associated diarrhoea (AAD) and can lead to pseudomembranous colitis	
53	Mantoux test is used for diagnosis of Mycobacterium tuberculosis.	
54	Streptolysin O lyse red cells but doesn't stimulate the production of any detectable antibody.	
55	Coxiella Burnetii doesn't cause skin rash and gives negative results with Weil felix reaction	
56	Mycobacteria are resistant to chemical agents, antibiotics, sunlight and UV rays	
57	All Enterobacteriaceae are oxidase negative, ferment glucose and reduce nitrate to nitrite	
58	Neisseria meningitides produce acid from glucose but not maltose, sucrose, fructose, or lactose.	
59	Proteae includes Proteus, Morganella and Provetella.	
60	Viridans streptococci A leading cause of bacterial native valve and prosthetic valve endocarditis.	

III- Answer the following questions:

1- What are the virulence factors of Helicobacter pylori? (5 marks)

	Virulence factor	Function
1		
2		
3		
4		
5		
6		
7		

2- A- What are the enzymes that developed by aerobic bacteria to protect themselves from the toxic forms of oxygen (3 marks)

	Enzyme	Equation
1		
2		
3		

B- How you create anaerobic conditions in Anaerobic Jar? (2 marks)

3- Explain the developmental cycle of Chlamydia trachomatis? (5 marks)

4- Write mechanism of action of cholera toxin (pathogenesis)? (5 marks)

IV - Fill in the blank the correct Microorganism according to the following choices? Bonus (5 marks)

A- Klebsiella pneumoniae

B- Mycobacterium ulcerans

C- Bacillus species

D- Chlamydia trachomatis

E- Pseudomonas aeruginosa

F- Salmonella species

G- Group B Streptococci

H- Bacteroides fragilis

I- Brucella species

J- Staph aureus

61- .....are Catalase negative, Bacitracin resistance, CAMP Test positive, Penicillin sensitive

62- .....are Small gram-negative coccobaccilli, Nonmotile, Aerobic, Oxidase positive, Catalase positive

63- ..... is a non-lactose fermenter, oxidase positive, produces exopigments in culture eg. pyocyanin, fluorescein

64- ..... are motile, urease negative, and produce H2S in culture

65- ..... The most important strict anaerobic non-spore-former causing clinical disease

66- ..... Small obligate intracellular parasites, have special growth cycle and replicate by binary fission

67- ..... It can cause sever infections which may destroy blood vessels and invade bone

68- ..... Short gram-negative rods, mucoid colonies, Lactose positive, most are urease positive, they are non motile.

69- ..... Most common cause of bacterial infections, food poisoning & toxic shock syndrome

70- ..... Gram positive bacilli, Spore forming (outside the host), Capsulated (inside the host), It is found in soil habitats.

****

مع تمنياتنا لكم بالتوفيق والنجاح

State Of Palestine
Al-Aqsa University
College of Applied Science
Dep. of Medical Lab Sciences

دولة فلسطين
جامعة الأقصى
كلية العلوم التطبيقية
قسم العلوم الطبية المخبرية

الفصل الأول: 2018-2019	الاختبار الفصلي لمساق	التاريخ: 14/01/2019
محاضر المساق: د. حسن خلف	التشريح ووظائف أعضاء 2	الزمن: 2 ساعة
عدد الأوراق : 6 صفحات	MEDT2206	عدد الأسئلة : 4 أسئلة
اسم الطالب:		الرقم الجامعي:

Question one Fill in the spaces. 2marks each

1. The main structural components of a nephron are:

A.---------- B. ----------
C.---------- D. ----------

2-The structures that inter the lung through the hilum are:

A----------B----------
C----------D----------

3-The urinary system consists of:

A----------B----------
C----------D----------

4-Major functions of the urinary system:

A.---------- B.----------
C.----------

5-Matured spermatozoa have 3 parts:

A.---------- B.----------
C.----------

6-The two types of respiration are:

A.- external that occurs in ---------- and
B.- internal that occurs in ----------

7-- It is better to breath through the nose than through the mouth because of changes produced in the air as it comes in contact with the lining of the nose:

A----------B----------
C----------

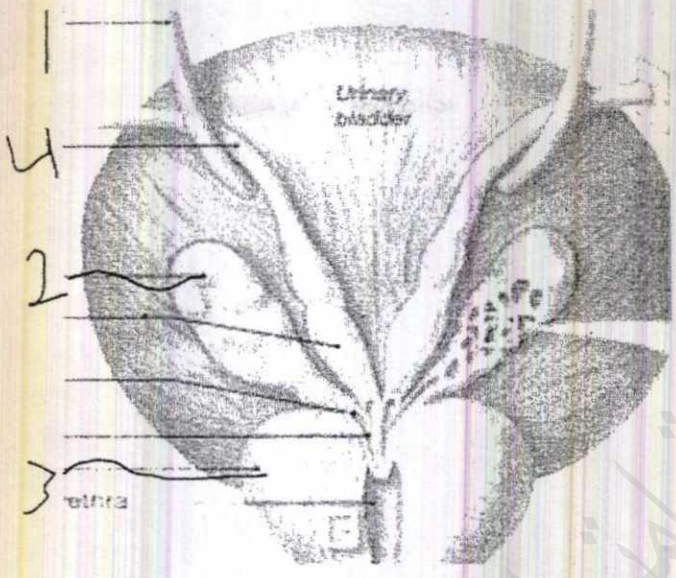
8-The salivary glands are: A----------
B----------C----------

9-The two chief function of the digestive system are

A---------- B----------

10- Write down the names of structures according to the liters:

1----------2----------
3---------- 4----------



Question two / True and false statements. One mark each:

Write all of the T & F answers in the following table.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

1-Proteins, glucose, casts (decomposed blood) and calculi from minerals are normal if present in urine. TRUE OR FALSE

2.The pancreas also produces large amounts of alkaline fluid, which neutralizes the chyme in the small intestine. TRUE OR FALSE

3.The testes hang in scrotum outside the body their temperature is of cooler than the body temperature. TRUE OR FALSE

4.Testosterone affects not only spermatogenesis but also sex organ development and appearance of secondary male sexual characteristics. TRUE OR FALSE

5.The erythrocyte loses its nucleus in the blood before maturation. True Or False

6.Persons with type O blood are said to be universal recipient. True Or False

7.The epiglottis helps keep food out of the remainder of the respiratory tract. True Or false

8.The larynx is lined with ciliated mucous membrane. . True Or False

9.Most absorption of digested food also occurs through the walls of the large intestine. True Or False

10.The villi and microvilli increase the surface area for absorption of nutrients in the small intestine. True Or False

11.The pancreas functions as endocrine gland only. True Or False

12.The veins allow for exchanges between the blood and body cells.
TRUE OR FALSE

13.The plasma proteins forms 27 percent of the volume of plasma.
TRUE OR FALSE

14.Buffers in the blood help keep the PH of body fluids at about 7.6.
TRUE OR FALSE

15.The blood group of a person is named after the type of antibodies in his plasma.
TRUE OR FALSE

16.Respiration is regulated so that the levels of oxygen, carbon dioxide, and acid are kept within certain limits. TRUE OR FALSE

17.The apex of each renal pyramid ends in papilla, which opens to a major calyx.
TRUE OR FALSE

18.The functional units of the testes are the seminiferous tubules that produce testosterone. TRUE OR FALSE

19.The uterine tubes are directly connected to ovary. TRUE OR FALSE

20.Breasts of women are modified sweat glands that produce and secrete milk.
TRUE OR FALSE

QUESTION THREE/ CROSS MATGHING QUESTION **One mark each**

Direction: Place the correct letter in blank to the left. Letters used only once.
ضع الحرف المناسب في الفراغ الذي يناسبه من القائمة اليسرى

.....1- Urethra	A. Houses the fetus during pregnancy.
-------2- Placenta	B. Male hormone
..... 3- Uterus	C. Glands that produce the egg cells and hormones.
..... 4- Testosterone	D. Organ that nourishes the fetus.

..... 5- Ovaries E. Brings urine and semen out of body through the penis

Question FOUR Multiple choice questions. One mark each :.

Write all of the MCQ answers in the following table.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

1. Which of the following is NOT an accessory structure of the digestive system?
a)Liver.
b)Gallbladder.
c)Pancreas.
d)Spleen..

2. The pancreatic duct transports secretions from the pancreas to the
a)stomach.
b)duodenum.
c)liver.
d)colon.

3. Bile is produced in the:
a)liver.
b)small intestine.
c)pancreas.
d)stomach.

4. The final portion of the small intestine is the
a)ileum.
b)duodenum.
c)jejunum.
d)colon..

5. Glucose is stored in the liver as
a)starch.
b)fat.
c)glycogen.
d)ATP.

6. During digestion, proteins are broken down into molecules of

a)glucose.
b)fatty acids.
c)amino acids.
d)nucleic acids.

7. Which of the following sphincters is under voluntary control?

a)Pyloric
b)cardiac
c)Internal anal
d)External anal

8. Which of the following is the function of epididymis: -

a) Stores sperm
b) Serve as duct system
c) Cause peristaltic contraction
d) a & b only
e) a, b and c

9. In female, production of FSH is inhibited by

a) Estrogen
b) LH
c) Progesterone
d) Prolactine
e) a & c only

10.Cardiac output is equal to the

(a) difference between the end-diastolic volume and the end-systolic volume.
(b) product of heart rate and stroke volume.
(c) difference between the stroke volume at rest and the stroke volume during exercise.
(d) stroke volume less than the end-systolic volume.
(e) product of heart rate and blood pressure.

11.A sudden surge in LH secretion causes the

a) onset of menses.
(b) rupture of the follicular wall and ovulation.
(c) beginning of the proliferative phase.
(d) end of the uterine cycle.

12. The enzymatic breakdown of large molecules into their basic building blocks is called:

(a) absorption.
(b) secretion.
(c) mechanical digestion.
(d) chemical digestion.

13. Air moves into the lungs because:

(a) the gas pressure in the lungs is less than atmospheric pressure.
(b) the volume of the lungs decreases with inspiration.
(c) the thorax is muscular.
(d) contraction of the diaphragm decreases the volume of thethoracic cavity.
(e) the respiratory control center initiates active expansion ofthe thorax

14.The hormone that stimulates uterine contractions is

a)oxytocin
b)Estrogen
c)granular cell carcinoma
d)progesterone

15. Sperm maturation occurs in the

a)seminiferous tubules
b)epididymis
c)vas deferens
d)urethra

GOOD LUCK

Final exam Cancer Biology

Time 120 min

جامعة الأقصى

Student name: ----------

Date: 8-1-2019

Question 1: Indicate which statement is true and which is false and underline the mistake - one or two words- (20 marks).

