30196

Government of Tripura
Health & Family Welfare Department
Recruitment Examination for Laboratory Technician : 2024

SET : A

Time : 2 hours Total Marks : 85

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Application Identity/Roll Number | | | | | | | | | | | | |

Name of Candidate : .....

Date of Birth : ..... Date of Examination : .....

Centre of Examination : .....

....
Signature of Candidate *Signature of Invigilator*

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FOR OFFICE USE ONLY

A.	Total number of questions	85	85
B.	Number of question attempted		
C.	Number of question not attempted		
D.	Number of correct answer		
E.	Number of wrong answer		
F.	Number of question skipped as *"Do not know"*		
G.	Number of question could not evaluate		
H.	Marks scored due to correct answer		
I.	Marks deducted due to wrong answer		
J.	Marks deducted due to no attempt (Maximum 10)		
K.	Total marks scored [H – (I + J)]		

....
Signature of answer script evaluator *Signature of Examiner*

READ INSTRUCTIONS CAREFULLY BEFORE ANSWERING THE QUESTIONS

- Duration of examination is 2 hours (120 minutes) from 11:00 A.M. to 1:00 P.M. **No extra time will be allowed** to any candidate including specially able (PwD) candidates, if any.

- Any conduct of candidate that is found to be inappropriate, unruly, disturbing or disrupting, or anyway detrimental to or violative of the integrity, sanctity and secrecy of the examination process, will be considered as a deliberate recourse to unfair means, and appropriate disciplinary and/or legal action shall ensure against the candidate concerned.

- Total number of multiple choice questions (MCQ) is 85. Each question carries 1 (one) mark.

- 0.25 marks will be deducted for each wrong answer.

- Each MCQ will have five options, and alongside each option, a blank response-circle is appeared. Out of the aforesaid five options, anyone of the first four options is the correct answer. **The fifth (the last in order) option – "Do not know" – shall be darkened if you do not know the correct answer.**

- **Candidates must darken any of the five options (response-circles) compulsorily in respect of all the 85 questions; skipping any question without darkening any of the five circles appearing alongside the options shall invariably lead to a penal deduction of 10 marks from the candidate's overall score.**

- Darken the whole circle using **exclusively black-inked ball pen** against the answer opted for. **Any other marks to denote the selected option /answer shall not be considered for evaluation.** Example :

  What is the name of your country?

A. China	○
B. Bangladesh	○
C. India	●
D. Sri Lanka	○
E. Do not know	○

- Candidates shall not make any marks, draw any picture, image or words, symbols, etc., which do not have any relevance to or comply with the foregoing instructions. Any violation of the instructions may lead to non-evaluation of the answer script.

- **No erasing, scratching, masking, etc., to modify any answer shall be allowed.**

- **An answer once made by darkening the relevant circle shall be final and absolute. Any instance of violating the instruction shall lead to an outright rejection of the answers so altered.**

- **No candidate shall ordinarily be allowed to leave examination hall during examination.** No candidate is allowed to go out for lavatory purpose within first one hour of the commencement of examination, and half an hour of the closure of examination. Same candidate should not be allowed to go outside twice for the said purpose. Two candidates should not be allowed to go outside lavatory purpose at the same time from same hall.

- Warning bell to be ring in the Examination Centres for 5 (five) times; viz. 15 minutes before the commencement of examination, at the time of starting the examination, elapse of one hour during examination, 15 minutes before the end of examination, and at the end of examination.

Question SET-A

1) The Friedewald formula is used to calculate serum LDL-cholesterol concentration. The formula is not valid if the serum fasting triglycerides concentration is raised.

What is the concentration of serum triglycerides above which the formula is considered invalid?

a) 1.7 mmol/L ○
b) 2.0 mmol/L ○
c) 4.5 mmol/L ○
d) 7.0 mmol/L ○
e) Do not know ○

2) A 25-year-old woman attended the A&E department complaining of a sudden onset severe headache. Twelve hours after the onset, a lumbar puncture was performed and the CSF sent for xanthochromia testing. The scan showed a single peak

At what wavelength would you expect a bilirubin peak to appear?

a) 403 – 410 nm ○
b) 410 – 418 nm ○
c) 450 – 460 nm ○
d) 510 – 518 nm ○
e) Do not know ○

3) Measurement of the faecal osmotic gap may be helpful in differentiating secretory from osmotic diarrhoea.

