KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.
(Declared as Deemed-to-be-University u/s 3 of the UGC Act, 1956)
Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

SECOND YEAR B.Sc. MEDICAL LABORATORY TECHNOLOGY DEGREE EXAMINATION – JANUARY 2021

Time: 3 Hours Max. Marks: 80

PATHOLOGY – II

Q.P. Code:1106

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. What is Decalcification? Describe methods of Decalcification. How will you confirm that the decalcification is complete?
2. Write in detail principle and procedure of Prothrombin Time (PT) and Activated Partial Thromboplastin Time (APTT)
3. Discuss frogen section technique with staining and application of frogen section.

SHORT ESSAY QUESTIONS (Answer any SIX): **6 X 5 = 30**

4. Discuss uses and functioning of Rotary microtome.
5. Discuss safe disposal of laboratory waste.
6. Discuss principle and procedure of Periodic Acid Schiff Stain.
7. Quality control in Haematology Laboratory.
8. Discuss mechanism of coagulation.
9. Anticoagulants used in haematology.
10. Write a note on clearing agents.
11. Laboratory diagnosis of disseminated Intravascular coagulation (DIC).

SHORT ANSWER QUESTIONS (All are compulsory): **10 X 3 = 30**

12. Reticulocyte count.
13. Paraffin.
14. Advantages of automation in laboratory.
15. LE cell phenomenon.
16. Mounting agents.
17. Composition of platelet diluting fluid.
18. Uses of Buffy coat smear.
19. Bleeding time.
20. What is mordant? Give examples.
21. Haematoxylin.

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THIRD YEAR B.Sc. MEDICAL LABORATORY TECHNOLOGY DEGREE EXAMINATION – JANUARY 2021

Time: 3 Hours **Max. Marks: 80**

PATHOLOGY – III

Q.P. Code: 1129

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. Explain the method of collection and preparation of CSF for cytological examination. (4+6)
2. Write in detail types of blood bags and anticoagulants used in blood bank. (5+5)
3. Explain methods of Karyotypic analysis.

SHORT ESSAY QUESTIONS (Answer any SIX): **6 X 5 = 30**

4. Donor screening.
5. Cytological differences between Benign and malignant cells with diagrams.
6. Discuss cell block technique and its uses.
7. Uses of flow cytometry.
8. Collection and preparation of urinary sample for cytological studies.
9. Image analysis.
10. Preparation of packed red cells and its uses.
11. May-Grunewald Giemsa satin-preparation and advantages.

SHORT ANSWER QUESTIONS (All are compulsory): **10 X 3 = 30**

12. Normal histology of respiratory tracts.
13. Applications of coomb's test.
14. Cytological fixatives.
15. Photomicroscopy.
16. Name **there** organ specific markers in Immunohistochemistry.
17. Barr body.
18. Bombay blood group.
19. Hb estimation during blood donation camps.
20. Maturation Index.
21. Name **three** hormones as cancer cell markers.

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SECOND YEAR B.Sc. MEDICAL LABORATORY TECHNOLOGY DEGREE EXAMINATION – JANUARY 2021

Time: 3 Hours **Max. Marks: 80**

MICROBIOLOGY – II

Q.P. Code: 1107

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number
Marks

LONG ESSAY QUESTIONS (Answer any TWO):
2 X 10 = 20

22. Enumerate bacteria causing diarrhoea. Describe pathogenesis and lab diagnosis of cholera. (3+3+4)
23. Classify mycobacteria. Describe pathogenesis and lab diagnosis of pulmonary tuberculosis (3+3+4)
24. Enumerate malarial parasites. Describe life cycle and lab diagnosis of plasmodium vivax. (2+4+4)

SHORT ESSAY QUESTIONS (Answer any SIX):
6 X 5 = 30

25. Describe suppurative infections caused by staph aureus.
26. Write lab diagnosis of Diphtheria.
27. Write principle and applications of VDRL test.
28. Write lab diagnosis of typhoid fever.
29. Describe pathogenesis of Balantidium coli.
30. Write the parasites causing anaemia and add a note on their laboratory diagnosis.
31. Discuss the complications of amoebiasis.
32. Discuss the pathogenesis and laboratory diagnosis of Hydatial diseases.

SHORT ANSWER QUESTIONS (All are compulsory):
10 X 3 = 30

33. What is streptococcal sequale give **two** examples.
34. What is MRSA? Give its significance.
35. What is casteneda medium? Give **two** uses.
36. Write **three** bacteria causing Gas Gangrene.
37. What is catalase test?
38. Name any **three** motile bacteria.
39. Entero test.
40. Draw a neat labelled diagram of Hookwarm ova.
41. Write aetiopathogenesis of liver fluke infection.
42. Name any three bile stained eggs.

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THIRD YEAR B.Sc. MEDICAL LABORATORY TECHNOLOGY DEGREE EXAMINATION – JANUARY 2021

Time: 3 Hours **Max. Marks: 80**

MICROBIOLOGY – III

Q.P. Code:1130

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number
Marks

LONG ESSAY QUESTIONS (Answer any TWO):
2 X 10 = 20

1. Enumerate opportunistic fungi. Describe in detail Aspergillosis. (2+8)
2. Enumerate types of immunity. Describe in detail active immunity. (2+8)
3. List the viruses affecting liver. Describe micro pathology, antigens and genome of hepatitis B virus. Describe the laboratory diagnosis of hepatitis B virus infection. (2+2+2+2+2)

SHORT ESSAY QUESTIONS (Answer any SIX):
6 X 5 = 30

4. Write the principle and applications of ELISA.
5. Describe the laboratory diagnosis of Rabies.
6. Discuss opportunistic fungal infections.
7. Lab diagnosis of Cryptococcus neoformans.
8. Describe Immunoglobulin M (IgM)
9. Cultivation of viruses.
10. Classify Herpes viruses.
11. Applications of monoclonal antibodies.

