

CBSE DEPARTMENT OF SKILL EDUCATION

MEDICAL DIAGNOSTICS (SUBJECT CODE 828)

CLASS XII (SESSION 2021-2022) MARKING SCHEME OF SAMPLE QUESTION PAPER FOR TERM - II

Max. Time Allowed: 1 ½ Hours (90 min)

Max. Marks: 30

General Instructions:

1. Please read the instructions carefully
2. This Question Paper is divided into 03 sections, viz., Section A, Section B and Section C.
3. Section A is of 05 marks and has 06 questions on Employability Skills.
 - a) Questions numbers 1 to 4 are one mark questions. Attempt any three questions.
 - b) Questions numbers 05 and 06 are two marks questions. Attempt any one question.
4. Section B is of 17 marks and has 16 questions on Subject specific Skills.
 - a) Questions numbers 7 to 13 are one mark questions. Attempt any five questions.
 - b) Questions numbers 14 to 18 are two marks questions. Attempt any three questions.
5. Section C is of 08 marks and has 03 competency-based questions.
 - a) Questions numbers 19 to 21 are four marks questions. Attempt any two questions.
6. Do as per the instructions given in the respective sections.
7. Marks allotted are mentioned against each section/question.

SECTION A

(3 + 2 = 5 marks)

Answer any 03 questions out of the given 04 questions		1 x 3 = 3
Q.1	Fear of failure.	1
Q.2	Motivation.	1
Q.3	Urban growers	1
Q.4	United Nation Environment Programme	1
Answer any 01 question out of the given 02 questions		1 x 2 = 2
Q.5	Persistence: An entrepreneur is never disheartened by failures and keeps trying, adapting and iterating to overcome obstacles that come in the way of achieving goals. Commitment: Entrepreneurs exhibit high level of commitment towards their work and decisions. For an entrepreneur to succeed, they have to stay committed to their venture and their goal.	2
Q.6	(a) The green design professionals work in collaboration with green builders. They lay the ideas of how the building will look like after its completion (b) They provide artistic beauty to building to make them look innovative and interesting.	2

SECTION B

(5 + 6 + 6 = 17 marks)

Answer any 05 questions out of the given 07 questions		1 x 5 = 5
Q.7	Issue Register	1
Q.8	Gregor Johann Mendel	1
Q.9	Antigen	1
Q.10	Duffy system	1
Q.11	95% Ethyl Alcohol (Ethanol)	1
Q.12	Cytospin	1
Q.13	Fine needle aspiration cytology	1
Answer any 03 questions out of the given 05 questions		2 x 3 = 6
Q.14	<p>Need to wash the cells:</p> <ol style="list-style-type: none"> 1. Washing improves reactivity. 2. Removes plasma that contains fibrinogen and forms clot when mixed with serum giving false positive. 3. Plasma can cause rouleaux's formation. 4. Anticoagulant present in plasma is anticomplementary and inhibits complement binding reactions. 5. Plasma contains blood group substances that can neutralize that reaction. 	2
Q.15	<p>The importance of blood grouping:</p> <ol style="list-style-type: none"> 1. Safe blood transfusion 2. Organ transplant especially liver, heart, and kidney 3. Medicolegal and forensic, paternity disputes 4. Immunology and genetics 	2
Q.16	Fine needle aspiration cytology includes aspiration done by the pathologist or the clinician as well as guided aspiration done by the radiologists and aspirations. It is a diagnostic procedure used to investigate pathological lesions in organs that do not shed cells spontaneously. In this technique, a thin, hollow needle is inserted into the lesion (usually a lump or a swelling) to obtain cells and tissue fragments, which, after being stained, are examined under a microscope.	2
Q.17	After preliminary visualization and cleaning of cervix a sterile cannula is introduced into the uterine cavity and aspiration is then carried out with a syringe. The specimen is squirted on a clean glass slide, gently spread and rapidly fixed.	2
Q.18	<ul style="list-style-type: none"> - Frankly hemorrhagic fluids are centrifuged like all fluids and fish tailed smears made from the sediment of the centrifuged deposit. - Alternatively, if very hemorrhagic, smears can be air dried and then flooded with normal saline for 30 seconds. This causes layers of red cells, smears are then air dried or wet fixed and stained by pap and Giemsa stains respectively. 	2
Answer any 02 questions out of the given 04 questions		3 x 2 = 6
Q.19	<p>Factors depending on reaction condition:</p> <ol style="list-style-type: none"> 1. Incubation time: Up to 60 minutes is adequate for all blood groups. 2. Incubation temperature: depends on type of antibody. 3. Centrifugation: should be adequate to produce a cell button with a clear supernatant but without packing cells tightly so that they are difficult to dislodge. Over centrifugation leads to false positive. 4. Ionic strength: low ionic strength i.e., low concentration of dissolved salts increases the amount of body binding to cell. 5. pH: Normal blood pH is about 7.42. 6. antigen-antibody ratio: The ratio of antigen and antibody in the mixture should be optimum. 7. Zeta potential: Erythrocytes have a genitive electrical charge. The electrical activity of this ionic cloud is called Zeta potential. 	3