1. Normal cells have about 60 doublings which are not enough to form malignant tumor. ( )
2. Cell cycle regulators include Rb and p21. ( )
3. In G1 cell cycle arrest the level of cyclin B will be decreased. ( )
4. Most of melanomas have mutated AKT which enables sustained proliferate for cancer cells. ( )
5. Necrotic tissues might considered indicators of cancer. ( )
6. PTEN is the main inhibitor of PI3K/AKT pathway. ( )
7. Sarcoma might be found in bones and soft tissues. ( )
8. Brain cancers develop from supportive cells only. ( )
9. mTOR is an activator of autophagy ( )
10. Replicative senesce might be induced by inactivation of Rb. ( )
11. In the cell cycle, G1/S transition is promoted by the activation of the p16 gene. ( )
12. Cytokeratins 8, 18, and 19 are markers of metastasis. ( )
13. Sustaining proliferation signaling of cancer cells depends on the external growth factors. ( )
14. Ras transcription factor is mutated in many cancers to activate continues cell division. ( )
15. Both cancer cells and embryonic stem cells have active telomerase. ( )
16. BH3 only proteins including PUMA and NOXA are pro apoptotic proteins. ( )
17. BCL-2 is overexpressed in cancer cells and prevents extrinsic apoptosis. ( )
18- C-FLIP is overexpressed in many cancer types. ( )
19- Active caspase 9 is part of the apoptosome complex. ( )
20- N cadherin is usually activated by SNAIL1 transcription factor. ( )

Question 2: Choose the correct answer of the followings. (30 marks)

1- Cancer cells don't have replicative senescence because

a) They have mutated apoptotic proteins

b) They have mutated p53

c) They have mutated TERT

d) They have functional ATR

2- Senescent cells are

a) Metabolically active

b) Metabolically inactive

c) express high level of β-galactosidase enzyme

d) express nonfunctional β-galactosidase enzyme

e) smaller in size than non-senescent cells

3- Normal senescent cells display growth factor receptor but----

a) These receptors are not functional

b) These receptors are hyperactive

c) These receptors work as normal

4- Human telomerase uses

a) Another chromosome as a template

b) Its own DNA template

c) Its own RNA template

d) Can't use any template

5- ATR inhibition induces

a) Senesce in normal cells

b) Mainly inhibits telomerase enzyme

c) Mainly inhibits ALT mechanism

d) None of the above

6- End of replication problem

a) Occurs in normal cells only

b) Occurs in cancer cells and normal cells

c) Occurs in 3' end of the daughter cells

d) All of the above

7- All of the followings induce sentence except

a) DNA damage

b) X ray

c) Chemotherapy

d) Ras

e) AKT

8- You have a plate of cells and wanted to test their migration ability, what of the followings is your first choice to test:

a) Scratch assay

b) P21 level

c) Colonogenic assay

d) Tumorgenic assay

9- pro-inflammatory cells can play major roles in--------

a) promoting tumor progression

b) cancer prevention

c) cancer multidrug resistance

d) activation check points protein

10- Deletion of p53 gene copies from the germ cells

a) Has significant effect on the development of the embryos .

b) Has lethal effects on the fetus

c) Will promote cancer developments in the embryos

d) None of the above

11- All of the followings are targets for p53 except

a) Bax

b) P21

c) Bcl-2

d) MDM2

e) AKT

12- APC normally play a role in

a) β-catenin regulation

b) accelerating cell division

c) promoting tumor initiation

d) All of the above

AKT plays a direct role in-------

a) P53 degradation

b) Bid inhibition

c) Bcl-2 activation

d) Autophagy activation

13- Mutant p53 allele---------

a) Has a hyperactive promoter

b) Can be inhibited by the wild type allele

c) Still active to prevent some cancers

d) All of the above

14- The main antagonist of p53 is

a) ARF

b) MDM2

c) P16

d) All of the above

15- ---------- play a role to stabilize p53

a) P21

b) P14

c) P27

d) P19

e) None of the above

16- P53 is normally regulated be ----------

a) Degradation

b) Localization

c) Phosphorylation

d) All of the above

e) None of the above

17- MDM2 can be phosphorylated by

a) AKT

b) P53

c) ARF

d) P14

e) None of the above

18- Active caspase 8

a) Activates BAX

b) Supports BAX

c) Inhibits BAX

d) Has no relation to Bax

19- Apoptosis can be inhibited by all of the followings except

a) AKT
b) ATM
c) C-Flip
d) Bcl-2

20- P16 is normally produced

a) In alternative splicing to the same gene of p14
b) When cells going to proliferate
c) When cells going to die
d) None of the above

21- Normally Rb protein --------

a) Inhibits E2F
b) Activates p14
c) Activates cell cycle progression
d) Inhibits active cdk

22- Active caspase 2 has a role in

a) Extrinsic apoptosis
b) P53 stabilization
c) Autophagy
d) All of the above

23- Autophagy is -------

a) a cell death mechanism
b) a cell survival mechanism
c) might be a cell death or cell survival depending its level
d) none of the above

24- starvation normally

a) activates JNK1
b) Inhibits BCL-2
c) activates AMPK
d) all of the above
e) none of the above

25- Invading carcinoma cells might

a) make their own proteases, such as MMP-2 and MMP-9
b) might depend on macrophages to destroy matrix

c) a+b

d) none of the above

26- Metastatic cancer cells

a) Are larger than normal cells

b) Smaller than normal cells

c) Has the same size of normal cells

27- P53 is a target for

a) P21

b) ARF

c) BAX

d) PUMA

e) None of the above

28- Twist is a transcription factor

a) That activates E-cadherin

b) Inhibits EMT

c) Might be regulated by degradation

d) Activates p53

29- In metastatic cancer cells

a) Anoikis is activated by p53 mutations

b) Anoikis is inhibited by p53 activation

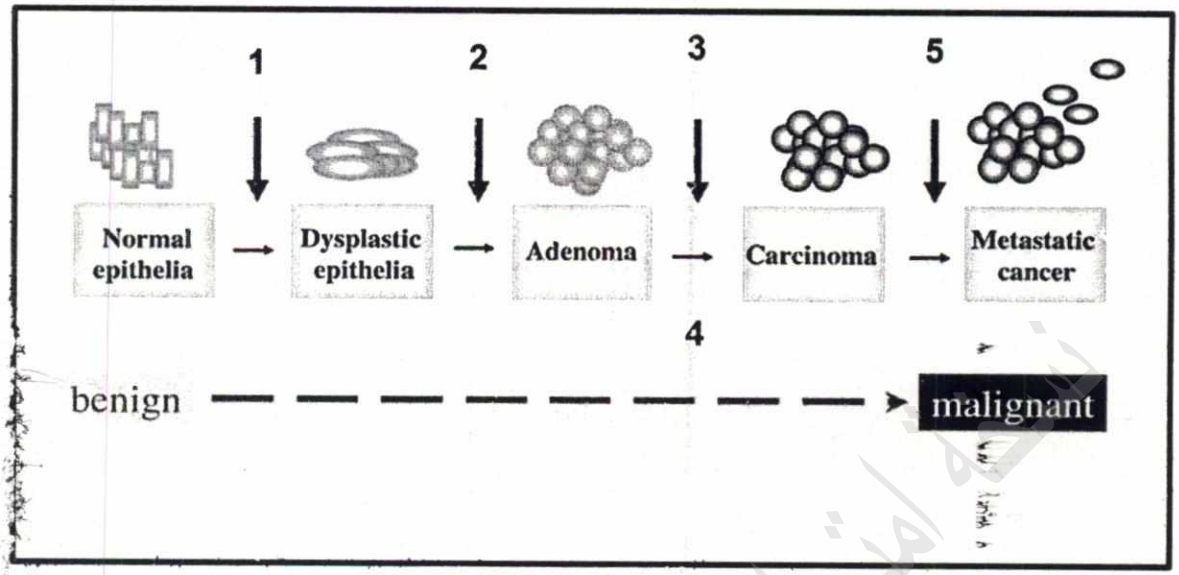
c) Anoikis is activated by p53 activation

d) Anoilkis is inhibited by Bcl2 overexpression

Question-3 answer the following questions briefly (30 marks)

1- Briefly describe 5 mechanisms for how cancer cells inhibit apoptosis. (15 marks)

2- Read the following model and answer the questions below. (15 marks)



a- What are the five genes indicated on the figure and how do these genes play roles in colorectal cancer development?

بالتوفيق

Al-Aqsa University		جامعة الأقصى
Medical Laboratory Sciences Dep.		قسم العلوم الطبية المخبرية
محاضر المساق: أ. أماني الهندي	جامعة الأقصى	اسم المساق: سوائل الجسم
تاريخ الامتحان: 2019/01/13 مدة الامتحان: 2 ساعة	الاختبار النهائي للفصل الأول 2018-2019 MEDT 3222	اسم الطالب/ة:
		الرقم الجامعي:

Q 1: Choose the correct answer for each of the following questions: (30 marks)

1. The most indicative cast seen in tubular necrosis:
   A. RBCs cast
   B. Epithelial cast
   C. WBCs cast
   D. Fat cast

2. The most common genetic defect associated with cystic fibrosis is:
   A. F508del
   B. Trisomy 21
   C. Philadelphia chromosome
   D. Fragile X

3. In the male, LH causes:
   A. Ejaculation
   B. Testosterone production
   C. Initiation of spermatogenesis
   D. Development of secondary sex characteristics

4. Ghost RBCs are seen in urine that is:
   A. Acidic and dilute
   B. Alkaline and dilute
   C. Acidic and concentrated
   D. Alkaline and concentrated

5. The function of fructose in semen is to:
   A. Promote coagulation of semen in the female reproductive tract
   B. Buffer acids in the female reproductive tract
   C. Provide an energy source for ATP production by sperm
   D. Inhibit the growth of bacteria in semen and the female reproductive tract

6. On the average, nearly _____ ml of CSF are produced daily.
    A. 100
    B. 500
    C. 140
    D. 1000

7. During spermatogenesis, which of the following undergoes the first meitotic division to produce haploid cells?
    A. Spermatogonia
    B. Primary spermatocytes
    C. Secondary spermatocytes
    D. Spermatids

8. The normal concentration of proteins in CSF, relative to serum protein, is:
    A. < 1%
    B. 5%-10%
    C. 25%-30%
    D. 50%-60%

9. In which of the following metabolic diseases will urine turn dark brown to black upon standing:
    A. Phenylketonuria
    B. Alkaptonuria
    C. Maple syrup disease
    D. Aminoaciduria

10. The CSF flows through the:
    A. Choroid plexus
    B. Pia mater
    C. Arachnoid space
    D. Dura mater

11. Liquefaction of a semen specimen should take place within:
    A. 1 hour
    B. 2 hours
    C. 3 hours
    D. 4 hours

12. The following results were obtained on a urine specimen at 8:00 AM: pH=5.5, protein=2+, glucose =3+, ketones= 3+, blood= negative, bilirubin=positive, nitrite=positive. If this urine was stored uncapped at 5 degrees C without preservation and retested at 2 PM, which of the following test results would be changed due to these storage conditions?
    A. Glucose
    B. Ketones
    C. Protein
    D. Nitrite