SHORT ANSWER QUESTIONS (All are compulsory): **10 X 3 = 30**

12. Write modes of transmission of HIV virus.
13. Name any **three** viruses causing diarrhea.
14. Name any **three** oncogenic viruses.
15. Write a note on fungal culture medium.
16. Name any **three** dermatophytes.
17. Herd immunity.
18. Complications of Mumps.
19. KOH preparation.
20. Laboratory diagnosis of Dengue.
21. Negri bodies.

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SECOND YEAR B.Sc. MEDICAL LABORATORY TECHNOLOGY DEGREE EXAMINATION – JANUARY 2021

Time: 3 Hours **Max. Marks: 80**

BIOCHEMISTRY – II

Q.P. Code: 1108

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number
Marks

LONG ESSAY QUESTIONS (Answer any TWO):
2 X 10 = 20

43. Describe the chemistry, sources, Recommended Daily Allowance (RDA), biochemical functions and deficiency manifestations of vitamin A. (1+1+1+4+3)
44. Define glycolysis. Discuss the steps of glycolysis. Add a note on its energetic. (1+6+3)
45. Define enzymes. Discuss the factors affecting enzyme action. (1+9)

SHORT ESSAY QUESTIONS (Answer any SIX):
6 X 5 = 30

46. Discuss the principle, procedure and applications of spectrophotometry.
47. Mention the various proteins present in the plasma. Discuss the functions of plasma proteins. (1+4)
48. Define isoenzymes. Mention their clinical significance with examples. (1+4)
49. Discuss about the amphibolic and anaplerotic role of TCA cycle.
50. Describe the biochemical functions of vitamin C.
51. Discuss the principle, procedure and uses of paper chromatography.
52. Glucose Tolerance Test-indications & interpretation.
53. Mention the non-protein nitrogenous (NPN) compounds. Discuss about the tests for detection of urea and uric acid in urine. (1+4)

SHORT ANSWER QUESTIONS (All are compulsory):
10 X 3 = 30

54. Define gluconeogenesis. Name the substrates for gluconeogesis.
55. Mention the uses of flame photometer.
56. Write the reference ranges of
    a) Fasting blood Glucose b) Serum uric acid c) Serum Creatinine.
57. Pellagra.
58. Beer-lamberts law.
59. Causes of hyperglycemia.
60. Collection and preservation of urine sample.
61. Classify enzymes as per IUBMB classification.
62. Preparation of Protein Free Filtrate (PFF)

63. What is random blood glucose level? Mention the hormones regulating blood glucose level.

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THIRD YEAR B.Sc. MEDICAL LABORATORY TECHNOLOGY DEGREE EXAMINATION – JANUARY 2021

Time: 3 Hours **Max. Marks: 80**

BIOCHEMISTRY – III

Q.P. Code:1131

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number
Marks

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. What is beta oxidation? Give an account of beta oxidation of palmitic acid with reference to location, pathway and energetics. (1+1+4+4)
2. Describe the sources, Recommended Daily Allowance (RDA), functions and deficiency manifestations of calcium. (2+2+3+3)
3. What is the normal pH of blood? Give detailed account of regulation of blood pH by buffers, lung and kidneys.

SHORT ESSAY QUESTIONS (Answer any SIX):

6 X 5 = 30

4. Enumerate liver function tests.
5. Different types of renal calculi and theory behind their formation.
6. Define Glomerular Filtration Rate (GFR) explain the tests to measure GFR (1+4)
7. Van den Bergh test.
8. Principle & applications of RIA (Radio Immuno Assay) technique.
9. Gastric function tests.
10. Pre analytical and post analytical errors in laboratory.
11. Enzyme markers in myocardial infarction.

SHORT ANSWER QUESTIONS (All are compulsory):

10 X 3 = 30

12. Internal quality control.
13. Hazards of radioisotopes.
14. Phenylketonuria.
15. Auto analyzers-types and advantages.
16. Clinical significance of transaminases.
17. Accuracy and precision.
18. What is ketosis? Mention the causes of ketosis.

19. Mention the derivatives of cholesterol.
20. Mention the enzyme defect and manifestations of alkaptonuria.
21. List the dietary sources and RDA of iron.

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B.SC. IN MEDICAL LABORATORY TECHNOLOGY
III SEMESTER – FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

BIOCHEMISTRY-III

Q.P. Code:1911

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. Name the hormones regulating blood glucose. Explain the mechanism of blood glucose regulation. Add a note on Diabetes mellitus.
2. Describe in detail the steps of beta oxidation of fatty acids. Add a note on its energetics.
3. Write the principle, procedure, types and applications of chromatography.

SHORT ESSAY QUESTIONS (Answer any FIVE): **5 X 5 = 25**

4. Describe the metabolism of fructose. Add a note on disorders associated with fructose metabolism.
5. Mention the types, biochemical defect and diagnosis of sickle cell anemia.
6. Define ketoacidosis. Describe the pathway of ketolysis.
7. Describe the role of enzymes in diagnosis of liver diseases.
8. Write the precipitation reactions of proteins with their significance.
9. Describe the pathway of Glycogen synthesis. Add a note on its regulation.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

10. Significance of HMP shunt pathway.
11. Write three functions of albumin.
12. Define normality. How do you prepare 1N H_2SO_4 in laboratory?
13. Write the procedure and interpretation of Hay's sulphur test.
14. List the functions of LDL and HDL cholesterol.

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B.SC. IN RADIOGRAPHY-III SEMESTER
FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

MEDICAL ETHICS IN RADIOLOGY

Q.P. Code:1914

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS: **2 X 10 = 20**

1. Discuss the techniques for safe patients transfer using the basic principles of body mechanics.

2. Explain in detail care and safety for female patients during radiological procedure. Add a brief note on radiography professionalism.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Sterilization and necessary steps taken to create a sterile field.
4. Isolation guide lines.
5. Patient care during cardiac arrest.
6. Modes of transmission of disease.
7. Adverse effects of contrast media.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Dealing with emergency condition with asthma patient.
9. Electro cardio graph.
10. Informed consent.
11. Management of occupational exposures to blood borne pathogens.
12. Handling of an unconscious patient.