The following results were obtained on a faecal sample:

Osmolality 280 mOsm/Kg

Faecal sodium 20 mmol/L

Faecal potassium 65 mmol/L

What is the faecal osmotic gap?

a) 40 mOsm/kg ○
b) 110 mOsm/kg ○
c) 130 mOsm/kg ○
d) 175 mOsm/kg ○
e) Do not know ○

4) Various parameters can be calculated to assess biochemical test performance in different clinical circumstances.

In screening, how is the diagnostic specificity of a test defined?

A. All affected individuals identified, divided by total of positive results. ○

B. All affected individuals identified, divided by total of those with condition. ○

C. All correct results, divided by total number of subjects studied. ○

D. All healthy individuals identified, divided by total number unaffected. ○

E. Do not know ○

5) A 3-year-old boy was investigated for short stature.

Results showed:

Sodium 137 mmol/L

Potassium 4.5 mmol/L

Creatinine 28 µmol/L (23-37)

Adjusted calcium 2.25 mmol/L

Albumin 38 g/L

ALP 19 U/L (60-425)

Phosphate 1.0 mmol/L

TSH 2.7 mU/L

25-OH vitamin D 35 nmol/L

Zinc 3.2 µmol/L (6-25)

What is the most likely cause of the low ALP?

a) EDTA contamination ○
b) Hypophosphatasia ○
c) Magnesium deficiency ○
d) Zinc deficiency ○
e) Do not know ○

6) A young boy was suspected of having mucopolysaccharidoses. A urine sample was sent for analysis and found to contain keratan sulphate.

Which type of mucopolysaccharidosis is he most likely to have?

a) Type I ○
b) Type II ○
c) Type III ○
d) Type IV ○
e) Do not know ○

7) A junior doctor telephones for advice. He needs to take various samples from his patient and wants to know the most appropriate order in which to draw the samples.The following tests have been requested Full blood count, renal profile, plasma glucose, clotting studies, blood cultures.

Which sample should he take third?

a) Clotting studies ○
b) Full blood count ○
c) Plasma glucose ○
d) Renal profile ○
e) Do not know ○

8) What is the normal level of serum sodium?

a) 135-145 meq/l ○
b) 125-135 meq/l ○
c) 145-155 meq/l ○
d) 128-138 meq/l ○
e) Do not know ○

9) Urea clearance is the

a) Amount of urea excreted per minute ○
b) Amount of urea present in 100 ml of urine ○
c) Volume of blood cleared of urea in one minute ○
d) Amount of urea filtered by glomeruli in one minute ○
e) Do not know ○

10) What is the full form of OGTT?

a) Oral glucose turnaround time ○
b) Oral glycine tolerance test ○
c) Oral glucose tolerance test ○
d) Amount of urea filtered by glomeruli in one minute ○
e) Do not know ○

11) Which of the following is used as anticoagulant in estimating ESR by Westergren method

a) Double oxalate ○
b) Heparin ○
c) 3.8 % Trisodium citrate ○
d) EDTA ○
e) Do not know ○

12) Pancytopenia means

a) Reduction in RBC and WBC count ○
b) Reduction in WBC and platelet count ○
c) Reduction in RBC and platelet count ○
d) Reduction in RBC, WBC and Platelet count ○
e) Do not know ○

13) Supravital stain is used for counting

a) Sperm ○
b) Reticulocyte ○
c) Platelet ○
d) Yeast cell ○
e) Do not know ○

14) All of the following are used in preservation of urine sample exceptss

a) Refrigeration ○
b) Sulfa-drugs ○
c) Boric acid ○
d) Thymol ○
e) Do not know ○

15) To estimate PCV, blood has to be centrifused at –

a) 2000 rpm for 1 hr ○
b) 1000 rpm for 15 mins ○
c) 5000 rpm for 30 mins ○
d) None of the above ○
e) Do not know ○

16) Site of collection of blood from newborn baby –

a) Heel of baby's foot ○
b) Ante-cubital fossa ○
c) Ear lobe ○
d) Finger prick ○
e) Do not know ○

