CBSE | DEPARTMENT OF SKILL EDUCATION

MEDICAL DIAGNOSTICS (SUBJECT CODE -828)

CLASS XII (SESSION 2021-2022)
BLUE-PRINT FOR SAMPLE QUESTION PAPER FOR TERM -1

Max. Time Allowed: 90 Minutes (1½ Hrs.) **Max. Marks: 30**

PART A - EMPLOYABILITY SKILLS (05 MARKS):

UNIT NO.	NAME OF THE UNIT	NO. OF QUESTIONS (1 MARK EACH)
1	Communication Skills-IV	2
2	Self-Management Skills-IV	2
3	Information and Communication Technology Skills-IV	2
TOTAL QUESTIONS		**6 Questions**
NO. OF QUESTIONS TO BE ANSWERED		**Any 5 Questions**
TOTAL MARKS		**1 x 5 = 5 marks**

PART B - SUBJECT SPECIFIC SKILLS (25 MARKS):

UNIT NO.	NAME OF THE UNIT	NO. OF QUESTIONS (1 MARK EACH)
1	Hematology Lab	24
2	Blood Bank and Transfusion (Material and Equipment)	8
TOTAL QUESTIONS		**32 Questions**
NO. OF QUESTIONS TO BE ANSWERED		**25 Questions**
TOTAL MARKS		**1 x 25 = 25 MARKS**

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Max. Time Allowed: 90 Minutes (1½ Hrs.) **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.
4. Section B is of 20 marks and has 25 questions on Subject specific Skills.
5. Section C is of 05 marks and has 07 competency-based questions.
6. Do as per the instructions given in the respective sections.
7. Marks allotted are mentioned against each section/question.
8. All questions must be attempted in the correct order

SECTION A

Answer any 5 questions out of the given 6 questions on Employability Skills (1 x 5 = 5 marks)

1.	When you communicate with your teachers, you basically use verbal communications, that can be of two types, those are: a) Languages and Sounds b) Gestures and Body languages c) Sign and signals d) Body language and written form	**1**
2.	A simple sentence is one independent clause that has two main components and express a complete thought. What are those two components? a) a subject and a verb b) a noun and a pronoun c) an adjective and a pronoun d) a noun and an adjective	**1**
3.	This motivation occurs when we feel driven by outside forces, performing an activity either to obtain a reward or to avoid punishment. Name the type of motivation. a) Physiological motivation b) Psychological motivation c) Internal motivation d) External motivation	**1**
4.	Rohit has got the personality disorder, that is a condition marked by an overreliance on other people to meet one's emotional and physical needs. Doctor has denoted the disorder as: - a) Paranoid b) Antisocial c) Dependent d) Obsessive	**1**

5.	This bar of a Calc Screen contains icons (buttons) to provide quick access to commands such as New, Open, Print, Copy and Paste etc. Which is this bar? a) Title bar b) Standard bar c) Menu bar d) Task bar	**1**
6.	You are working with your computer. You need to select the entire worksheet. Which of the following shortcut keys are used to select the entire worksheet? a) CTRL+X b) CTRL +S c) CTRL+A d) CTRL + C	**1**

SECTION B

Answer any 20 questions out of the given 25 questions **(1 x 20 = 20 marks)**

7.	Some precautions while using it are: i) The buckets should be balanced equally with correct weight and size of the tubes ii) It should always be covered when in use. iii) It should be kept on firm and hard base. Identify the Instrument. a) Centrifuge b) Microscope c) Cell Counter d) Coagulation Analyzer	**1**
8.	Rohit is working as Laboratory technician in hospital. He has to know about the principle behind automated cell counters. What it can be- a) X ray, Light scattering, and Computed Tomography b) Electrical impedance, light scattering and flowcytometry c) Computed tomography, light scattering and flowcytometry d) X ray, light scattering and flowcytometry	**1**
9.	If anyone gets any cut in hand, then the blood gets clot. In this process which component further converts fibrinogen (soluble) into fibrin clot (insoluble)? a) Calcium b) Thrombin c) Prothrombin d) Blood	**1**
10.	During the collection of blood in the vial anticoagulant is used to make it anticoagulated. For this purpose EDTA is used as an anticoagulant. Name the full form of EDTA. a) ethylenediaminetetra-amino acid b) ethyldiaminetetra-acetic acid c) ethylenediaminetetra- acetic acid d) ethylenediaminetetrameric-acetic acid	**1**
11.	During the process of Platelet counting, why does Excessive EDTA lead to a spuriously high platelet count? a) RBCs may swell and then disintegrate into fragments which are counted as platelets b) Reticulocytes may swell and then disintegrate into fragments which are counted as platelets c) WBCs may swell and then disintegrate into fragments which are counted as platelets d) Platelets may swell and then disintegrate into fragments which are counted as platelets	**1**