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Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

B.SC. IN ANESTHESIA TECHNOLOGY/PERFUSION TECHNOLOGY/CARDIAC CARE TECHNOLOGY -III SEMESTER FEBRUARY 2021

Time: 3 Hours Max. Marks: 80

APPLIED PHARMACOLOGY

Q.P. Code:1917

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. Enumerate various factors modifying the drug action with suitable examples. Add a note on Bioavailability? (7+3)
2. Classify adrenergic drugs. Explain the mechanism of action, therapeutic uses and adverse effect of adrenaline. (4+1+3+2)
3. Classify non-steroidal antinflamtory drugs. Explain the mechanism of action, therapeutic uses and adverse effect of Aspirin? (3+1+3+3)

SHORT ESSAY QUESTIONS (Answer any SIX): **6 X 5 = 30**

4. Merits and demerits of intravenous route.
5. Therapeutic uses, mechanism of action and adverse effect of Propranolol.
6. Therapeutic uses, mechanism of action and adverse effect of bronchodilators.
7. Therapeutic uses, mechanism of action and adverse effect Succinylcholine.
8. Drug synergism and drug antagonism.
9. Therapeutic uses, mechanism of action and adverse effect of Atropine.
10. Therapeutic uses, mechanism of action and adverse effect of oral hypoglycemic drugs.

SHORT ANSWER QUESTIONS (All are compulsory): **10 X 3 = 30**

11. Sublingual administration.
12. Therapeutic uses and adverse effect of radioactive iodine.
13. Name three mucolytic and expectorants.
14. Treatment of migraine.
15. Treatment of organophosphorus poisoning.
16. Enumerate three uses and adverse effect of Prazosin.
17. Therapeutic uses and adverse effect of H_1-receptor antagonist
18. Treatment of drug induced allergy with suitable example.
19. Factors modifying drug absorption.
20. Nasal decongestant.

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B.SC. IN NEUROSCIENCE TECHNOLOGY -III SEMESTER FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

BASIC NEUROSCIENCES-I

Q.P. Code:1924

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS: **2 X 10 = 20**

1. Describe the anatomy of lumbosacral plexus.

2. Describe the anatomy of visual pathway.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Auditory pathway.
4. Anatomy of median nerve.
5. Connections and functions of cerebellum.
6. Connections and functions of thalamus.
7. Draw a neat labeled diagram of cross section of spinal cord.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Muscles supplied by radial nerve.
9. Name the intrinsic muscles of the hand.
10. Acetylcholine.
11. Functions of parietal lobe.
12. Trigeminal nerve.

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B.SC. IN MEDICAL LABORATORY TECHNOLOGY-V SEMESTER
FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

CLINICAL BIOCHEMISTRY-II

Q.P. Code:1982

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. What is hypothyroidism? Describe various tests done in laboratory to assess the functions of thyroid gland.
2. Define automation. Discuss in detail the component steps in fully automated systems. Add a note on advantages of automation.
3. What are radioisotopes? Explain the principle, procedure and applications of Radioimmunoassay.

SHORT ESSAY QUESTIONS (Answer any FIVE): **5 X 5 = 25**

4. Describe the sources, RDA and functions of phosphorus. Add a note on hypophosphatemia.
5. Gene therapy.
6. Name three inborn errors of metabolism. Write the biochemical defect and diagnosis.
7. Renal stone analysis.
8. Sources of variation in laboratory test results.

9. Describe the role of enzymes in the diagnosis of liver and pancreatic diseases.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

10. What is the normal range of serum calcium? Write the causes of Hypocalcemia.
11. Mention different coloured bags used for biomedical waste disposal.
12. What is total acidity? Write the composition of gastric juice.
13. Advantages of laboratory accreditation.
14. Basic principle of pH estimation.

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B.SC. IN RADIOGRAPHY-V SEMESTER

FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

RADIOGRAPHIC TECHNIQUE-II

Q.P. Code:1985

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS: **2 X 10 = 20**

1. What is contrast media? Give detail contrast media. Write in brief about –
   a) Intravenous CT contrast media
   b) Intravenous Pyelogram
2. Celiac axis, superior mesenteric and inferior mesenteric arteriography.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Sialography.
4. Mammography and views.
5. Adverse reactions to contrast media and patient management.
6. Lithotripsy.
7. Hysterosalpingography (HSG).

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. MCU – Micturating Cysturethrogram.
9. Oral Choledochography.
10. Barium Swallow.
11. Asepsis in Radiography procedures.
12. Guide wire, catheter, pressure injector used in Cardia vascular procedures.

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B.SC. IN ANESTHESIA TECHNOLOGY -V SEMESTER
FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

ANAESTHESIA TECHNOLOGY

Q.P. Code:1987

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number	**Marks**
LONG ESSAY QUESTIONS (Answer any TWO):	**2 X 10 = 20**
1. a) Discuss about blood and blood component transfusion	4
b) Write the complications during blood transfusion	3
c) How do you manage the complications during blood transfusion	3
2. a) Describe the physiological changes in a obese patient	4
b) Describe the Pre-anesthetic evaluation of a obese patient	3
c) Enumerate the Anaesthetic complications in a obese patient	3
3. a) What are Mechanical Ventilators?	2
b) How are they Classified?	2
c) What are the common modes of ventilation and their clinical applications	6
SHORT ESSAY QUESTIONS (Answer any FIVE)	**5 X 5 = 25**
4. Drugs for perioperative hypertension.	
5. Heparin.	

6. Discuss the Pre-operative assessment of a patient with bronchial asthma.
7. Bi-spectral index monitoring in anaesthesia.
8. Pro-seal LMA
9. Predictors of difficult mask ventilation
10. Ultra-sonography (USG) in anaesthesia practice.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

11. Combitube
12. ASA physical status classification.
13. Rapid sequence intubation.
14. Venturi mask.
15. Post dural puncture headache.

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B.SC. IN PERFUSION TECHNOLOGY-V SEMESTER
FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

ADVANCED PERFUSION TECHNOLOGY-I

Q.P. Code:1992

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS: **2 X 10 = 20**

1. What is myocardial protection? Describe various strategies involved in myocardial protection in cardiac surgery.
2. Describe various cannulation techniques used in cardiopulmonary bypass.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5= 25**

3. Explain blood cell trauma caused due to cardiopulmonary bypass.
4. Different types of cardioplegia.
5. Problems associated with termination of cardiopulmonary bypass
6. What are cardiac assist devices & its uses?
7. Management of protamine reaction.