17) Stains used in sputum microscopy –

a) Gram stain ○
b) Ziehl-Neelsen stain ○
c) Giemsa stain ○
d) All of the above ○
e) Do not know ○

18) In microcytic hypocromic anemia, MCV is expected to be

a) 80 – 98 fl ○
b) < 80 fl ○
c) 100 -120 fl ○
d) > 120 fl ○
e) Do not know ○

19) In a patient of polycythemia, for preparing peripheral blood smear what should be the angle of the spreader

a) 45^0 ○
b) 60^0 ○
c) 90^0 ○
d) 30^0 ○
e) Do not know ○

20) What is the depth of counting area in Improved Neubauer chamber

a) 0.1 mm ○
b) 0.16 mm ○
c) 0.4 mm ○
d) 0.5 mm ○
e) Do not know ○

21) The condition required for autoclave

a) 121°C temp and 15 lbs. pressure for 15 min ○
b) 121°C temp and 20 lbs. pressure for 30 min ○
c) 150°Ctemp for 1 hr. ○
d) 130°C temp for 2 hr. ○
e) Do not know ○

22) Blood agar medium is

a. Enrichment medium ○
b. Enriched medium ○
c. Selective medium ○
d. Differential medium ○
e. Do not know ○

23) Glassware are sterilized by

a) Autoclaving ○
b) Hot air oven ○
c) Incineration ○
d) Inspissation ○
e) Do not know ○

24) On MacConkey's medium Esch. Coli forms

a) Colourless colonies ○
b) Greenish pigmentation ○
c) Pink coloured colonies ○
d) Medusa head appearance ○
e) Do not know ○

25) Which of the following test used to differentiate Staphylococcus aureus from other Staphylococcus spp.

a) Coagulase Test ○
b) Catalase Test ○
c) Urease Test ○
d) Oxidase Test ○
e) Do not know ○

26) Cerebral malaria is caused by?

a) Plasmodium vivax ○
b) Plasmodium ovale ○
c) Plasmodium malariae ○
d) Plasmodium falciparum ○
e) Do not know ○

27) Mycobacterium tuberculosis resist decolourization from?

a) 20% sulphuric acid ○
b) 5% sulphuric acid ○
c) 1% sulphuric acid ○
a) 3% sulphuric acid ○
b) Do not know ○

28) Which part of light microscope converges the light beam so that it passes through the specimen?

a) Objective lens ○
b) Mechanical stage ○
c) Condenser ○
d) Iris diaphragm ○
e) Do not know ○

29) Solidifying agent of a culture media is

a) Peptone ○
b) Meat extract ○
c) Sodium chloride ○
d) Agar ○
e) Do not know ○

30) Paraffin oil can be sterilised by using

a) Autoclave ○
b) Hot air oven ○
c) Vaccine bath ○
d) Pasteurization ○
e) Do not know ○

31) What is the normal level of serum potassium?

a) 3.5-5.5 meq/l ○
b) 2.5-3.5 meq/l ○
c) 4.5-5.5 meq/l ○
d) 5-6 meq/l ○
e) Do not know ○

32) What is the full form of ELISA?

a) Enzyme linked immunosorbent assay ○
b) Erythrocyte linked immunosorbent assay ○
c) Enzyme linked immunological assay ○
d) Erythrocyte linked immunological assay ○
e) Do not know ○

33) Phosphate can be measured by the formation of a colourless complex with ammonium

molybdate

At what wavelength (nm) would such a complex generally be measured?

a. 330-390 ○
b. 410-470 ○
c. 480-540 ○
d. 550-610 ○
e. Do not know ○

34) A 27 year old woman with long standing Crohn's disease, who has been receiving home parenteral nutrition for several years, presents with a skin rash. Her clinical team think that its appearance is typical of that of pellagra

Deficiency of which vitamin is most likely to be the cause?

a. Biotin ○
b. Niacin ○
c. Pyridoxine ○
d. Riboflavin ○
e. Do not know ○

35) Serum indices are calculations of absorbance measurements that provide a semiquantitative representation of levels of icterus, haemolysis or lipaemia in patient samples

At what wavelength (nm) is detection of lipaemia best performed?

a. 300-410 ○
b. 400-510 ○
c. 500-610 ○
d. 600-710 ○
e. Do not know ○

36) Serum concentrations of cancer antigens may be increased in malignancy.