13. Elevated CSF protein values can be caused by all of the following except:
    A. Meningitis
    B. Multiple sclerosis
    C. Fluid leakage
    D. CNS malignancy

14. Cholesterol crystals and fatty casts will most likely to be observed in urine that contain:
    A. Glucose +3
    B. WBCs
    C. Protein +4
    D. Triple phosphate crystals

15. An antidiuretic hormone deficiency is associated with:
    A. Specific gravity around 1.031
    B. Low specific gravity
    C. High specific gravity
    D. Variable specific gravity

16. To prepare the reagent used for mucin clot determination of synovial fluid, water is mixed with:
    A. Hydrochloric acid
    B. Sodium hydroxide
    C. Acetic acid
    D. Sodium chloride

17. A patient s urinalysis revealed a positive bilirubin and a normal level of urobilinogen. These results are associated with:
    A. Obstruction of the biliary tract
    B. Viral hepatitis
    C. Hemolytic jaundice
    D. Cirrhosis

18. All characterized by low viscosity of synovial fluid except:
    A. Gout
    B. Osteoarthritis
    C. Rheumatoid arthritis
    D. Septic arthritis

19. Normal WBCs count in synovial fluid:
    A. <300 cell/µl
    B. <200 cell/µl
    C. 500 cell/ µl
    D. 2000 cell/ µl

20. An increase secretion of renin would be expected to have what effect on sodium excretion and potassium excretion in urine?
    A. Increase in Na+ excretion and increase K+ excretion
    B. Increase in Na+ excretion and decrease K+ excretion
    C. Decrease in Na+ excretion and increase K+ excretion
    D. Decrease in Na+ excretion but no effect on K+ excretion

21. Why might a creatinine level be requested on an amniotic fluid?
    A. Detect oligohydramnios
    B. Detect polyhydramnios
    C. Differentiate amniotic fluid from maternal urine
    D. Evaluate lung maturity

22. The presence of a fetal neural tube disorder may be detected by:
    A. Increased amniotic fluid bilirubin
    B. Increased maternal serum alpha-fetoprotein
    C. Decreased amniotic fluid phosphatidyl glycerol
    D. Decreased maternal serum acetylcholinesterase

23. Following an abnormal sperm motility test with a normal sperm count, what additional test might be ordered?
    A. Fructose level
    B. Zinc level
    C. Acid phosphatase
    D. α-Glucosidase

24. Chemical tests primarily performed on synovial fluid include all of the following except:
    A. Uric acid
    B. Lactate dehydrogenase
    C. Alkaline phosphatase
    D. Total protein

25. The percentage of sperm showing average motility that is considered normal is:
    A. 25%
    B. 50%
    C. 60%
    D. 75%

26. Synovial fluid crystals that occur as a result of purine metabolism or chemotherapy for leukemia are:
    A. Monosodium urate
    B. Cholesterol
    C. Calcium pyrophosphate
    D. Apatite

27. Chemical tests primarily performed on peritoneal fluid include all of the following except:
    A. Lactate dehydrogenase
    B. Glucose
    C. Alkaline phosphatase
    D. Amylase

28. ADA levels higher than 40 U/L in pleural fluid are highly indicative of:
    A. Pancreatitis
    B. Esophageal rupture
    C. Tuberculosis
    D. Pneumonia

29. CSF is produced by …….. in the ventricles.
    A. Arachnoid villi
    B. Subarachnoid space
    C. Spinal canal
    D. Choriod plexuses

30. Ketonuria may be caused by all of the following except:

A. Starvation
B. Vomiting
C. Bacterial infection
D. Diabetic acidosis

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

Q 2: Matching: (15 marks)

1. Match the following colors in amniotic fluid with their significance.

___ A. Colorless	1. Fetal death
___ B. Dark green	2. Normal
___ C. Red-brown	3. Presence of bilirubin
___ D. Yellow	4. Intra-amniotic hemorrhage
___ E. Blood-streaked	5. Presence of meconium

2. Match the following disorders with their appropriate group:

A. Noninflammatory
B. Inflammatory
C. Septic
D. Hemorrhagic

____ Gout
____ Neisseria gonorrhoeae infection
____ Systemic lupus erythematosus
____ Osteoarthritis
____ Hemophilia
____ Rheumatoid arthritis
____ Heparin overdose

3. **Match each of the following Dipstick reaction principles or reagents with the substance listed.**

A. Double sequential enzymes		Specific gravity
B. Sodium nitroprusside		Protein
C. Diazonium salt		PH
D. Bromphenol blue		Bilirubin
E. Hemoglobin Peroxidase		Nitrite
F. p-dimethyl aminobenzaldehyde (Ehrlich's reagent)		Glucose
G. Pyrrole amino acid ester compound reacts with diazo		Blood
H. Para arsanilic acid		Urobilinogen
I. Polyelectrolytes and bromothymol blue indicator		Leukocyte esterase
J. Double indicator system to cover span of color changes		Ketones

4. **Place the appropriate letter in front of the following statements describing transudates and exudates.**

A: Transudate
B: Exudate

____ Caused by increased hydrostatic pressure
____ Caused by decreased oncotic pressure
____ Malignancy related
____ Caused by nephrotic syndrome
____ Clear appearance
____ Caused by increased capillary permeability
____ Caused by congestive heart failure
____ Tuberculosis related
____ Endocarditis related
____ Caused by hepatic cirrhosis

Q 3: Write "T" For True Statement And "F" For False Statement: (20 marks)

	1. Polydipsia is a symptom of both diabetes mellitus and diabetes insipidus.
	2. The protein section of the urine reagent strip is most sensitive to Bence Jones protein.
	3. Hyaline cast is most likely to be found in healthy people.
	4. The primary component of most urinary calculi is uric acid.
	5. Sweat conductivity is the confirmatory test for diagnosing Cystic fibrosis.
	6. Brown color of pleural fluid is due to aspergillus while black color is due to rupture of amoebic liver abscess.
	7. Two membranes lines the cavity wall (parietal membrane), and the third covers the organs within the cavity (visceral membrane).
	8. To determine if a fluid is synovial fluid, it should be mixed with acetic acid.
	9. The appearance of glucose in the urine of a patient with a normal blood sugar indicate renal tubular damage.
	10. An increased semen PH may be indicative of infection within the reproductive tract .
	11. A sweat test can't identify carriers of the cystic fibrosis gene.
	12. Cystic fibrosis is an autosomal recessive disease is caused by a mutation in the CFTR gene disrupt the function of the sodium channel.
	13. After 34 weeks of gestation, the level of sphingomyelin decreases, whereas the level of lecithin increases significantly. L/S ratio $\geq$ 2.0.
	14. Pilocarpine stimulates sweat gland to produce sweat fluid.
	15. Before testing, very viscous synovial fluid should be treated with normal saline.
	16. Fluid:serum albumin ratio is the recommended test for determining whether peritoneal fluid is a transudate or an exudate.
	17. Criteria for a positive sweat test in children is sweat chloride greater than 60 mmol/L) and child need more than one sweat test to diagnose cystic fibrosis.
	18. Staghorn stones are struvites that formed in alkaline urine.
	19. Lactate is the best indicator for CSF (hepatic encephalopathy).
	20. White blood cell casts is considered diagnostic of pyelonephritis.

Q 4: Write short notes about: **(15 marks)**

1. Indications for performing amniocentesis:
   a. .....
   b. .....
   c. .....

2. Seminal fluid fractions and its % of the fluid volume:
   a. .....
   b. .....
   c. .....
   d. .....

3. Cystic Fibrosis patient suffer from malnutrition and poor growth, explain:
   .....
   .....
   .....

4. Differential Diagnosis of Meningitis by Laboratory Results

	Bacterial	Viral	Tubercular	Fungal
Total WBC				
Differential				
Protein				
Glucose				
Lactate				
Others				

End of Questions

Miss. Amany S. AlHindi

AL-AQSA UNIVERSITY		جامعة الأقصى
Medical Technology Department		قسم العلوم الطبية المخبرية
اسم المحاضر المساق: أ.ناهض عبد اللطيف		اسم المساق: علم الفطريات الطبية MEDT4319
مدة الامتحان: ساعتين	الامتحان النهائي للفصل الدراسي الاول (2018-2019)	اسم الطالب/ة:

*Write all of the answers in the following table.

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

رصد درجات الطالب	
Question I	
Question II	
Question III	
Question IV	
Question V	
Total	

AL-AQSA UNIVERSITY		جامعة الأقصى
Medical Technology Department		قسم العلوم الطبية المخبرية
اسم محاضر المساق: أ. ناهض عبد اللطيف		اسم المساق: علم الفطريات الطبية MEDT4319
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I-Choose the best answer: (35 Marks)

1. A primary gram stain shows filamentous, branching gram positive rods. A modified acid fast stain from the same specimen reveals that the bacteria are modified acid fast positive. The organism is most likely to be which of the following?

A. Actinomyces
B. Streptomyces
C. Nocardia
D. Mycobacterium tuberculosis

2. A lung biopsy shows an invasive fungal pneumonia. Morphologically, the organism has relatively narrow, regularly septated, hyaline hyphae, with acute angle branching. The organism is most likely to be which of the following?

A. Mucor
B. Coccidioides immitis
C. Aspergillus species
D. Rhizopus

3. A 65-year-old man was diagnosed with pseudomembranous candidiasis and given a prescription for oral fluconazole. This drug acts by:

A. Binding to membrane ergosterol
B. Incorporation into RNA leading to mistranslation and inhibits DNA synthesis
C. Inhibition of 1,3-β-glucan biosynthesis
D. Inhibition of mitosis
E. Inhibition of squalene 2,3-epoxidase
F. Inhibition P450-dependent sterol demethylase (lanosterol 14α-demethylase)

4. Fusarium grows in cool and wet conditions and produces all of these mycotoxinx Except:

A. Trichothecenes
B. Zearalenone
C. Patulin
D. Deoxynivalenol

5. A patient receiving corticosteroid treatment for lupus developed headache and fever and when she began to display some memory loss she was brought to her physician by her spouse. Considered in the differential diagnosis was cryptococcal meningitis. Which of the following, if found upon examination of cerebrospinal fluid would support that diagnosis?