SHORT ANSWER QUESTIONS (All are compulsory): **5X 3 = 15**

8. Left heart venting.
9. Clinical use of pulsatile perfusion.
10. Management of massive air lock in the venous line.
11. Causes of hemolysis on CPB.
12. Indications for Intra-Aortic Balloon Pump.

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B.SC. IN CARDIAC CARE TECHNOLOGY -V SEMESTER
FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

ELECTROCARDIOGRAPHY-II

Q.P. Code:1990

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS: **2 X 10 = 20**

1. Hoiter monitoring patient preparation, procedure, indications and reporting.
2. How to recognize various cardiac arrhythmias, how to setup intensive coronary care unit and its usefulness.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Usefulness of myocardial perfusion study.
4. Defibrillator uses.
5. Differences between supraventricular and ventricular arrhythmias.

6. WPW syndrome ECG features.
7. ECG features of hyperkalemia.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Ventricular premature complexes.
9. Atrial tachycardia.
10. ECG features of hypokalemia
11. Drugs for cardiac arrest.
12. Type- II AV block.

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B.SC. IN NEUROSCIENCE TECHNOLOGY -V SEMESTER
FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

BASIC NEUROSCIENCES-III

Q.P. Code:1995

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS: **2 X 10 = 20**

1. Discuss clinical Features of Polymyositis and Investigations.
2. Discuss different types of entrapment neuropathies in upper limbs

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Describe clinical features of multiple sclerosis.
4. Describe clinical features of Guillain Barre Syndrome.

5. Describe Diabetic Neuropathies.
6. Describe clinical features of Duchenne muscular dystrophy.
7. Clinical features of Parkinson's disease.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Tremors.
9. Dystonia.
10. Causes of axonal neuropathies.
11. Ulnar neuropathy.
12. Acute myelopathy.

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B.Sc. IN MEDICAL LABORATORY TECHNOLOGY
III SEMESTER – FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

HISTOPATHOLOGY

Q.P. Code:1912

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. What is a source of haeamatoxylin stain? What are different types of oxidation procedure for the preparation of haematoxylin stain? Write briefly about different types of haematoxylin stain. (1+2+7)

2. Write about advantages & disadvantages of different types of microtomes & add a note on microtome knives. (3+3+4)

3. What is Decalcification? What are different types of decalcifying fluids? Write a procedure for decalcification in bone marrow needle biopsy specimens. (1+2+7)

SHORT ESSAY QUESTIONS (Answer any FIVE): **5 X 5 = 25**

4. Write a brief note on various types of embedding media.
5. Write a brief note on record keeping & coding of lesion in histopathology.
6. Write a short note on Cryostat.
7. Kaiserling's technique procedure of mounting of specimens.
8. Principles & various types of Automatic tissue processors.
9. Enlist various mounting techniques & mounting media.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

10. Write a note on using controls in staining techniques with examples.
11. Write three indications for frozen section technique.
12. Principle of polarizing microscope.
13. Simple fixatives.
14. What is clearing agent. Write one example of clearing agent with its property.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.
(Declared as Deemed-to-be-University u/s 3 of the UGC Act, 1956)

Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

B.SC. IN RADIOGRAPHY-III SEMESTER
FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

RADIATION PHYSICS & PHYSICS OF DIAGNOSTIC RADIOLOGY

Q.P. Code:1915

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS: **2 X 10 = 20**

1. Discuss in detail about three phase generators with diagrams.
2. What is filtration? Discuss about the type of filters.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Properties of X-rays.
4. Line focus principle.
5. Film badge.
6. Alara principle.
7. Penumbra and ways to reduce it.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Filament circuit.
9. Potter Bucky.
10. Pocket dosimeter.
11. Work load.
12. Floating table.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.
(Declared as Deemed-to-be-University u/s 3 of the UGC Act, 1956)

Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

B.SC. IN ANESTHESIA TECHNOLOGY-III SEMESTER FEBRUARY 2021

Time: 3 Hours Max. Marks: 80

INTRODUCTION TO ANESTHESIA TECHNOLOGY

Q.P. Code:1918

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. How will you classify Mapleson breathing systems? Discuss the techniques of use of Mapleson D system.
2. Mention the different types of endotracheal tubes. Describe the markings on an endotracheal tube and their significance.
3. Explain $ETCO_2$ & Draw diagram of capnograph and explain and what are the uses of ETCO2 monitor.

SHORT ESSAY QUESTIONS (Answer any SIX): **6 X 5 = 30**

4. Describe Humidifies. What are the uses of Humidification?
5. Write a note on Soda Lime in anaesthesia.
6. Describe components of the circle system.
7. Antihypoxia safety mechanisms in Boyels anaesthesia machine.
8. Explain high pressure system of gas supply.
9. Define and classify vaporizers and what are its uses.
10. Explain multimodal monitor.

SHORT ANSWER QUESTIONS (All are compulsory): **10 X 3 = 30**

11. Laryngeal mask airway.

12. Pressure reducing valves.
13. Liquid oxygen.
14. Double lumen tubes.
15. Explain pulse oximetry.
16. Pin-index safety system.
17. Oxygen delivery devices.
18. Intermediate pressure system in anaesthesia machine.
19. Jackson rees system
20. C.V.P.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.

(Declared as Deemed-to-be-University u/s 3 of the UGC Act, 1956)

Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

B.SC. IN PERFUSION TECHNOLOGY -III SEMESTER
FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

BASICS OF PERFUSION TECHNOLOGY-I

Q.P. Code:1920

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS: **2 X 10 = 20**

1. What is the principle of using intra-aortic ballon pump? What are its indications, contraindications & complications?

2. What are the types of cardioplegia? Discuss regarding different routes of administration of cardioplegia & indications for different approaches for delivering cardioplegia?