12.	Raju is working as lab technician and he has to study Coagulation Studies and ESR measurement with the blood sample. Which anticoagulant will be used by Raju? a) EDTA b) Trisodium citrate c) Heparin d) Double Oxalates	**1**
13.	It should never be left for more than 1 minute. For prolonged application re- apply it after the site has been cleaned and just prior to insertion of needle. Name the procedure that is performed here. a) Tourniquet application b) Injection Push c) Disinfection d) Sanitization	**1**
14.	Mercuric chloride – 0.5gms – Prevents growth of bacteria and fungus. Sodium chloride – 1.0gms Sodium sulphate - 5.0gms Distilled water – 200ml The fluid has to be renewed frequently to avoid RBC clumping. Name the diluting fluid. a) Dacie's formol citrate Solution b) Toisson's fluid c) Hayem's fluid d) Gower's fluid	**1**
15.	The lab attendant is working in the laboratory and during the staining procedure what kind of problems can be encountered during staining: a) Dark black color on slide and deposition b) Excessive blue stain, excessive pink stain, and precipitation c) Excessive purple stain and cell swelling d) Light stain and loss of smear	**1**
16.	The blood is drawn up to the mark 0.5 tip is wiped clear followed by the diluting fluid which is drawn up to the 101 mark. The pipette is rotated rapidly between the fingers to allow the fluid to mix well. The glass bead helps in mixing of the fluid and the blood. The dilution of blood contained is 1/200. Name the blood counting process. a) RBC counting b) WBC counting c) Platelet counting d) Reticulocyte counting	**1**
17.	One requires glass or plastic tube under defined vacuum, needle holder and a needle for such a system. The tubes are available with and without anticoagulant. The rear end of the needle can pierce the cap of the evacuated tube and multiple tubes can be filled one after other. Name the blood collection method. a) Evacuated Tube collection system b) Skin puncture c) Indwelling catheter method d) Syringe method	**1**

18.	Ravi is working in laboratory and when he is working with blood cells under microscope, he can see the blood cells That are small and colorless and moderately refractile, in unstained preparations. Identify the blood cell. a) RBC b) WBC c) Platelet d) Reticulocyte	**1**
19.	Based on the results of these parameters several indices are derived, which give quantitative information about the red blood cells. These are called absolute values or Erythrocyte indices. What are these parameters? a) hemoglobin, PCV and total red cell count b) hemoglobin, ESR and total white cell count c) hemoglobin, PCV and total platelet count d) hemoglobin, ESR and total red cell count	**1**
20.	Doctor should talk to the patient and ask about any history of exposure to drugs, chemicals, any change in bowel habits, fever, kidney dysfunction, early greying of hair or skin changes. Family history of bleeding disorders should also be asked. Sometimes patient may also complain of breathlessness, tiredness, and fainting spells. The disease is defined as decrease in oxygen carrying capacity of blood. In practice, decrease in hemoglobin is considered as the specific disease. Evaluation of the disease is based on clinical history, examination, and lab findings. Identify the disease. a) Dengue b) Sleeping sickness c) Anemia d) Malaria	**1**
21.	Name the screening test that can be performed to detect any vascular defect of the vessel or any abnormality of platelet number and function. This test is helpful to detect Idiopathic Thrombocytopenic Purpura, Ehler-Danlos Syndrome also. a) Clotting time test b) Bleeding time test c) Hemoglobin test d) ESR test	**1**
22.	This kind of examination is an important test for correct diagnosis in many conditions. One may resort to this examination in cases of pyrexia of unknown origin, thrombocytopenia, leukumeia, storage disease, Refractory anaemia, Paraproteinemias (rule out Myeloma), Leukaemia, staging of neoplasm including lymphoma. The procedure is contraindicated if the patient has haemostatic failure. Identify the type of examination to be performed. a) Endoscopic Examination b) Cardiac catheterization c) Bone marrow examination d) Bronchoscopy examination	**1**
23.	While processing the Bone marrow aspirate three types of samples will be processed in different ways for further processing. Match the ways in which the samples will be processed. a) Smear preparation – Morphology, Cytochemistry, FISH Anticoagulated sample – Flow Cytometry, Cytogenetic studies, Molecular studies Clot preparation- Processed as Biopsy b) Smear preparation – Flow Cytometry, Cytogenetic studies, Molecular studies Anticoagulated sample – Morphology, Cytochemistry, FISH Clot preparation- Processed as Biopsy	**1**