A. Encapsulated yeast cells
B. Hyphae
C. Intracellular yeast cells
D. Yeast cells with multiple buds
E. Yeast cells with a broad base between mother and daughter cells

6. Histopathology of the biopsy specimen showed at 2.4mm granule surrounded by neutrophils. KOH mount suggested that the granule contained 2-6μ, wide interwoven hyphae with large, swollen cells (chlamydospores) at the margin of the lesion. The most likely diagnosis is:

A. Actinomycetoma
B. Aspergillosis
C. Chromomycosis
D. Eumycetoma
E. Phaeohyphomycosis

7. A small brownish irregular macule on the palm of a 13-year-old girl is examined by a dermatologist in her Louisiana home town. A skin scraping from the lesion is obtained for microscopic observation and culture. Microscopic examination of the specimen shows brownish septate branching hyphae and budding yeast cells. The most likely diagnosis is:

A. Tinea capitis
B. Tinea corporis
C. Tinea manuum
D. Tinea nigra
E. Tinea pedis

8. A normally healthy young man in Arizona was diagnosed with coccidioidomycosis. The most likely route of infection for the etiologic agent is:

A. Aspiration
B. Cutaneous contact
C. Ingestion
D. Inhalation
E. Implantation

9. An isolate of Candida albicans was found to be resistant to caspofungin due to mutation in the drug target which is:

A. Cytosine permease
B. Ergosterol c. P450 14-α-demethylase
C. Squalene 2,3-epoxidase
D. Subunit of β-1,3-glucan synthase.

10. A 25-year-old man made a self-diagnosis of athlete's foot and purchased a product advertised to treat this condition that listed the active ingredient as Griseofulvin. The mode of action of this drug is:

A. Binding to membrane ergosterol
B. Incorporation into RNA leading to mistranslation and inhibition DNA synthesis
C. Inhibition of 1,3-β-glucan biosynthesis
D. Inhibition of mitosis
E. Inhibition of squalene 2,3-epoxidase
F. Inhibition P450-dependent sterol demethylase (lanosterol 14α-demethylase).

11. Antifungal drug obtained from streptomyces nodosus (Bacteria):

A. Natamycin.
B. Clotrimazole.
C. Tolnaftate.
D. Amphotericin B
E. Nystatin

12. This organism is difficult to grow on arifiial media and diagnosed only by histology:

A. Histoplasma capsulatum
B. Actinomadura madurai
C. Lacazia loboi
D. Pseudollescheria boydii
E. Coccidioides immitis

13. Reverse pigmentation of fungi on media means:

A. Color of fungus itself.
B. Color of spores on surface of media
C. Color of mycelium on surface of media
D. Color of sporangium on surface of media
E. Color of the fungus on the bottom of the colony.

14. The indicator used in Carbohydrate assimilation test for fungi identification is:

A. Phenol red
B. Bromcresol purple
C. Neutral red
D. Bromthymol blue
E. Cresol red

15. All of these are adverse reactions of Amphotericin B Except:

A. Nephrotoxicity
B. Hypokalaemia
C. Hypomagnesaemia
D. Thrombocytopenia
E. Hypertension

16. Fungi live exclusively on the dead layers of the skin & its appendages like hair & nails seen in:

A. Subcutaneous Mycosis
B. Surface Mycoses
C. Cutaneous mycoses
D. Systemic Mycoses
E. Oppurtunistic Mycoses

17. This fungi thrives on the fatty acids found in sebum secreted by the skin and affects pigment□producing cells, resulting in a pink rash on pale skin and hypopigmentation in darker skin:

A. Hortaea werneckii
B. Piedraia hortae
C. Trichosporon sps
D. Malassezia furfur
E. Epidermatophton sp.

18. Seborrheic dermatitis is one of Surface Mycoses caused by:

A. Malassezia globosa.
B. Malassezia furfur
C. Malassezia restricta
D. Hormonal factors
E. All of above

19. This type of Tinea cause concentric rings of scaling's which spread out peripherally over years and considered unusual form of tinea corporis:

A. Tinea capitis
B. Tinea imbricata
C. Tinea cruris
D. Tinea versicolor
E. Tinea corporis

20. One of the causative agent of Madura foot disease is:

A. Pseudallescheria boydii
B. Sporothrix schenckii
C. Rhinosporidium seeberi
D. Paracoccidioidoes brasiliensis
E. Cryptococcus neofomans

21. Classification of mycetoma based on the colour of grains, its colour in actinomycetoma is :

A. Green to orange
B. White to yellow
C. Brown to black
D. Tan to gray
E. Blue to violet

22. All of these characteristics regarding splendore-Hoeppli phenomenon Except:

A. Antigen-antibody complex
B. Exact nature of this reaction is unknown
C. Localized immunological response
D. Seen in fungal infections only
E. Leads to chronicity of infection

23. High incidence of this disease among people who frequently bath along with domestic animals in ponds, tanks, lakes is:

A. Sporotrichosis
B. Lobomycosis
C. Chromoblastomycosis
D. Phaeohyphomycosis
E. Rhinosporidiosis

24. This organism is a dimorphic fungus that exists as a mold in soil and as a spherule in tissue and infection with it may be occur by reactivation of latent infection in immunocompromised patients:

A. Histoplasma capsulatum
B. Blastomyces dermatitidis
C. Coccidioides immitis
D. Paracoccidioidoes brasiliensis
E. Cryptococcus neofomans

25. All of these characteristics regarding Endemic Systemic Mycoses Except:

A. Fungal infection of internal organs
B. Primarily involve the respiratory system
C. Usually most often found in all regions of the world
D. More than 95% are self limiting & asymptomatic
E. Infected persons do not communicate these diseases to others

26. All of these characteristics regarding Histoplasmin skin test Except:

A. A skin test using histoplasmin
B. Is useful for diagnosis
C. Can stimulate an antibody response
D. Is useful for epidemiologic studies
E. After the test, the patient remains positive for many years.

27. The most commonly Aspergillus species may causes aspergillosis infection.:
A. Aspergillus Niger
B. Aspergillus fumigatus
C. Aspergillus terreus
D. Aspergillus Flavus
E. Aspergillus parasiticus

28. Are sexually reproducing basidiomycetous yeast□like fungi that produce a characteristic carbohydrate capsule:
A. Candida albicans
B. Cryptococcus neoformans
C. Aspergillus sp.
D. Mucor sp.
E. Penicillium marneffei

29. In this form of aspergillosis infection there is a compact mass of fungal mycelia surrounded by dense fibrous walls (fungus ball) in:
A. Aspergilloma
B. Invasive Aspergillosis
C. Extrapulmonary Aspergillosis
D. Allergic aspergillosis
E. Obstructive aspergillosis

30. Bamboo rat harbors ..... in their internal organs and isolated from soil samples from their burrows :
A. Aspergillus flavus
B. Penicillium melinii
C. Penicillium marinum
D. Penicillium marneffei
E. Aspergillus niger

31. All of these characteristics regarding Pneumocystis jiroveci Except:
A. Stained with the fungal stains like GMS
B. Produces chitin
C. Requires tissue culture or cell lines for growth
D. Resistant to anti-protozoan agents like Pentamidine
E. Resistant to antifungals because of lack of ergosterols

32. On of these statments about mycotoxins is incorrect:
A. Aflatoxins affect on reproductive, liver, carcinogen and immune systems.
B. Fumonisin affect on nervous and pulmonary systems
C. Trichothecenes 2 affect on reproductive and digestive systems
D. Deoxynivalenol affect on reproductive and digestive systems
E. Ochratoxins affect on reproductive and endocrine systems

33. This mycotoxin has been found in moldy bread, sausage , fruits (including bananas, pears, apples, grapes and peaches), apple juice, cider, and other products:

A. Trichothecenes
B. Citrinin
C. Patulin
D. Deoxynivalenol
E. Fumonisins

34. This mycotoxin can be disrupt sphingolipid metabolism and may be cause neural tube abnormalities in infants :

A. Trichothecenes
B. Citrinin
C. Patulin
D. Deoxynivalenol
E. Fumonisins

35. This mycotoxin can be eaten safeley when grows on rotten cheese :

A. Trichothecenes
B. Citrinin
C. Patulin
D. Deoxynivalenol
E. Fumonisins

II- Match the following: (10 Marks)

_____ 36. Conjugated carbon-carbon double bonds	A. Assimilattion reactions
_____ 37. Capsular polysaccharide in Cryptococcus	B. White Piedra
_____ 38. Associated with dandruff	C. Invasion
_____ 39. Results from the production of melanin by the fungus	D.Verrucous dermatitis
_____ 40. Jock itch	E. Glucuronoxylomannan
_____ 41. Phospholipase at tip of hyphae	F. Sporothrix schenckii
_____ 42. Chromoblastomycosis	G. Malassezia globosa
_____ 43. Chicago disease	H. Blastomycosis.
_____ 44. Softer nodule in hair which is white to light brown	I. Tinea Nigra
_____ 45. Digestion and absorption.	J. Polyene
	K. Mycobacterium tuberclosis
	L. Tinea cruris

III- Write T for true statement and F for false statement: (15 Marks)

46. ( ) Hematoxylin and eosin (H&E) stain, is very useful to visualize the host's response and considered a special fungal stain.

47. ( ) Anti-Candida antibodies present only in infected perons with candida sp.

48. ( ) Maintenance therapy is given to help keep disease from coming back after it has disappeared following the initial therapy.

49. ( ) Decrease in the ergosterol in the funagal membrane by amphotericin B reduces the fungicidal action of ketoconazle.

50. ( ) The cause of Atopic Dermatitis is unknown, although there is some evidence of genetic factors, and some evidence that growing up in a sanitary environment

51. ( ) The cutaneous mycoses are usually confined to the outermost layers of skin, which invade the dead layers of the skin and caused by dermatophytes.

52. ( ) dermatophytid ("id") reactions is secondary eruption in sensitized tinea patients because of circulation of allergenic products from the primary site of infection.

53. ( ) When Actinomycetoma is suspected on direct examination inoculate the specimen on Sabarouds dextrose agar with antibiotics and actidione.

54. ( ) Coccidioidomycosis characterized by the development of friable polyps in the nose, mouth or eye.

55. ( ) In immunodiffusion test for detects precipitating anti-histoplasma antibodies; presence of both the H and the M band indicates active histoplasmosis.

56. ( ) Diagnosis of Paracoccidioidomycosis is proved by presence of doubly refractile thick walled globular spherules filled with endospores in direct Examination of the specimens.

57. ( ) Prolonged antibiotic or steroid therapy destroys the balance of normal flora in the intestine allowing the endogenous Candida to overcome the host.

58. ( ) The final diagnosis of the Aspergillosis completed when the aspergillus is isolated from the culture media for only one time.

59. ( ) Aflatoxin B2 is most important Aflatoxin, highly carcinogenic, widespread occurrence in foods, and florescence green under uv-light.

60. ( ) Contamination with Aflatoxins in corn occurs both in the field before harvest and in storage and if the contamination is prevented before harvest the problem can be managed.