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. What are the benefits of deep hypothermic circulatory arrest?
4. Explain regarding necessary monitorings in retrograde cardioplegia delivery system.
5. Comparision of oxygenators used during CPB for routine cardiac surgeries & oxygenators used during ECMO circuit.
6. How ACT monitoring is helpful during cardiac surgery?
7. What are different modes of ventilators? What are different modes of ventilators? What are different parameters monitored on ventilator?

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Draw normal ECG (Electro cardiogram) enumerate different components of normal ECG.
9. Enumerate the components of left heart border of normal heart.

10. How does pulse oximeter work? What different information we get from pulse oximeter wave?
11. Enumerate renal function tests routinely done prior to cardiac surgery.
12. What are the different filters used in cardio pulmonary bypass circuit?

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.

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Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

B.SC. IN CARDIAC CARE TECHNOLOGY -III SEMESTER FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

CARDIOLOGY

Q.P. Code:1922

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (All are compulsory): **2 X 10 = 20**

1. How do you classify heart failure? Write briefly about the causes, signs, symptoms and management of diastolic heart failure.

2. Define atherosclerosis. Write in brief about the etiopathogenesis, risk factors, and prevention of the same.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Write briefly about the signs and symptoms of peripheral vascular disease.
4. Mention the causes and management of acute renal failure.
5. How do you diagnose cardiac tamponade and its management?
6. Classify cardiomyopathy and add a note on dilated cardiomyopathy.
7. What are the signs and symptoms of acute rheumatic fever?

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Complete heart block.
9. Wide QRS tachycardia.
10. Causes of pulmonary arterial hypertension.
11. Megaloblastic anemia.
12. Cardiac MRI.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.

(Declared as Deemed-to-be-University u/s 3 of the UGC Act, 1956)

Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

B.SC. IN NEUROSCIENCE TECHNOLOGY -III SEMESTER
FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

BASICS OF CLINICAL NEUROPHYSIOLOGY & ELECTROENCEPHALOGRAPHY

Q.P. Code:1925

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS: **2 X 10 = 20**

1. Describe the principles of digital electroencephalogram (EEG) recording.
2. Describe the various electroencephalographic (EEG) rhythms.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Principles of sampling rate.
4. Video EEG.
5. Low frequency filter.
6. How do clean and sanitize the electrodes
7. Use of triggering in clinical neurophysiology.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Steps to reduce the impedance.
9. Enumerate the transients during sleep.
10. Electrodes used electroencephalography.
11. T1 and T2 electrodes.
12. Steps to reduce sweat artefacts in electroencephalography.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.

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Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

B.Sc. IN MEDICAL LABORATORY TECHNOLOGY–V SEMESTER

FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

CYTOLOGY & CYTOGENETICS

Q.P. Code:1983

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. How do you collect sample from endo and ectocervix for screening. Discuss the processing and papanicolaou's staining for the above sample.
2. Discuss the methods of karyotypic analysis. Write a brief note on culture of bone marrow.
3. Discuss collection and processing of peritoneal fluid. Add a brief note on cells encountered in peritoneal fluid.

SHORT ESSAY QUESTIONS (Answer any FIVE): **5 X 5 = 25**

4. Discuss the cytology of breast with diagram.
5. Discuss principle and application of image analysis.
6. Methods of karyotyping for chromosomal abnormalities.
7. Describe criteria and types of cervical dysplasia.
8. Classify cytological fixatives.
9. Procedure of May-grunwald giemsa staining.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

10. Mention 3 application of flow cytometry.
11. Maturation Index.
12. Mention cytological features of malignant cells with diagram.
13. Mention 3 common chromosomal aberrations in cancer.

14. Name bluing agents used during cytological staining.

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B.SC. IN RADIOGRAPHY-V SEMESTER
FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

IMAGING TECHNIQUE

Q.P. Code:1986

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS: **2 X 10 = 20**

1. Describe in detail the instrumentation of computed tomography.
2. Explain the techniques to optimize SNR in MRI.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Explain data collection & image formation in MRI.
4. Multi – slice technology.
5. Write about ultrasound modes.
6. Explain Doppler Effect. Write a short note on colour Doppler.
7. Patient based artifacts in CT.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Specific Absorption Rate (SAR).
9. Pixel and voxel.
10. Ultrasound transducer.
11. Quenching.
12. Diffusion Imaging.

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B.SC. IN ANESTHESIA TECHNOLOGY-V SEMESTER
FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

REGIONAL ANAESTHESIA TECHNOLOGY

Q.P. Code:1988

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number	**Marks**
LONG ESSAY QUESTIONS (Answer any TWO):	**2 X 10 = 20**
1. a) What is peripheral stimulator? Describe its technique of use	2+2
b) What is the difference between nerve stimulator and nerve locator?	3
c) Discuss their clinical applications advantages and disadvantages	3
2. a) Discuss difference between spinal and epidural anaesthesia	4
b) Enumerate contraindications for central neuraxial blockade.	4
c) What are the various neurological complications of spinal anaesthesia	2
3. a) What are the preparations to perform USG guided nerve blocks for upper limb surgery?	3
b) What are different needle insertion techniques?	4
c) How are intraneural and intravascular injection is avoided by these techniques?	3
SHORT ESSAY QUESTIONS (Answer any FIVE):	**5 X 5 = 25**
4. Discuss hypotension due to spinal anaesthesia. How it is managed.	
5. How is post dural puncture headache diagnosed and managed?	
6. Management of cardiac arrest due to local anaesthetic toxicity.	
7. Stellate ganglion block.	
8. Sciatic nerve block.	
9. Epidural blood patch.	
10. Caudal Anaesthesia.	
SHORT ANSWER QUESTIONS (All are compulsory):	**5 X 3 = 15**

11. USG guided internal jugular vein cannulation.
12. Discuss pneumothorax in upper extremity block. How can it be prevented?
13. Wrist block.
14. Anaphylactic reaction and its management.
15. Failed spinal anaesthesia.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.