	c) Smear preparation – Processed as Biopsy Anticoagulated sample – Flow Cytometry, Cytogenetic studies, Molecular studies Clot preparation- Morphology, Cytochemistry, FISH d) Smear preparation – Morphology, Cytochemistry, FISH Anticoagulated sample – Processed as Biopsy Clot preparation- Flow Cytometry, Cytogenetic studies, Molecular studies	
24.	This is the field of an applied science concerned with the design of workplaces, tools, and tasks that match the physiological, anatomical, and psychological characteristics and capabilities of the worker." The Goal of this field is to 'fit the job to the person,' rather than making the person fit the job." Identify the field of the science. a) Disaster management b) Waste disposal c) Fire safety d) Ergonomics	**1**
25.	In a Hospital according to Biomedical waste management how the waste can be classified into different categories: A) Infectious Hazardous waste (15%-18%). i) Non-sharps, Sharps, Plastics disposal and Liquid waste B) Other Hazardous waste (5%-7%) ii) Radioactive waste, discarded glass, Pasteurized container, chemical Waste, Cytotoxic waste C) Non- Hazardous waste (75%-90%) iii) Paper, Cardboard, Office products. a) A- i, B – ii, C- iii b) A-ii, B- i, C-iii c) A-iii, B-ii, C-i d) A-i, B- iii, C-ii	**1**
26.	This instrument helps us to examine tiny objects which cannot be visualized with the naked eye. It is a delicate instrument and needs utmost care. Name the instrument. a) Centrifuge b) Microscope c) Cell Counter d) Coagulation Analyzer	**1**
27.	This instrument is used to sterilize various materials in the laboratory by steam sterilization method. Blood units that are sero- positive or expired are autoclaved at 120 degree for 20 minutes. a) Microscope b) Autoclave c) Cell separator d) Incubator	**1**
28.	The instrument is used for following purposes: 1. Determination of enzyme's in the specimen by end point reaction methods. 2. Determination of glucose, urea, uric acid etc., by enzymatic methods. 3. Growing microorganisms on various culture media. 4. Right temperature for immune antigen reaction. Identify the instrument. a) Hot air oven b) Autoclave c) Cell separator d) Incubator	**1**

29.	In hot air oven when electricity is passed through the heating coils, the energy is converted into heat energy. Which kind of energy can it be? a) Light energy b) Electrical energy c) Chemical energy d) Nuclear energy	**1**
30.	As a technician in Blood bank you have to work with different instruments. Match the functions of different instruments in correct order. Instrument / Functions A) Electronic weighing machine — i) Bucket handle typed of centrifuge to hold the collected bags with a provision for a wide range of temperature is preferred. B) Refrigerated Centrifuge — ii) For weighing bags accurately C) Tube sealer — iii) 70% of the air in recirculated through filters. So that the working area is bathed in clean (almost sterile) air. D) Laminar flow cabinet — iv) Used for clamping the segment of the blood bag after it is collected. a) A- ii, B-i, C-iv, D-iii b) A-iii, B-ii, C-iv, D-i c) A- ii, B- iii, C- iv, D- i d) A-iv, B- iii, C- ii, D-i	**1**
31.	Rohini is working in Blood Bank and she is responsible to collect the blood from donor. What instrument does she use for the actual collection of blood? a) Blood Collection monitor b) Tube sealer c) Blood donor couch d) Blood collection bag	**1**