Which cancer antigen is particularly used as a marker in breast cancer?

a. CA 15-3 ○
b. CA 19-5 ○
c. CA 19-9 ○
d. CA 50 ○
e. Do not know ○

37) Serum from a man who has dermatomyositis had LDH isoenzymes analysed using thin-layer agarose gel electrophoresis.

Which isoenzyme would be expected to have the highest peak?

a. LD1 ○
b. LD2 ○
c. LD3 ○
d. LD5 ○
e. Do not know ○

38) A 62-year-old man presented to his GP with a painful, red big toe.

Blood testing showed: Serum urate 0.74 mmol/L (0.23-0.46)

What would be the most useful additional biochemistry test to perform in this situation?

a. Cholesterol ○
b. Creatinine ○
c. Glucose ○
d. Lactate ○
e. Do not know ○

39) A 30-year-old, obese male was found elevated ALT and ALP. Fatty liver was noted on ultrasound. After weight loss, ALT decreased but the elevated ALP persisted. Isoenzyme analysis revealed the presence of intestinal ALP.

Which ABO blood types is this patient most likely to have?

a) A or B ○
b) A or AB ○
c) A or O ○
d) B or O ○
e) Do not know ○

40) A baby had a positive result on the newborn screening for cystic fibrosis. After assessment by a paediatrician, a sweat test was arranged. The sweat test was performed when the baby is three weeks old. Following iontophoresis, the sweat was collected over 30 minutes using the Macroduct system.

Results: Sweat volume 14 mg Sweat chloride 37 mmol/L

What interpretative comment should be added to these results?

a) Result not consistent with a diagnosis of cystic fibrosis ○
b) Result consistent with a diagnosis of cystic fibrosis ○
c) Result suggestive but not diagnostic of cystic fibrosis ○
d) Insufficient sweat volume collected. Repeat sweat test is required. ○
e) Do not know ○

41) Positive osmotic fragility test indicates which disorder –

a) CML ○
b) Sideroblastic anemia ○
c) Hereditary spherocytosis ○
d) G-6-PD deficiency ○
e) Do not know ○

42) Adult haemoglobin (HbA) is a tetramer consisting of –

a) $\alpha\ 2\beta\ 2$ ○
b) $\alpha\ 2\ \delta\ 2$ ○
c) $\alpha\ 2\gamma\ 2$ ○
d) $\beta\ 4$ ○
e) Do not know ○

43) All of the following are the cytochemical stains used to identify blast cells in acute leukemia except

a) MPO ○
b) Reticulin ○
c) Sudan black ○
d) PAS ○
e) Do not know ○

44) Very low platelet count is usually associated with

a) Prolonged CT ○
b) Both BT & CT prolonged ○
c) Prolonged BT ○
d) Prolonged APTT ○
e) Do not know ○

45) Urinary crystals with envelop shape –

a) Calcium oxalate ○
b) Ammonium oxalate ○
c) Hippuric acid ○
d) Leucine ○
e) Do not know ○

46) In Bombay blood group which antigen is present on RBC surface –

a) H Ag ○
b) A Ag ○
c) B Ag ○
d) h Ag ○
e) Do not know ○

47) Which of the following is WBC sdiluting fluid –

a) Hayem's fluid ○
b) Turk's fluid ○
c) Dacie'sfluid ○
d) Toluidine fluid ○
e) Do not know ○

48) Bone marrow study is indicated in all of the following expect –

a) Sickle cell anemia ○
b) AML ○
c) Leishmaniasis ○
d) Megaloblastic anemia ○
e) Do not know ○

49) Which of the following is a natural anticoagulant –

a) EDTA ○
b) Double oxalate ○
c) Sodium fluride ○
d) Heparin ○
e) Do not know ○

50) Cryoprecipitate is rich in –

a) WBC ○
b) Coagulation factors ○
c) RBC ○
d) Platelet ○
e) Do not know ○

51) RPR and VDRL test are done for the diagnosis of

a) AIDS ○
b) Hepatitis ○
c) Syphilis ○
d) Malaria ○
e) Do not know ○

52) Salmonella typhi is the causative organism of

a) Undulent fever ○
b) Remittent fever ○
c) Enteric fever ○
d) Dengue fever ○
e) Do not know ○