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B.SC. IN PERFUSION TECHNOLOGY -V SEMESTER
FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

ADVANCED PERFUSION TECHNOLOGY-II

Q.P. Code:1993

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS: **2 X 10 = 20**

1. Explain IABP with respect to
   a) Indications (3)
   b) Contraindications (3)
   c) Complications (2)
   d) Weaning off IABP (2)

2. Describe paediatric cardiopulmonary bypass with respect to: a) arterial cannulation b) venous cannulation c) circulatory arrest d) anticoagulation management e) ultrafiltration. (2 x 5)

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Recent advances in cardiac surgery.
4. Cannulation techniques in minimally invasive cardiac surgery.
5. Indication and contraindications of MICS.
6. Left ventricular assist devices.
7. Blood conservation techniques.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. ECMO as bridge to transplant.
9. Experimental perfusion.
10. Low prime volume CPB circuit.
11. Priming methods in neonatal cardiac surgery.
12. Method of brain protection in deep hypothermic circulatory arrest.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.
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Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

B.SC. IN CARDIAC CARE TECHNOLOGY -V SEMESTER
FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

ECHOCARDIOGRAPHY

Q.P. Code:1991

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS: **2 X 10 = 20**

1. Echo-cardiography in congenital heart diseases.
2. Describe physical principles and clinical applications of tissue Doppler and strain imaging.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Myocardiac contrast Echo.
4. Transesophageal echo indications.
5. Echo in infective endocarditis.
6. 2-D echo in co-arctation of aorta.
7. Echo-cardiographic features of HOCM.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Echo features of PDA.
9. Echo during PTMC.
10. Indications for Foetal echo.
11. Importance of color-flow imaging
12. Echo features of pericardial effusion.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.

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Accredited 'A' Grade by NAAC (2nd Cycle) Placed in 'A' Category by MHRD (GoI)

B.SC. IN NEUROSCIENCE TECHNOLOGY –V SEMESTER

FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

APPLIED NERVE CONDUCTIONS, ELECTROMYOGRAPHY & EVOKED POTENTIALS

Q.P. Code:1996

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS: **2 X 10 = 20**

1. Describe the physiological variables affecting nerve conduction studies.
2. Describe the nerve conduction abnormalities in myopathy and neurogenic disorders.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Describe abnormalities of visual evoked potentials (VEP) and brain stem auditory evoked abnormalities in central nervous system disorders.
4. Abnormalities of repetitive nerve stimulation in myasthenia.
5. Nerve conduction abnormalities in Axanopathies.
6. Write short notes on quantitative electro myography.
7. Median nerve conduction techniques.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Positive Sharp Waves, Fibrilation.
9. Conduction block.
10. Tremor recording.
11. Somato sensory evoked potential technique.
12. Turns amplitude ratio.

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Accredited 'A' Grade by NAAC (2nd Cycle) Placed in 'A' Category by MHRD (GoI)

B.Sc. IN MEDICAL LABORATORY TECHNOLOGY
III SEMESTER – FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

BACTERIOLOGY

Q.P. Code:1913

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **10 X 2 = 20**

1. How do you differentiate pneumococci from viridans streptococci? Discuss the laboratory diagnosis of pneumococcal meningitis. (4+6)
2. Enumerate the pathogens causing upper respiratory tract infection. Explain the laboratory diagnosis and prevention of diphtheria. (2+5+3)
3. Define family Enterobacteriaceae. List the diarrheagenic *Escherichia coli*. How will you diagnose a case of *E. coli* diarrhoea in children? (4+4+2)

SHORT ESSAY QUESTIONS (Answer any FIVE): **5 X 5 = 25**

4. Explain the procedure of coagulase test.
5. Classify streptococci.
6. Cultivation of bacteroides species.
7. Describe laboratory diagnosis of brucellosis.
8. Explain laboratory diagnosis of staphylococcal wound infections.
9. Bacteriological monitoring of operation theatre

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

10. Define iatrogenic meningitis.
11. Enumerate common organisms causing hospital infections.
12. List important indications for hand washing.
13. Collection of urine sample in a catheterized patient.
14. Enumerate serological tests for diagnosis of syphilis.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.
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Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

B.SC. IN RADIOGRAPHY-III SEMESTER
FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

RADIOGRAPHIC PHOTOGRAPHS

Q.P. Code:1916

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS: **2 X 10 = 20**

1. Discuss in detail about workflow, components image formation of computed radiography.
2. Describe the factors determining radiographic image quality.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Intensifying screens.
4. Modulation transfer function.
5. Quality assurance tests in automatic film processor.
6. Advantages and disadvantages of digital radiography.
7. Dry view processor.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Film latitude.
9. Distortion.
10. Dry bench and wet bench.
11. Types of cassettes.
12. Film gamma.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.
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Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

B.SC. IN ANESTHESIA TECHNOLOGY -III SEMESTER
FEBRUARY 2021

Time: 3 Hours Max. Marks: 80

APPLIED TECHNOLOGY IN ANESTHESIA

Q.P. Code:1919

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. Enumerate the types of spinal needles. What are the complications of spinal anaesthesia? (5+5)
2. Enumerate the methods of sterilization and explain autoclaving briefly. (5+5)
3. Explain pre-anaesthetic assessment of adult & children. (5+5)

SHORT ESSAY QUESTIONS (Answer any SIX): **6 X 5 = 30**

4. Blood and blood component.
5. Atropine
6. Ringer's lactate &RL)
7. Describe pre-medication drugs used in general anaesthesia, uses and their actions.
8. Discuss the different types of endotracheal tubes.
9. Bupivacaine hydrochloride.
10. Confirmation of identity of patient

SHORT ANSWER QUESTIONS (All are compulsory): **10 X 3 = 30**

11. Mention various methods of regional anaesthesia.
12. ETO (Ethylene Oxide) sterilizer.
13. Advantages of Humidification.
14. Parts of laryngoscope blade.
15. Contraindications for spinal anaesthesia.
16. Adrenaline-uses
17. Neostigmine
18. Nitrous oxide (N_2O)
19. Parts of anatomical face mask
20. Oropharyngeal airway-indications and complications.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.
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B.SC. IN PERFUSION TECHNOLOGY -III SEMESTER
FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

BASICS OF PERFUSION TECHNOLOGY-II

Q.P. Code:1921

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS: **2 X 10 = 20**

1. What are different components of extra corporeal circuit? What are the parameters to be monitored on extra corporeal circuit during patient on ECMO?