SECTION C
(COMPETENCY BASED QUESTIONS)

Answer any 5 questions out of the given 7 questions **(1 x 5 = 5 marks)**

	Read the passage carefully and answer the questions **(32-36):** A 53-year-old man Michele presents to your office for a routine assessment. He has a history of rheumatoid arthritis (RA), which was previously treated with prednisone and azathioprine. He also has hyperlipidaemia and hypertension treated with simvastatin and lisinopril, respectively. Physical examination is normal with no lymphadenopathy or splenomegaly. He previously had mild anaemia of chronic inflammation but no abnormalities of his white blood cell or platelet counts. A complete blood count with differential shows the following: The interpretation of the peripheral blood film is as follows: "Normal morphology of all cells, but decrease in absolute neutrophil count. Excess of lymphocytes with azurophilic granules." Haemoglobin: 11.2 g/dl WBC: 4200/Microliter Platelet Count: 104,000/Microliter Absolute neutrophil Count: 560/ Microliter	

32.	Michele is suffering from rheumatoid arthritis, that is one kind of- a) Parasitic disorder b) Autoimmune disorder c) Viral disorder d) Bacterial disorder	
33.	Name the basic problem from which Michele is suffering from. a) Neutropenia b) Eosinophilia c) Eosinopenia d) Thrombasthenia	**1**
34.	Michele has the Hemoglobin level of 11.2 g/dl, which is lower than normal in case of male, what is the normal range of hemoglobin in normal males? a) 21-29 g/dl b) 18-22 g/dl c) 16-20 g/dl d) 13-17 g/dl	**1**
35.	Michele has the platelet count of 104,000/Microliter in his blood. He is suffering from the condition that is called as- a) Thrombocytosis b) Thrombocytopenia c) Thrombasthenia d) Thrombosis	**1**
	Read the passage carefully and answer the questions (**36-38):** Madhu is working as Lab technician in Blood bank. She is responsible in collecting blood from donor and maintenance of all instruments of Blood bank. The basic equipment for blood collection are used as Blood donor couches, Blood collection monitor, Blood bags and Tube sealer. She is basically using the equipment for blood component preparation are Electronic weighing machine, Refrigerated centrifuge, Plasma expressor and Cell separator. As a part of hospital when she has to supply the blood bags for the recipients then she is responsible to test the blood and the basic instruments that are used as ABO grouping and Infectious disease testing. For maintaining the activity of blood bank in proper way she has to handle autoclave, incubator, microscope, hot air oven, laminar flow cabinet also.	
36.	As Madhu is working in Blood bank, the machine is used for quick thawing of Plasma at + 4^0C / + 37^0C and improves yields over conventional air thawing methods. This is fabricated out of sheet with a stainless-steel inner chamber. Refrigeration is achieved by means of hermetically sealed compressor. The temperature is controlled by a digital indicator cum controller. Identify the machine with which Madhu is working. a) Cryoprecipitate bath b) Ultra-low freezer c) Blood storage cabinet d) Plasma storage cabinet	**1**

37.	The instrument is mainly used by Madhu for the following purposes. 1. Dry sterilization of syringes & needles. 2. Preparation of anticoagulated bulbs. 3. Drying of glass ware. 4. Heating of chemicals used for the preparation of primary standards. Identify the instrument. a) Incubator b) Microscope c) Hot air Oven d) Laminar flow cabinet	**1**
38.	Madhu maintains the temperature of blood storage cabinet for keeping the blood components in proper way. How much temperate is maintained by Madhu? a) 2-6 degree b) 6-10 degree c) 10-14 degree d) 14-18 degree	**1**