IV-Answer <u>Only two</u> of the following questions: (10 Marks)

1- Write short note about Coccidioidomycosis life cycle? (5 Marks)

2- Write short note about the mutation caused by Aflatoxin B1 which may lead to Hepatocellular carcinoma (HCC). (5 Marks)

3- In light of your study of the mycotoxin chapter, how we can control fungal diseases of crop plant (Preventive Strategies)? (5 Marks)

V. Fill the following table: (10 Marks)

Fungal disease	Diagnostic shape	Culture media	The causative agent(s)
1-Pitryiasis versicolor			
2- Tinea nigra			
3- Dermatophytoses			
4- Phaeohyphomycosis			
5- Eumycetoma			
6-Histoplasmosis			
7-Coccidioidomycosis			
8-Candidiasis			
9-Cryptococcosis			
10-Penicillosis			

End of Questions

مع تمنياتنا لكم بالتوفيق والنجاح

أ. ناهض عبد اللطيف

STATE OF PALESTINE — دولـــة فلسطيـن

AL-AQSA UNIVERSITY — جامعة الأقصى

FACULTY OF SCIENCE- Medical Tech. Dept. — كلية العلوم - قسم التكنولوجيا الطبية

التاريخ: 31/12/2018	الاختبار النهائي لمساق	الفصل الأول 2018 / 2019م
الزمن: ساعتان	علم أمراض الدم (MEDT4322)	محاضر المساق:
عدد الأسئلة: 6 أسئلة	عدد الصفحات: 9 صفحات	ا. محمـــــد إسماعيل داود

اسم الطالب/ة ..... رقم الطالب/ة:.....

Q1- Choose the correct answer — 40 Marks

1- Monoclonal gammopathy of undetermined significance (MGUS)
a. MM
b. AML
c. ALL
d. P.V

2- One of the following isn't tyrosine kinase super family
a. ABL
b. FLT3
c. BCL2
d. Jack 2

3- Bone marrow failure, agranular blasts and negative MPO are the features of
a. AML M0
b. AML M5b
c. AML M6
d. AML M7

4- One of the following diseases is characterized by the presence of Auer rods
a. MM
b. CML
c. RAEB-1
d. FAB M0

5- The good prognosis MDS is associated with
a. Monosomy 7
b. Del 5q13
c. Trisomy 8
d. trisomy 11

6- Rare malignant disease in children with no curative therapy except for SC transplantation
a. ALL - L1
b. JMML
c. ALL – L2
d. Burkett's lymphoma

7- One of the following is not lab findings of CLL

a. Leukocytosis $40\times10^3/\mu L$
b. Serum electrophoresis hypergammaglobulinemia
c. lymphocytosis up to 80%-90%
d. Granulocytes and platelets are normal

8- p230 BCR-ABL leukemia is associated with

a. t(8; 21)
b. t(11; 19)
c. t(15; 17)
d. t(9; 22)

9- Rouleaux formation on peripheral blood is common in

a. Multiple Myeloma
b. B-cell prolymphocytic leukemia
c. Burkitt lymphoma
d. ALL-L1

10- Lymphocytosis can be detected in the following except

a. HIV infection
b. CMV infection
c. Brucellosis
d. Toxoplasmosis

11- One of the following isn't B lymphocytic disease

a. Small lymphocytic lymphoma (SLL)
b. Hairy cell leukemia
c. Hodgkin lymphoma
d. Prolymphocytic Leukemia

12- Large blast, indented nucleus, large nucleoli and clefted cytoplasm

a. MM
b. ALL L2
c. ALL L3
d. AML M1

13- Which of the following is not characteristic of AML

a. Maturational but none functional cells
b. Degenerative shift left
c. Survival for short duration
d. Remission is inversely related to age

14- Common cells in ALL blood film

a. Rieder Cell
b. Vacuolated lymphocytes
c. Smudge Cell
d. Plasma cell

15- Regarding to lymphocyte one of the following statement is not true

a. 20%composed of T lymphocytes and 80%composed of B lymphocytes
b. Lymphocytes represent 33% of the total leukocytes count
c. At birth, lymphocytes are the dominant type of leukocyte
d. 5% of the body lymphocyte mass is present in the circulating blood

16- Lymphoplasmoproliferative disorder with infiltration of the bone marrow and a monoclonal IgM

a. Non Hodgkin lymphoma
b. Burckits lymphoma
c. WaldenstrÖm Primary Macroglobulinemia
d. ALL

17- The differentiated granulocytic cells can be detected in

a. Myloblast
b. Promyelocyte
c. Mylocyte
d. CFU-G

18- One of the following isn't common clinical symptoms of ALL

a. Gastric hemorrhage
b. Lymphadenopathy
c. Infiltrate of blast
d. Leukemic meningitis

19- One of the following not causes absolute polycythemia Vera

a. Altitudes
b. Dehydration
c. Smoking
d. Hypoventilation

20- Regarding to BM transplantation, all of the following is true except

a. BMT Engraftment is quicker in transplantation than PBSC
b. The first appearance are monocytes and neutrophils
c. Immune recovery is quicker after autologous than allogeneic SCT
d. The patient's blood group changes to that of the donor

21- In CML, all of the following are true except

a. Stem cells become part of the proliferating compartment
b. Associated with the *BCR-ABL* fusion gene
c. Poor prognosis appears in Ph-negative
d. Excessive increase in immature myeloid cells in the blood

22- Extranodal disease is more frequent in

a. CLL
b. ALL
c. Hodgkin Lymphoma
d. Non Hodgkin Lymphoma

23- Auer rods are cytoplasmic aggregates of fused lysosomes, have red needle shape, can be detected in

a. ALL
b. CML
c. FAB M0
d. FAB M2

24- MDS RARS, the bone marrow smear

a. Erythroid dysplasia <5% blasts
b. Erythroid dysplasia with >15% ringed sideroblasts
c. Uni or multilinage dysplasia 5-9% blasts
d. Uni or multilinage dysplasia 10-19% blasts

25- The first sign of successful B.M engraftment is the increase number

a. lymphocytes
b. Reticulocyt
c. Platelet
d. Monocytes

26- Classification of ALL is based on

a. Cytochemical test
b. Morphology
c. Immunophenotype
d. Cytogenetic test

27- The Laboratory findings of Polycythemia vera include the following except

a. Increase Hb, Hct and RBCs count
b. Increase serum erythropoietin
c. Raised platelet count
d. LDH is normal

28- No tendency for blast formation is a hallmark of

a. CLL
b. MDS (RAEB2)
c. CML
d. AML M0

29- Leukostasis can be detected in the following cases except

a. ALL-L1
b. FAB M4
c. CLL
d. FAB M5

30- The most common type of DNA

a. Inversion
b. Translocation
c. Insertion
d. Deletion

31- Negative MPO is observed in

a. ALL L3
b. CML
c. FAB M1
d. FAB M6

32- The chimeric fusion gene that generates B-ALL is

a. RARα-PML t (15; 17)
b. TEL-AMLl t (12; 21)
c. BCR-ABL t (9; 22)
d. BCL-2 in t (14; 18)

33- Defected genes expression of Retinoic acid which is required for normal myeloid differentiation can cause

a. JMML
b. AML M3
c. Burkett's lymphoma
d. MDS

34- Paradox between bone marrow and peripheral blood

a. P.V
b. CML
c. MDS
d. Aplastic anemia

35- FAB M2 is classified according to WHO as

a. Acute promyelocytic leukemia
b. Acute myeloblastic leukemia with maturation
c. Acute myeloblastic leukemia with minimal maturation
d. Acute myelomonocytic leukemia

36- In AML, the highest elevation of leukocyte count is observed in

a. FAB M0
b. FAB M2
c. FAB M3
d. FAB M5b

37- All the following is true about Core-binding factor (CBF) except

a. Consisting of the interacting proteins RUNX1 and CBFb
b. Mutation of CBF can cause AML with poor prognosis
c. CBF turns on genes that help control the development of blood cells
d. CBF-AML is associated with chromosomal rearrangements between chromosomes 8 and 21

38- Which of the following isn't true about Hodgkin disease

a. Hodgkin lymphoma is diffuse large B-cell lymphoma
b. Characterized by the presence of Reed- Sternberg cells
c. Hasn't specific genotype or chromosomal abnormalities
d. Caused by infectious agent with long latent period

39- The more prevalent AML subtype is

a. FAB M1
b. FAB M2
c. FAB M5a
d. FAB M7

40- Burkitt lymphoma

a. t(8,14)
b. t(15,17)
c. t(9,22)
d. t(6,16)

MCQ box answers

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40

Q2 - True and False — 10 Marks

1. EBV is major cause of Burkitts lymphoma in whites ( )
2. Hodgkin lymphoma accounts for the mortality and morbidity of all lymphomas ( )
3. Myelocyte has the capability of DNA synthesis ( )
4. Classical CLL is usually disorder in BCL2 gene ( )
5. The diagnosis of Hodgkin Disease is made primarily by examination of sections of lymph nodes ( )
6. More expression of CD41 or CD61 is an immunophenotyping of FAB M6 ( )
7. Deletion of 5q and 7q is good prognosis in case of FAB M0 ( )
8. 30% of Burkitt lymphoma cases involve mutation of P53 ( )
9. FAB-M5 is very resistant to therapy and survival of patients is usually short ( )
10. Excessive increase in immature myeloid cells in the peripheral blood is the hallmark of CML ( )

Q3- Write blood disease according to the following — 10 Marks

1		Common in African children with large extranodal tumors in jaw or abdomen
2		Malignancy of B cell with large number of prolymphocytes in the peripheral blood
3		Characterized by green and soft appearance tumor in bone, which is termed as a chloroma
4		lymphoplasmoproliferative disorder with infiltration of the bone marrow and monoclonal IgM
5		Excessive B cells as a result of decreased apoptosis than of increased proliferation
6		Increasing number of progenitor cells and reducing pool of stem cells
7		Appearance of fine, hair like irregular cytoplasmic projections
8		Clonal hematopoietic progenitor cell disorder with trilineage hyperplasia
9		Increase plasma cell mass in the peripheral blood with abnormal protein production
10		Blockage of maturation with accumulation of Promyelocytes in bone marrow and peripheral blood

Q4 - Write the Pathophysiology of **5 Marks**

1- Refractory anemia with multilinage dysplasia and ringed sideroblast (RCMD)

2- Precursor T-cell ALL

Q5- Explain the following **5 Marks**

1. Lymphocyte is the predominant leukocyte in children

2. CLL is usually associated with Hypogammaglobulinemia

3. Administration of vitamin A derivative is a treatment of FAB M3

4. Histopathology is the diagnostic criteria of Non Hodgkin Lymphoma

5. Decrease serum erythropoietin level in Polycythemia Vera

Q6. Write about the following **10 Marks**

1. Leukemoid reaction 3 Marks

2. Blast crises CML 3 Marks

3. Lymphoplasmacytic Lymphoma 4 Marks

انتهت الأسئلة

Al-Aqsa University		جامعة الأقصى
Medical Laboratory Sciences Dep.		قسم العلوم الطبية المخبرية
محاضر المساق :د. حسام راشد أ. أماني الهنداي 29 -12- 2018		اسم المساق: علم بيولوجيا الخلية
تاريخ الإمتحان:2018/12/29 عدد الأسئلة: 4 أسئلة	الاختبار النهائي للفصل الأول 2019-2018 مدة الامتحان: 2 ساعة MEDT1300	اسم الطالب/ة: الرقم الجامعي:

Q 1: Choose the correct answer for each of the following questions: (40 marks)

1. **Which of the following would be the most easily diffuse through a cell membrane?**
   A. A large polar molecule
   B. A large nonpolar molecule
   C. A small polar molecule
   D. A small nonpolar molecule

2. **Which of the following correctly matches a structure with its function?**
   A. Mitochondria—photosynthesis
   B. Nucleus—cellular respiration
   C. Vacuole—storage
   D. Chloroplast—cellular respiration
   E. Lysosome—movement

3. **Which of the following substances is unable to diffuse across the plasma membrane?**
   A. Water
   B. Oxygen
   C. Carbon dioxide
   D. Sodium

4. **In folds of membranes of mitochondrion are called:**
   A. Cisternae
   B. Cristae
   C. Chromatin fibers
   D. Chromatic networks

5. **A set of flattened membrane discs that modify, sort, and package proteins:**
   A. Mitochondria
   B. Chloroplasts
   C. Golgi apparatus
   D. Vacuoles

6. **When the DNA in a cell is uncoiled and spread throughout the nucleus it is called:**
   A. Chromosomes
   B. Chromatids
   C. Centromeres
   D. Chromatin

7. **What cell structure is responsible for regulating all cellular activities:**
   A. Mitochondria
   B. Chloroplasts
   C. Golgolgi apparatus
   D. Nucleus

8. **A plant cell has a 5% salt concentration. It is placed into a solution containing a 12% salt concentration. What will happen to the plant cell?**
   A. Water will move out of the plant cell, causing it to swell and burst
   B. Water will move into the plant cell, causing it to swell and burst
   C. Water will move out of the plant cell, causing it to shrivel
   D. Water will move into the plant cell, causing it to shrivel

9. **Cells spend most of their time in which phase?**
   A. Cytokinesis
   B. Prophase
   C. Mitosis
   D. Interphase

10. **A cell makes both a signaling molecule and the receptor for that signaling molecule in which mode of signaling?**
   A. Paracrine
   B. Endocrine
   C. Autocrine
   D. Contact dependent

11. **The spindle fibers are produced by the**
   A. Centrioles
   B. Nucleus
   C. Chromosomes
   D. Chromatin

12. **The stage of mitosis when chromosomes condense to form rod-shaped structures visible under the microscope is called:**
   A. Interphase
   B. Prophase
   C. Metaphase
   D. Anaphase

13. The PI 3-Kinase–Akt Signaling Pathway is inhibited by:

A. TOR
B. PTEN
C. Bad
D. Ras

14. During the G2-M transition point in eukaryotic cells, the cell is assessed to M phase with regard to:

A. Nutrients
B. Chromosome attachment to the spindle
C. DNA replication
D. Presence of growth factors

15. Metaphase- Anaphase transition is influenced by:

A. Nutrients
B. Chromosome attachment to the spindle
C. DNA replication
D. Presence of growth factors

16. Acts as a second messenger in the cascade by which epinephrine stimulates the activation of the enzyme glycogen phosphorylase:

A. Diacylglycerol
B. Ca2+
C. IP3
D. cAMP

17. Which of the second messengers listed below remains bound to the plasma membrane:

A. Diacylglycerol
B. Ca2+
C. IP3
D. cAMP

18. Which of the signaling receptors are/is generally activated by dimerization induced by binding to ligand?

A. Gated ion channels
B. G protein-coupled receptors
C. Receptor tyrosine kinases
D. All of the above

19. **Which cellular organelles are involved in the initiation of the intrinsic pathway of apoptosis**?
    A. Endoplasmic reticulum
    B. Lysosomes
    C. Mitochondria
    D. Peroxisomes

20. **During which phase of mitosis do the chromosomes line up along the middle of the dividing cell?**
    A. Prophase
    B. Metaphase
    C. Anaphase
    D. Telophase

21. **In which phase of the cell cycle is DNA replicated?**
    A. G1 phase
    B. S phase
    C. G2 phase
    D. M phase

22. **TGF-β binding to its receptor phosphorylates ..... proteins that move into the nucleus and activate expression of genes coding for proteins that inhibit proliferation**
    A. TOR
    B. PTEN
    C. Smad
    D. Ras

23. **Cdk inhibitor proteins that block cell cycle progression by suppressing the activity of Cdk-cyclin complexes:**
    A. Rheb and TOR
    B. Rheb and Bad
    C. P15 and P21
    D. Ras and TOR

24. **Cyclin dependent kinases which control progression through cell cycle checkpoints are fully activated by which of the following** :
    A. Binding to cyclins only
    B. Phosphorylation by cdk activating protein kinase only
    C. Binding to cyclin, plus phosphorylation by a cdk activating protein kinase
    D. Phosphorylation by a tyrosine kinase

25. Unattached chromosomes keep the mitotic spindle check point on by organizing _____ proteins into a complex that prevents Cdc20 from activating anaphase promoting complex.

A. Separase
B. Mad and Bub proteins
C. Ubiquitin Ligase
D. Securin

26. In cells stimulated by growth factors, the Ras pathway is activated and thereby:

A. Rb protein is dephosphorylated, E2F Transcription factor inactive
B. Rb protein is dephosphorylated, E2F Transcription factor active
C. Rb protein is phosphorylated, E2F Transcription factor inactive
D. Rb protein is phosphorylated, E2F Transcription factor active

27. Regulates Progression Through the Restriction Point by Phosphorylating the Rb Protein:

A. Anaphase-promoting complex
B. G1-Cdk Cyclin
C. Mitotic Cdk-cyclin
D. Separase

28. Active mitotic Cdk-cyclin stimulates:

A. Nuclear envelope breakdown
B. Chromosome condensation
C. Mitotic spindle formation
D. Targeted protein degradation
E. All are true

29. An inhibitor of sister chromatid separation:

A. Lamin protein
B. Ubiquitin ligase
C. Securin
D. Separase

30. Which of the following processes during animal cell division is not mediated by microtubules?

A. Movement of the chromosomes to the poles of the cell
B. Movement of the chromosomes to the metaphase plate
C. Contraction of the cleavage furrow
D. Separation of the centrosomes

31. All true regarding cholera toxin except:

A. Does not allow hydrolysis of GTP to GDP
B. Leads to the continuous production of cAMP
C. Acts on the inhibitory G protein Gi
D. The intestinal cells secrete large amounts of salt and water

32. All cell functions regulated by cAMP except:

A. Glycogen degradation
B. Platelet activation
C. Fatty acid production
D. Heart rate, blood pressure

33. Is an enzyme that hydrolyze cAMP in the cytosol to AMP:

A. Phosphodiesterase
B. Adenylyl cyclase
C. Protein kinase a
D. Protein kinase c

34. The receptor for PDGF is:

A. Gated ion channels
B. G protein-coupled receptors
C. Receptor tyrosine kinases
D. Steroid receptor

35. The following modification occurs on nuclear lamins, which causes nuclear lamina to disassemble and nuclear envelope to rupture during mitotic entry:

A. Glycosylation
B. Ubiquitination
C. Phosphorylation
D. GTP binding

36. Chemical signals that can only travel limited distances between cells:

A. Paracrine
B. Endocrine
C. Autocrine
D. Contact dependent

37. A multiprotein complex functions as ubiquitin ligase by promoting the destruction of several key proteins at specific points during mitosis events:

A. Separase
B. Mad and Bub proteins
C. Anaphase promoting complex
D. Securin

38. Protein with SH2 domains bind to phosphorylated tyrosine kinase receptor:

A. Ras
B. Sos
C. GRB2
D. Raf

39. Catalyzes phosphorylation of proteins such as Ets and Jun in the nucleus to regulate the transcription of response genes:

A. Ras
B. Raf
C. Phosphorylated MEK
D. Phosphorylated MAP kinase

40. The protein kinase Akt promote cell survival and proliferation by inhibiting cell cycle arrest by leading to activation of protein called:

A. Puma
B. TOR
C. Bad
D. PTEN

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40

Q 2: Put (T) for true statement and (F) for false statement: (20 marks)

	1. Active transport uses energy in the form of ATP to move a substance against its concentration gradient.
	2. Virus infected cells die by necrosis.
	3. The cotransport of glucose and sodium across intestinal epithelial cells is an example of symport.
	4. Growth factors such as PDGF and EGF act by binding to plasma membrane receptors located on the surface of target cells.
	5. Cellular levels of mitotic cyclin rise during M phase then fall abruptly during interphase (G1, S, and G2) of the next cell cycle.
	6. If mammalian cells are placed in a culture medium containing nutrients and vitamins but lacking growth factors, they normally become arrested in G1.
	7. Channel proteins are able to transport molecules much more quickly than carrier proteins because carrier proteins must change shape.
	8. In the sodium-potassium pump, during each cycle three sodium ions exit the cell for every two potassium ions that enter.
	9. Cyclin dependent kinase (Cdk) levels remain relatively constant throughout the cell cycle, but their activity varies. They are activated by binding the appropriate cyclin.
	10. The interaction between p53 and Mdm2 is blocked by p53 phosphorylation.
	11. Cytokinesis of plant cell occur by cleavage furrow as well as animal cell.
	12. Cells that divide slowly may spend days, months, or even years in the offshoot of G1 called G0, whereas cells that divide very rapidly have a short G1 phase.
	13. Asymmetric cell divisions also occur frequently during embryonic development in animal embryos as in frog embryo.
	14. Liver cells do not proliferate when a portion of the liver is removed surgically.
	15. Cytokinesis usually starts during late anaphase or early telophase, as the nuclear envelope and nucleoli are re-forming and the chromosomes are decondensing.
	16. In the absence of receptor stimulation, Ras is normally in the GDP-bound state.
	17. IP3 is released into the cytosol where it triggers calcium release from ER.
	18. Steroids are signal molecules that can pass through the lipid bilayer and bind to a receptor within the cytoplasm.
	19. Receptors with a high affinity for their ligands have a very small dissociation constant.
	20. Binding of acetylcholine to muscarinic acetylcholine receptor cause activation of G protein and G_α triggers K^+ channels to open.

Q 3: Fill in the blank: **(10 marks)**

	1. Cell death involves the swelling and rupture of the injured cells.
	2. Give example of Death signal.
	3. A multiprotein complex is involved in condensing chromatin fibers into compact chromosomes.
	4. Sister chromatids are held together prior to anaphase by adhesive proteins called .....
	5. The first control restriction point occurs during late G1. In yeast, this control point is called .....
	6. Karyokinesis in the absence of cytokinesis results in multinucleate cell known as .....
	7. A family of proteases that have a cysteine at their active site and cleave their target proteins at specific aspartic acids.
	8. Anti-apoptotic protein
	9. Is an intracellular protein that binds calcium and activates enzymes.
	10. Type of toxin acts on the inhibitory G protein Gi, so Gi no longer inhibits adenylyl cyclase.