2. What are different peripheral venous cannulation sites? How it is useful in cardiac surgery?

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Discuss the protocol to be followed before going on CPB.
4. Write a note on management of heparin resistance.
5. How CPB circuit is useful in non-cardiac surgeries?
6. Discuss the neurological complications of CPB.
7. What are the precautions to be taken during CPB to avoid renal dysfunction post operatively?

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Enumerate components of cryoprecipitate. What are the indications of cryoprecipitate?
9. What are the contraindications for antegrade cardioplegia.
10. Discuss the role of platelets in postoperative bleeding.
11. Compare helium & Co_2 for use in IABP.
12. Enumerate indications for DHCA in cardiac surgery.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.
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Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

B.SC. IN CARDIAC CARE TECHNOLOGY -III SEMESTER
FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

BASICS OF CARDIAC TECHNOLOGY

Q.P. Code:1923

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (All are compulsory): **2 X 10 = 20**

1. Describe in detail about the various transducers in echocardiography. Add a note on normal variants in 2D ECHO.
2. Describe the various waveforms and time intervals in normal ECG.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Trans esophageal echocardiography.
4. Contrast echo.
5. LV segments assessment by 2D ECHO.
6. ECG criteria of right and left atrial enlargement.
7. Write in brief about advanced cardiac life support.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. DICOM.
9. P value and its significance.
10. Drugs used in ICU.
11. Describe briefly about the biomedical waste management.
12. Blood transfusion.

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B.SC. IN NEUROSCIENCE TECHNOLOGY -III SEMESTER
FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

BASIC OF NERVE CONDUCTIONS, ELECTROMYOGRAPHY AND EVOKED POTENTIALS

Q.P. Code:1926

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS: **2 X 10 = 20**

1. Describe principles of evoked potentials.
2. Describe the methods of motor nerve conduction of ulnar nerve.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Methodology of repetitive nerve stimulation.
4. Describe the steps in performing needle electromyography.
5. Recording the sensory nerve conduction of superficial peroneal nerve.
6. Principles and application of averaging in evoked potentials.
7. Measurement of F wave parameters.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Insertional activity during electromyography.
9. Motor unit potentials.
10. Sinus arrhythmia in electrocardiogram.
11. Compound muscle action potential
12. End plate spike.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.
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B.Sc. IN MEDICAL LABORATORY TECHNOLOGY–V SEMESTER
FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

PARASITOLOGY & MYCOLOGY

Q.P. Code:1984

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **10 X 2 = 20**

1. Enumerate protozoa causing Diarrhoea. Describe the life cycle and laboratory diagnosis of Entamoeba hystolytica. (3+3+4)

2. Enumerate the parasites causing anaemia. Describe the life cycle, laboratory diagnosis and prophylaxis of hookworm infestation. (2+3+3+2)

3. Classify Fungi. Describe the pathogenesis and laboratory diagnosis of Dermatophytosis. (3+3+4)

SHORT ESSAY QUESTIONS (Answer any FIVE): **5 X 5 = 25**

4. Malaria parasites
5. Trichomonas vaginalis.
6. Laboratory diagnosis Mycetoma.
7. Candidiasis.
8. Enterobious vermicularis.
9. Taenia solium.
10. Opportunistic Mycosis.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

11. Draw a neat labelled diagram of trophozoite and cyst of E. histolytica
12. Name **three** dimorphic fungi.
13. Draw a neat labelled diagram of Hook worm egg.
14. Enumerate three different species of Aspergillus and add the disease caused by them.
15. List three different fungal identification media.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.
(Declared as Deemed-to-be-University u/s 3 of the UGC Act, 1956)
Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

B.SC. IN ANESTHESIA TECHNOLOGY -V SEMESTER
FEBRUARY 2021

Time: 3 Hours Max. Marks: 60

ANAESTHESIA FOR PATIENTS WITH MEDICAL DISORDERS

Q.P. Code:1989

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. Discuss the anaesthetic management of a patient with bronchial asthma
2. How do you evaluate and optimize a patient with chronic renal failure coming for continuous abdominal peritoneal dialysis catheter insertion
3. Describe types of hypertension. Describe the perioperative management of patient with hypertension posted for emergency laparotomy (2+8)

SHORT ESSAY QUESTIONS (Answer any FIVE): **5 X 5 = 25**

4. Name **three** commonly used IV anaesthetic agents. Write in detail about Thio-pentone sodium.
5. Importance of monitoring the patient in post anaesthesia care unit (PACU).
6. Bed-side pulmonary function tests
7. HELLP syndrome.
8. Post-anaesthesia shivering and its management.
9. Types of insulin preparations. Indications for their use.
10. Post-dural puncture headache (PDPH).

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

11. Ketamine.
12. Urine out-put monitoring in intra-operative period.
13. Problems of prone position under anaesthesia.
14. Hypothermia and its implications.
15. Succinylcholine.

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Accredited 'A' Grade by NAAC (2nd Cycle) | Placed in 'A' Category by MHRD (GoI)

B.SC. IN PERFUSION TECHNOLOGY -V SEMESTER
FEBRUARY 2021

Time: 3 Hours | Max. Marks: 60

CPR & LIFE SUPPORT

Q.P. Code:1994

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number | **Marks**

LONG ESSAY QUESTIONS: **2 X 10 = 20**

1. Describe the various acid base disorders with examples.
2. Explain diagnostic procedures in ICU.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Care of mechanical ventilated patient in intensive care.
4. Describe the principles of transfusion therapy.
5. Explain different ionotropic drugs and its uses.
6. Fluid management in intensive care.
7. Basic life support in children.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Endo tracheal intubation.
9. Oxygen therapy.
10. Two rescuers BLS in adult.
11. Gastrointestinal tract care in ICU.
12. Postoperation reading of chest X-ray.