53) Dengue virus is transmitted from man to man by the

a) Sand fly ○
b) Ticks ○
c) Aedes aegypti ○
d) Culex mosquito ○
e) Do not know ○

54) Man is the intermediate host for

a) Guinea Worm ○
b) Filaria ○
c) Malaria ○
d) Kala-azar ○
e) Do not know ○

55) Which method is used for cultivation of viruses?

a) Incubation in embryonated egg ○
b) Animal inoculation ○
c) Tissue culture ○
d) All the above ○
e) Do not know ○

56) Identify the correct sequence of steps on the gram stain procedure:

a) Primary stain, counter stain, mordant, decolorizing ○
b) Primary stain, mordant, counter stain, decolorizing ○
c) Primary stain, decolorizing, counter stain, mordant ○
d) Primary stain, mordant, decolorizing, counter stain ○
e) Do not know ○

57) Culture media of choice for culture of urine sample:

a) Blood agar ○
b) Chocolate agar ○
c) CLED agar ○
d) XLD agar ○
e) Do not know ○

58) Bacteria having flagella all over the body called as:

a) Monotrichous ○
b) Peritrichous ○
c) Lophotrichous ○
d) Amphitrichious ○
e) Do not know ○

59) Which of the following parasite has no cystic stage?

a) Giardia lamblia ○
b) Balantidium coli ○
c) Trichomonas vaginalis ○
d) Entamoeba histolytica ○
e) Do not know ○

60) All the following are sporicidal except

a) Glutaraldehyde ○
b) Alcohols ○
c) Ethylene oxide ○
d) Stabilized hydrogen peroxide ○
e) Do not know ○

61) A 2-month-old baby was found to have ambiguous genitalia

Which analyte is likely to be most useful in assessing for the presence of testicular tissue?

a) AMH ○
b) FSH ○
c) hCG ○
d) Inhibin B ○
e) Do not know ○

62) A 28-year-old man presented to the gastroenterology clinic with a 3 month history of weight loss and mild iron deficiency anaemia. On colonoscopy he was found to have melanosis coli.

Investigations showed

Serum Sodium 144 mmol/L Urine

Potassium 2.6 mmol/L

Creatinine 96 µmol/L

Ferritin 9 µg/L

Urine Potassium 12 mmol/L

What is the most likely explanation for the hypokalaemia?

a) Conn Syndrome ○
b) Gitelman Syndrome ○
c) Laxative abuse ○
d) Renal tubular acidosis ○
e) Do not know ○

63) A 28-year-old woman with no previous history of thyroid disease is seen in the endocrine clinic. Her thyroid function tests are shown:

TSH <0.1 mU/L

FT4 46.3 pmol/L

FT3 21.6 pmol/L

Thyroglobulin <0.1 ng/mL (3.3-77)

Thyroid peroxidase antibodies: weak positive

What is the most likely diagnosis?

a) Graves' disease ○
b) Hashimoto's thyroiditis ○
c) Multinodular goitre ○
d) Thyrotoxicosis factitial ○
e) Do not know ○

64) What is the normal level of fasting blood glucose?

a) 70-100 mg/dl ○
b) 60-110 mg/dl ○
c) 80-120 mg/dl ○
d) 80-140 mg/dl ○
e) Do not know ○

65) What is the normal level of total bilirubin?

a) 0.2-1.2 mg/dl ○
b) 0.6-1.5 mg/dl ○
c) 0.4-1.5 mg/dl ○
d) 1.2-2.0 mg/dl ○
e) Do not know ○

66) Fixative used in PAP stain –

a) Formalin ○
b) 95% ethanol ○
c) Absolute methanol ○
d) 75% ethanol ○
e) Do not know ○

67) Cells found normally in CSF –

a) Lymphocyte ○
b) Neutrophil ○
c) Eosinophil ○
d) Epithelial cell ○
e) Do not know ○

68) All of the following are Romanowsky stain except

a) MGG ○
b) Leishman stain ○
c) Brilliant cresyl blue ○
d) Field stain ○
e) Do not know ○

69) Magnification of oil immersion objective in compound microscope –
   a) 400 x ○
   b) 1000x ○
   c) 100x ○
   d) 200x ○
   e) Do not know ○