Q 4: Answer the following questions: **(10 marks)**

1. Roughly 30% of human cancers have mutant form of Ras, explain how this type of mutant form contributed to develop cancer?

2. Describe the role of P53 protein in responding to DNA Damage in which two types of events can be activated cell cycle arrest and cell death.

With All Best Wishes
Dr. Hussam Rashed
Miss: Amany S. AlHindi

STATE OF PALESTINE | دولـــة فلسطيــن

AL-AQSA UNIVERSITY | جامعة الأقصى

Faculty Of Medical Sciences
Dept. Med. Lab. Sciences

كلية العلوم الطبية ـ قسم العلوم الطبية المخبرية

الفصل الاول 2018 / 2019م	الاختبار النهائي لمساق: كيمياء سريرية 1	التاريخ: 30/12/2018
إسم الطالب/ة..............................	محاضر المساق: د. محمود اسماعيل الحبيبى	الزمن: ساعتان
رقم الطالب/ة:..............................		الفترة الاولي

ملاحظات : عدد الصفحات : 7 عدد الآسئلة: 6

Answer Sheet

MCQ's						False/True		
1.	a	b	c	d	e	1.	T	F
2.	a	b	c	d	e	2.	T	F
3.	a	b	c	d	e	3.	T	F
4.	a	b	c	d	e	4.	T	F
5.	a	b	c	d	e	5.	T	F
6.	a	b	c	d	e	6.	T	F
7.	a	b	c	d	e	7.	T	F
8.	a	b	c	d	e	8.	T	F
9.	a	b	c	d	e	9.	T	F
10.	a	b	c	d	e	10.	T	F
11.	a	b	c	d	e	11.	T	F
12.	a	b	c	d	e	12.	T	F
13.	a	b	c	d	e	13.	T	F
14.	a	b	c	d	e	14.	T	F
15.	a	b	c	d	e	15.	T	F
16.	a	b	c	d	e	16.	T	F
17.	a	b	c	d	e	17.	T	F
18.	a	b	c	d	e	18.	T	F
19.	a	b	c	d	e	19.	T	F
20.	a	b	c	d	e	20.	T	F
21.	a	b	c	d	e	21.	T	F
22.	a	b	c	d	e	22.	T	F
23.	a	b	c	d	e	23.	T	F
24.	a	b	c	d	e	24.	T	F
25.	a	b	c	d	e	25.	T	F
26.	a	b	c	d	e	26.	T	F
27.	a	b	c	d	e	27.	T	F
28.	a	b	c	d	e	28.	T	F
29.	a	b	c	d	e	29.	T	F
30.	a	b	c	d	e	30.	T	F

Part I MCQ's (30 marks)

Read the following sentences carefully then choose the most correct answer

1. Urine concentration test required water deprivation for a period of ……..hours
a. 4 b. 12 c. 14 d. 24 e. 48

2. In hemolytic disease of the newborn the raise is in
a. conjugated bilirubin b. unconjugated bilirubin
c. both types d. biliverdin

3. In which age of the infant the total bilirubin reaches the adult range
a. 5 days b. 3 days c. 15 days d. 30 days

4. A carrier protein of bilirbin from hepatocytes membrane to the endoplasmic reticulum where it is conjugated
a. albumin b. ligandin c. transferrin d. Interleukin-2 e. ligadin

5. A conjenital malfunction of an active transport system of bilirubin through the hepatic cell membrane to microsomes
a. Crigler- Najjar Syndrome b. Physiologic Jaundice c. Gilbert's Syndrome
d. Obstructive jaundice e. Active transport disorder

6. The powder of the stone is dissolved in an acid before its chemical analysis
a. oxalic acid b. sulfuric acid c. hydrochloric acid d. nitric acid

7. Formation of stones is aggravated by the following factors <u>except one</u>
a. infections b. excessive intake or production of insoluble compounds
c. dehydration d. Urinary obstruction e. Hemolysis

8. Serum uric acid is determined by uricase method which classified as
a. Enzymatic b. Colorimetric c. Enzymatic Colorimetric d. Kinetic

9. Serum urea is measured by urease/ glutamate dehydrogenase method depending on the decrease in NADH absorbance; this type of procedures is called
a. Kinetic b. Colorimetric c. Enzymatic d. End point

10. A very well indicator of glomerulus filtration rate (GFR)
a. Creatinine level b. Creatinine Clearance rate (CCR)
c. Blood Urea Nitrogen d. Uric acid e. Detection of proteinuria

11. If serum creatinine is normal but CCR is low this may due to a problem in
a. Collection b. Analysis c. Collection or analysis d. Collection and analysis

12. Short and wide casts, formed in broad collecting tubules found only in renal failure
a. waxy casts b. broad casts c. fatty casts d. granular casts

13. Acute phase proteins are the following <u>except</u>
a. C-reactive protein b. Ceruloplasmin c. fibrinogen d. α1-antitripsin e. Non

14. Aminotransferases are moderately increased in the following situations <u>except one</u>
a. cholestasis b. cirrhosis c. acute toxicity with drugs d. hepatic tumors e. infections

15. Cholestasis can be caused by the following except one
a. viral hepatitis b. hemolysis
c. cirrhosis d. stones in the bile duct

16. Diseases in which ALP increases but GGT and 5NT are normal are all of the following except which one
a. pregnancy b. childhood and adolescence c. bone diseases
d. hyperthyroidism e. non of the above

17. Measurement of 5NT is of clinical value in the following situations except one
a. Diagnosis of hepatic metastasis in anicteric patients
b. Management of patients with infections hepatitis
c. Ascertaining whether an increase in ALP is caused by osteoblastic activity or liver diseases.
d. non of the above

18. Estimation of GGT is helpful in the following situations except
a. detecting hepatic injury caused by alcoholism.
b. hepatic metastasis in the anicteric patient in conjunction with ALP
c. in management of patients with infection hepatitis
d. In obstruction of the bile duct
e. non of the above.

19. The most sensitive and common enzyme for estimation of liver function
a. AST b. GGT c. ALT d. 5NT e. ALP

20. Causes of increased urinary urobilinogen are the following except one
a. hemolytic diseases b. obstruction of biliary duct
c. hepatocellular diseases d. congestive heart failure

21. Fecal urobilinogen is increased severely in which type of Jaundice
a. Hemolytic b. Hepatic c. Obstructive d. Non of the above

22. Normal level of blood glucose renal threshold……. Mg/dl
a. 80-120 b. 170-180 c. 70-110 d. 180

23. Lactose intolerance
a. is due to deficiency of lactose
b. is due to genetic or acquired deficiency of lactase
c. characterized by lactose tolerance
d. non of the above

24. Lipoprotin; that can enhance the development of atherosclerosis or coronary heart diseases (CHD)
a. High density lipoprotein (HDL) b. Low density lipoprotein (LDL)
c. Very low density lipoprotein (vLDL) d. Chylomicrons

25. Disorder of carbohydrates metabolism causes
a. ketoacidosis b. hypoxia c. ketonuria d. all of the above

26. Hyperglycemia occurs in the following except
a. stress b. injection of glucose intravenously
c. anterior pituitary insufficiency d. after cerebrovascular accident

27. One of the primary reasons that causes an increase in plasma TG level is
a. meal containing fat b. acute alcoholism
c. Nephrotic Syndrome d. hypothyroidism

28. Interpretation of lipids profile results required the combination of
a. plasma lipoprotein electrophoresis b. the appearance of plasma or serum
c. analytical value of serum HDH-cholesterol and TG
d. all of the above e. non of the above

29. Cerebrospinal fluid proteins
a. includes prealbumin, albumin, transferrin c. ranges from 15-45mg/dl
d. all are true e. only b and c are true

30. Chemical tests for estimation of renal functions
a. serum uric acid and urea b. serum creatinine and CCT
c. serum electrolytes d. urinary proteins e. all are true

Part II False / True (30 marks)

1. Prealbumin has a short life span of 20 days that's why it is a better indicator of early hepatocellular damage.

2. In viral hepatitis and chronic infections there is a monoclonal raise in gamma globulins.

3. Deficiency of fecal urobilinogen in hepatocellular diseases, can be detected by visual inspection of the feces through changing of the color from clay to brownish.

4. The amount of urobilinogen excreted through the intestine is more than that excreted in urine.

5. Allopurinol increases uric acid level in the urine but decreases it in serum.

6. Urate deposition in the kidney may lead to renal failure.

7. Diabetic ketoacidosis promotes uric acid reabsorption so it is increased in serum.

8. Urea cycle enzymes are found in many tissues but its highest level is in the liver cells.

9. Creatinine is a waste product formed in the muscles as a catabolic end product of phosphocreatine.

10. Osmolarity is more accurate reflection of the concentration of the dissolved substances than specific gravity because of variation in molecular weights of urine dissolved compounds.

11. Bicarbonate in the filtrate is nearly completely reabsorbed by renal tubules.

12. Microalbuminuria is represented on the form of urinary albumin secretion in the range of 30-300mg/dl.

13. Gamma globulin of CSF in multiple sclerosis is usually exceeds 18%.

14. In polyclonal gamopathies plasma proteins electrophoresis shows a sharp spike.

15. Measurement of serum total protein by biuret method depends on a moderately alkaline medium to form a colored chelate.

16. Citrullinemia is due to deficiency of Ornithine Transcarbamoylase.

17. Running of standard sample in the daily work of laboratory is important but quality control sample is less important.

18. The physiologic range of specific gravity for the normal urine sample is in the range of 1.003-1.302g/L.

19. If all the rules of Westgard-Multi rules advices accept the run; then we can accept the run.

20. Hyperammonemia type I is due to a decreased of carbamoyl-phosphate synthetase.

21. Polyuria is a urine excretion of greater than 3 liters per day.

22. Enzymatic methods are the most popular procedures for measurement of blood glucose level.

23. EDTA the most common anticoagulant is inappropriate for enzymes assays because of its binding to metal cofactors.

24.The sample from emergency unit (EU) or intensive care unit (ICU) must not be assayed and send the result even the quality control result is unacceptable.

25. One way of combating heart disease and atherosclerosis to reduce the level of lipids in the bloodstream.

26. Clinical chemistry concerned with the analysis, techniques and causation of diseases as will as management of patients.

27. Quality assurance involve every step of analytical process but ordering of attest isn't involved.

28. The integrity of analytical process is continually assessed by quality control program .

29. In Levey Jening chart days plotted on the ordinate and concentration on the horizontal .

30. Lipemia falsely depress glucose concentration.

Part III Short Questions (40 marks)

Answer the following questions

1. Fill the space with a suitable concept

a. ..... when the blood circulates to the brain and unbound bilirubin enters the brain cells causing irreversible damage leading to spastic and mental retardations.

b. ..... yellowish pigmentation of the skin or sclera of eyes when bilirubin increase in serum and reach 2.5mg/dl.

c. ..... one of urea cycle disorders, due to deficiency of carbamoyl phosphate synthetase, characterized by irritability and mental retardations.

d. ..... simple casts of protein alone and are clear as glass, present in normal persons after strenuous exercise.

e. ..... Occurs when a patient is active and stand on his feet long time.

f. ..... fluids that accumulate when the membranes are injured by inflammatory or infectious processes.