Q.20	Rh antigens are found only on red cells. The Rh antibodies usually develop only in absence of Rh antigen, by a known stimulus, e.g., transfusion or pregnancy. Rho (D) is the most immunogenic factor and therefore unless specified Rh positive and negative denote D positive or D negative. The incidence of Rh negative amongst India's is approximately 5%. Rhesus system is comparatively more complex. Wiener postulated that there are multiple allelic genes. An Rh-negative mother with an Rh positive fetus may get alloimmunized with anti-D and cause hemolytic disease of the new born. Rh antibody titers are done in the antenatal period to rule out such a condition.	3
Q.21	Common sites for exfoliative cytology 1. Body Fluids (a) Pleural (b) Pericardial (c) Peritoneal (d) Synovial (e) Cerebrospinal 2. Surface Epithelia (a) Female genital tract (b) Respiratory tract (c) Nasopharynx (d) Larynx (e) Gastrointestinal tract (f) Urinary tract (g) Nipple discharge 3. Buccal Smear	3
Q.22	It is critical to fix cytology specimens immediately after collection for proper preservation of the cellular components. It is important that no air-drying occurs prior to fixation. If a smear is already air-dried it should not be put in an alcohol fixative. Please note on the requisition if the slide (s) being submitted are fixed or air-dried. Properties of a good cytological fixative: • It should not excessively shrink or swell cells. • It should not distort or dissolve cellular components. • It should help preserve nuclear details. • It should improve optical differentiation and enhance staining properties of the tissues and cell components.	3

SECTION C
(COMPETENCY BASED QUESTIONS)

(2 x 4 = 8 marks)

Answer any 02 questions out of the given 03 questions		
Q.23	(a) To detect the presence of HIV in human body, ELISA is used. Here an enzyme label is used and a color reaction that takes place in presence of a substrate denotes the presence of antigen/ antibody. This is the principle used in Transfusion transmitted disease tests. (b) Agglutination: It is defined as clumping of particles that have antigen on their surface and is brought about by anti-bodies. This forms the basis of blood grouping tests. 2. Hemolysis: Rupture of red cells with release of intracellular hemoglobin can occur if the Antibody has the property of hemolysin. It requires presence of complement.	4
Q.24	(a) Transferases: enzymes which assemble individual sugars into chains forming the antigen. As each sugar added on a new structure is formed which acts a substrate for another transferase. The A gene specified transferase adds N acetyl galactosamine, the B gene transferase adds N acetyl galactose to the H gene. The H gene transferase is the L fucosyl transferase. In the AB individual 2 different sugars are added to different chains of the same red cells. (b) Secretor status: The A, B and H substances on erythrocyte surfaces are lipopolysaccharides, not water soluble but they can be dissolved in fat solvents, such as alcohol and chloroform. They are most clearly detectable in saliva and identified in some other body fluids. These people are referred to as secretors. The secretor characteristic is inherited in the classic fashion by a dominant gene designated se. Its alleles se has no effect. Hence non secretors are sese while SeSe and Sese are secretors. The gene is independent of ABO and Hh.	4
Q.25	(a) Advantages of Pap Smear: • It is painless and simple • Does not cause bleeding • Does not need anesthesia • Can detect cancer and precancer • Can identify non-specific and specific inflammations • Can be carried out as an outpatient procedure (b) Endo-cervical brush is a small bottlebrush like device with one end having fine bristles made up of nylons. This device is strictly for taking materials from endocervix. Gently insert the brush in endocervix and rotate one turn pressing in the upper and	4

	<p>lower wall. The cytobrush is similar to that of endocervical brush except that the projected tip is without bristles. This can be used for obtaining cells from the whole cervix. Single sampling devices and methods have their limitations in obtaining adequate smears from the cervix. A combination of two devices, usually spatula and endocervical brush, give better results. Triple smear or the vaginal-cervical-endocervical (VCE) technique can provide the best results.</p>	
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