70) Barr body can be found in all of following biological samples except –
   a) Hair ○
   b) Blood ○
   c) Buccal mucosal scrapping ○
   d) Tear ○
   e) Do not know ○

71) In histopathology laboratory clearing agent used during tissue processing is
   a) Absolute alcohol ○
   b) 70% alcohol ○
   c) Xylene ○
   d) Formalin ○
   e) Do not know ○

72) What should be the minimum ratio of volume of the tissue and fixative –
   a) 1:5 ○
   b) 1:10 ○
   c) 1:30 ○
   d) 1:40 ○
   e) Do not know ○

73) Which one of the following is not a decalcifying agent –
   a) Phosphotungstic acid ○
   b) Nitric acid ○
   c) EDTA ○
   d) Formic acid ○
   e) Do not know ○

74) Melting point of paraffin wax used in histology lab –
   a) 40 – 45° C ○
   b) 62 – 66° C ○
   c) 45 – 52° C ○
   d) 56 – 58 ° C ○
   e) Do not know ○

75) All of the following are the special stains used in histopathology except
   a) Alcian blue ○
   b) MPO ○
   c) PAS ○
   d) Reticulin ○
   e) Do not know ○

76) All of the following characteristics are seen in the stools in amoebic dysentery except
   a) RBCs in clumps ○
   b) Charcot-leyden crystals ○
   c) Pyknotic bodies ○
   d) Ghost cells ○
   e) Do not know ○

77) Stoll's method is used for:
   a) Determining the number of helminthic eggs in faces ○
   b) Demonstration of Cryptosporodium oocysts in faeces ○
   c) Concentrating microfilariae in blood ○
   d) Staining of lymph node smear for Leishmania donovani ○
   e) Do not know ○

78) Which medium is the most ideal for antibiotic sensitivity testing of bacterial isolates?

a. Muellar-Hinton agar ○
b. Nutrient agar ○
c. Blood agar ○
d. Macconkey agar ○
e. Do not know ○

79) Hand wash should be performed for minimum of how much duration?

a. 20 second ○
b. 40 second ○
c. 2 minutes ○
d. 3 minutes ○
e. Do not know ○

80) Hand rub should not be used in which condition?

a. Before touching patient ○
b. After touching a patient ○
c. After touching patient's surrounding ○
d. Hands are visibly soiled ○
e. Do not know ○

81) Gloves should be segregated in which colour bags?

a. Yellow bags ○
b. Red bag ○
c. Blue bag ○
d. White /translucent bin ○
e. Do not know ○

82) Indian ink is used to demonstrate:

a. Cell wall ○
b. Bacterial capsule ○
c. Bacterial flagella ○
d. Bacterial spore ○
e. Do not know ○

83) Which of the following diseases can be transmitted by water and food?

a. Cholera ○
b. Poliomyelitis ○
c. Hepatitis A virus infection ○
d. All of the above ○
e. Do not know ○

84) All the following are gram negative bacilli except

a. Salmonella typhi ○
b. Escherichia coli ○
c. Klebsiella pneumoniae ○
d. Bacillus anthracis ○
e. Do not know ○

85) Which HIV testing strategy is used for HIV Surveillance?

a. Strategy I ○
b. Strategy IIA ○
c. Strategy IIB ○
d. Strategy III ○

SPACE FOR ROUGH WORK

ESH Lee

31/01/2024

Ans Key – Lab. Technician Set-A

Set-A		
1-C	31-A	61-A
2-C	32-A	62-C
3-B	33-A	63-D
4-D	34-B	64-A
5-D	35-D	65-A
6-D	36-A	66-B
7-D	37-D	67-A
8-A	38-B	68-C
9-C	39-D	69-B
10-C	40-D	70-D
11-C	41-C	71-C
12-D	42-A	72-B
13-B	43-B	73-A
14-B	44-C	74-D
15-C	45-A	75-B
16-A	46-D	76-D
17-D	47-B	77-A
18-B	48-A	78-A
19-D	49-D	79-B
20-A	50-B	80-D
21-A	51-C	81-B
22-B	52-C	82-B
23-B	53-C	83-D
24-C	54-C	84-D
25-A	55-D	85-B
26-D	56-D	
27-A	57-C	
28-C	58-B	
29-D	59-C	
30-B	60-B	