2. Discuss the concept of renal threshold of blood compounds and mention the abnormal constituent that may found in the urine of the following diseases

Nephritic syndrome

Hepatic Jaundice

Diabetes Mellitus

Gout

Multiple Myeloma

3. On the light of your studying of clinical chemistry course, explain why most of the medical laboratory tests performed are related to the liver and kidney?

4. Case Study

The following laboratory test results were obtained in a patient with severe jaundice, right upper quadrant abdominal pain, fever, and chills,
Laboratory results:

Analyte	Results
Serum alkaline phosphatase enzyme	3 times normal
Serum total cholesterol	Increased
AST (SGOT)	Normal
5-Nucleotidase (5NT)	Increased
Total Bilirubin	23mg/dl
Prothrombin time	Prolonged
Direct Bilirubin	16mg/dl

Questions:

1. **What is the most likely cause of jaundice in this patient?**
2. **The result of AST is normal; can you explain why?**

Bonus question **(3 marks)**

Draw a diagram for uric acid formation and excretion inside the human body?

Questions Finished
Good Luck

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الرقم الجامعي:	الاختبار النهائي للفصل الأول 2018-2019 MEDT2202	اسم الطالب/ة:
عدد الأسئلة: 6 أسئلة عدد الصفحات: 9 صفحات	مدة الامتحان: 2 ساعة	التاريخ: 2/01 /2019

Q 1: Choose the correct answer for each of the following questions: (30 marks)

1. **The study of pathogenic fungi is:**
   A. Mycology
   B. Parasitology
   C. Hematology
   D. Virology

2. **Arterial blood is usually collected in tube contains ……………. Anticoagulant, to be examined for ………………..**
   A. EDTA, Blood glucose
   B. EDTA, CBC
   C. Heparin, Blood gases
   D. Heparin, Electrolytes

3. **All of the following is correct about anticoagulant K3EDTA except:**
   A. Remove ionized calcium from fresh whole blood by process of chelation
   B. It is used for most routine coagulation studies
   C. It doesn't affect the morphology of blood cells
   D. The anticoagulant of choice for platelet counts

4. **All of the following are disadvantages of sodium citrate except:**
   A. It preserves blood for only a few hours
   B. It has a tendency to shrink cells
   C. Na-citrate is generally not used for cbc because of dilution
   D. It interferes with many tests such as pt, ptt and ESR

5. **Activated ………………. is an enzyme that converts prothrombin to thrombin:**
   A. Factor X
   B. Factor XIII
   C. Factor III
   D. Fibrinogen

6. The ratio of blood to sodium citrate in ESR test is:

A. 9:1
B. 4:1
C. 1:4
D. 1:9

7. To prevent hemolysis of blood sample you should do all except:

A. Make sure the syringe, needle and test tubes are dry and free from detergent
B. Transfer the blood from the syringe by gently ejecting down the side of the tube
C. Mix blood with anticoagulant by gentle inversion
D. Blood should be stored in a freezer

8. The proposed diagnosis of normocytic and normochromic anemic patient is:

A. Vitamin B12 deficiency
B. Iron deficiency anemia
C. Acute blood loss
D. Thalassemia

9. All are diluting fluids for WBCs count except:

A. Acetic acid 2%
B. HCL 1%
C. Isotonic saline
D. Turks' solution

10. The final product that is measured during Hb determination:

A. Methemoglobin
B. Cyanmethemoglobin
C. Ferricyanide Hb
D. Cyanide Hb

11. The newborn with Hb of 11.0 g/dl is diagnosed as:

A. Anemic
B. Polycythemic
C. Normal
D. Thalassemic

12. MCHC is usually increased in:

A. Iron deficiency anemia
B. Thalassemia
C. Hereditary spherocytosis
D. Lead poisoning

13. All cause lower than normal numbers of WBCs except:

A. Hepatitis
B. Measles
C. Typhoid fever
D. Splenectomy

14. A patient with CBC parameters: MCV 102 fl, MCH 26 pg and MCHC 33%, is usually classified as:

A. Macrocytic hyperchromic
B. Normocytic normochromic
C. Macrocytic normochromic
D. Microcytic hypochromic

15. Given Hb= 9.0g/dl , Hct= 30% , RBCs= $4.5x10^{12}$ / L. Calculate MCV:

A. 60 fl
B. 100 fl
C. 66.6 fl
D. 80 fl

16. Regarding Q15. Calculate MCHC:

A. 30%
B. 33%
C. 36%
D. 28%

17. A stage of ESR approximately takes 10 minutes during which rouleaux formation takes place:

A. Log phase
B. Initial Lag phase
C. The phase of rapid RBC falling
D. The packing phase

18. Decreased ESR occur in all of the following except:

A. Micorcytes
B. Hereditary spherocytosis
C. Sickle cell anemia
D. Multiple Myeloma

19. Automated blood counters calculate hematocrite using the following formula:

A. RBC/MCV
B. Hb X RBC
C. RBC X MCV
D. RBC X MCHC

20. Cytoplasmic granules of eosinophils are:

A. Acidic and stained by eosin
B. Basic and stained by methylene blue
C. Acidic and stained by methylene blue
D. Basic and stained by eosin

21. Effects of dehydration on Hb value:

A. Decrease Hb level
B. Increase Hb level
C. Decrease iron
D. No effect

22. All true regarding basophiles except:

A. Are the rarest leukocytes, less than 1 %
B. Phagocytes and contain heparin, histamines, and serotonin
C. Contain a blue nucleus that is segmented into two distinct lobes
D. Increased in allergy and CML

23. Neutrophilia occur in case of:

A. Typhoid fever
B. Acute bacterial infection
C. Brucellosis
D. Hepatitis

24. The absolute count of 47% lymphocyte in a blood specimen with total WBCs count: $4.3X10^9/L$

A. $0.2X10^3/\mu l$
B. $0.02X10^3/\mu l$
C. $2.0X10^9/L$
D. $0.2X10^9/L$

25. High protein intake causes a tendency to:

A. Acidic urine
B. Alkaline urine
C. Neutral urine
D. No effect

26. Protein in urine is detected by:

A. Sulphosalicylic acid
B. Benedict's test
C. Ehrlich's reagent
D. Greiss reaction

27. A positive ..... test indicates that bacteria may be present in significant numbers in urine.

A. Urobilinogen
B. Nitrite
C. Ketones
D. Bilirubin

28. At urine specific gravity <1.008 and/or highly alkaline pH red blood cells appear:

A. Dysmorphic RBCs
B. Ghost cells
C. Glitter cells
D. Biconcave disc

29. Calculate the corrected WBCs count for a smear containing 20 NRBCs if WBCs count= $4.5X10^3/\mu L$.

A. 3700 cell/μL
B. 4480 cell/μL
C. 3750 cell/μL
D. 4440 cell/μL

30. **Calculate the total RBCs count if blood is drawn to the mark 1 in a RBCs pipette and the total number of RBCs in 5 squares is 430**

A. 4.30×10^6 cell/μL
B. 2.15×10^6 cell/μL
C. 5.0×10^6 cell/μL
D. 3.5×10^6 cell/μL

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

Q 2: Write the best descriptive term for sentences: **(10 marks)**

	1. The best anticoagulant in hematocrit determination.
	2. Type of casts indicates severe, longstanding kidney disease such as renal failure (end stage renal disease).
	3. A type of leukocytes responsible for initiating and regulating the immune response by the production of antibodies.
	4. Measures the variation in size of the red blood cells.
	5. Polymorphonuclear phagocytic cells, its granules are rich in peroxidase, and aid the cell in destroying bacteria and other ingested cells.
	6. The renal threshold for glucose.
	7. Complete cessation of urine
	8. A measure of the average volume of a red blood cell.
	9. A type of leukocytes would increase if patient has asthma and allergy.
	10. The best urine sample for quantitative estimation of proteins.

Q 3: Put (T) for true statement and (F) for false statement: **(20 marks)**

	1. Mycobacterium tuberculosis and HIV organisms are categorized under Risk Group **IV** by WHO.
	2. An increased amount of anti-coagulant decreases the Hct reading as a result of erythrocyte shrinking.
	3. Hb concentration is measured on spectrophotometer at wavelength 450nm.
	4. ESR in Polycythemia will be normal.
	5. The number of millimeters the red blood cells fall during this timed period is the PCV.
	6. If the hematocrit is increased, the angle of the spreader slide should be decreased.
	7. It is important to prevent contact with water before blood smear fixation is complete.
	8. One of the biological causes of poor smear is lipemic sample.
	9. Hb F is the major hemoglobin of the fetus and the newborn infant and composed of two alpha and two delta subunits.
	10. Increased rouleaux formation contributes to high ESR.
	11. The fixative used in blood smear preparation is 95% methanol.
	12. Tilting of the ESR tube decreases the sedimentation rate.
	13. Westergren is a method used to determine Hct.
	14. In Hb determination, ferrous ions (Fe2+) of hemoglobin are oxidized to the ferric (Fe3+ state by potassium cyanide to form methemoglobin.
	15. Shift to the right refers to increased number of hypersegmented neutrophils.
	16. The appearance of bilirubin in the urine is the first indication of kidney disease.
	17. A brownish yellow urine may indicate bilirubin in urine.
	18. Calcium carbonate crystals present in acidic urine while calcium oxalate is present in acidic urine.
	19. The most valuble aid in the identification of crystals is knowledge of the urine PH.
	20. In urinalysis, the numbers of cells seen are usually reported as number of each type found per low power field (LPF).

Q 4: Mention: **(6 marks)**

1. Leaving the tourniquet more than 2 minutes it will cause:
   a. .....
   b. .....
   c. .....

2. Three things determine the thickness of the smear
   a. .....
   b. .....
   c. .....

3. Factors affecting cast formation:
   a. .....
   b. .....
   c. .....

4. Sources of errors in Hb determination:
   a. .....
   b. .....
   c. .....

Q 5: Explain the following: **(4 marks)**

1. In staining., the pH of the phosphate buffer is critical adjusted between 6.8-7.2

2. Urine sample in room temperature should be examined within one hour.

3. Heparin is not used as anticoagulant in blood smear preparation.

4. ESR has no significant in case of sickle cell anemia and spherocytosis

Q6: Write the <u>reference value and the expression unit</u> of the following (10 Marks)

1- RBCs count (Newborn)

2- HCT (Female)

3- Eosinophil

4- Urine specific gravity

5- MCH

End of Questions
Good Luck

MR: Mohammed Dawoud ***Miss: Amany S. AlHindi***