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Accredited 'A' Grade by NAAC (2nd Cycle) | Placed in 'A' Category by MHRD (GoI)

B.SC. MLT/ RADIOGRAPHY / ALLIED HEALTH SCIENCES
B.SC. IN RENAL DIALYSIS TECHNOLOGY
B.SC. OPTOMETRY
I SEMESTER – MARCH 2021

Time: 3 Hours | Max. Marks: 60

HUMAN ANATOMY

Q.P. Code:1901

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number | **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. Name the parts of respiratory system. Describe the gross anatomy of right lung.
2. Describe the superolateral surface of brain under following headings.
   a. Lobes
   b. Sulci and Gyri
   c. Functional areas.
3. Describe the heart under following headings:
   a. External features
   b. Blood supply
   c. Applied anatomy

SHORT ESSAY QUESTIONS (Answer any FIVE): **5 X 5 = 25**

4. Classification of synovial joints left.
5. Bronchopulmonary segments of lung.
6. Blood supply of long bones.
7. Draw and label microscopic structure of elastic cartilage.
8. Venous drainage of heart.
9. Blood supply of nerve supply of lateral wall of nose.
10. Types of epithelium.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

11. Name the paired and unpaired cartilages of larynx.
12. Anatomical position.
13. Name the parts of pharynx.
14. Name the bones of axial skeleton.
15. Name the types of pleura.

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B.SC. MLT / RADIOGRAPHY / ALLIED HEALTH SCIENCES
B.SC. IN RENAL DIALYSIS TECHNOLOGY
II SEMESTER – MARCH 2021

Time: 3 Hours Max. Marks: 60

HUMAN ANATOMY -II

Q.P. Code: 1906

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. Describe tongue under the following headings: (3+3+2+2)
   a. Externa features
   b. Muscles
   c. Nerve supple
   d. Applied anatomy

2. Describe uterus under the following headings: (3+2+3+2)
   a. Parts and relations
   b. Blood supply
   c. Supports
   d. Applied anatomy

3. Describe the left kidney under the following headings: (3+3+2+2)
   a. External features
   b. Relations
   c. Blood supple
   d. Applied anatomy

SHORT ESSAY QUESTIONS (Answer any FIVE): 5 X 5 = 25

4. Parts and relations of stomach.
5. Structure and blood supply of ovary.
6. Gross features of urinary bladder.
7. Parts and hormones of pituitary gland.
8. Extrahepatic biliary apparatus.
9. Blood supply and applied anatomy of pancreas.
10. Vermiform appendix.

SHORT ANSWER QUESTIONS (All are compulsory): 5 X 3 = 15

11. Features of prostatic urethra.
12. Name the ligaments of liver.
13. Name the hormones produced by thyroid gland.
14. Blood supply of adrenal glands.
15. Name the coverings of testis.

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B.SC. MLT / RADIOGRAPHY / ALLIED HEALTH SCIENCES
B.SC. IN RENAL DIALYSIS TECHNOLOGY
B.SC. OPTOMETRY- I SEMESTER – MARCH 2021

Time: 3 Hours **Max. Marks: 60**

HUMAN PHYSIOLOGY-I AND BIOCHEMISTRY

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.
Use separate answer books for Section A and Section B

SECTION A : HUMAN PHYSIOLOGY-I Q.P. CODE : 1902 [30 Marks]

Question Number
Marks

LONG ESSAY QUESTIONS (Answer any ONE): 1 X 10 = 10

1. Define & classify Immunity. Discuss the mechanism of cellular immunity in detail. Add a note on AIDS. (3+4+3)
2. Define and classify synapses. Discuss properties of synapses in detail. (1+3+6)

SHORT ESSAY QUESTIONS (Answer any TWO): 2 X 5 = 10

3. List various phases of action potential in a nerve fibre & discuss its ionic basis. (2+3)
4. State Landsteiner's law. Explain about Rh blood group system. (1+4)
5. Explain any **two** tests that are used to test colour blindness.

SHORT ANSWER QUESTIONS (All are compulsory):
5 X 2 = 10

6. Classify body fluid compartments and write their normal values.
7. Function of middle ear.
8. State **five** differences between smooth muscle and cardiac muscle.
9. Classify nerve fibers.
10. Name the mechanism of heat loss & gain in the body.

SECTION B : BASICS OF BIOCHEMISTRY…Q.P. CODE : 1903 [30 Marks]

Question Number
Marks

LONG ESSAY QUESTIONS (Answer any ONE): **1**
X 10 = 10

1. Define amino acid. Classify amino acids based on structure, polarity and metabolic fate with suitable examples. (1+9)
2. Define lipids. Classify lipids with suitable examples. And mention the functions of lipids. (1+5+4)

SHORT ESSAY QUESTIONS (Answer any TWO):
2 X 5 = 10

3. Mention the names & any **five** biologically important peptides and write their uses. (1+4)
4. What are homopolysaccharides? Give examples with their composition and function. (1+1+1.5+1.5)
5. Write in brief about various safety measures followed in the laboratory

SHORT ANSWER QUESTIONS (All are compulsory):
2 X 5 = 10

6. What is denaturation? Mention the various denaturing agents.
7. Mention the types of RNA & list their functions.
8. Define the following- a) Molarity b) Atomic weight
9. Write the names of any **two** phospholipids along with their function.
10. Mention the precautions to be taken during weighing in a chemical balance.

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B.SC. MLT / RADIOGRAPHY / ALLIED HEALTH SCIENCES
B.SC. IN RENAL DIALYSIS TECHNOLOGY
II SEMESTER – MARCH 2021

Time: 3 Hours **Max. Marks: 60**

HUMAN PHYSIOLOGY-II AND BASICS OF BIOCHEMISTRY- II

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.
Use separate answer books for Section A and Section B

SECTION A : HUMAN PHYSIOLOGY-II Q.P. CODE : 1907 [30 Marks]

Question Number
Marks

LONG ESSAY QUESTIONS (Answer any ONE): **1**
X 10 = 10

1. Define cardiac cycle & give its normal duration. Describe various events of cardiac cycle. Add a note on heart-sounds (1+6+3)
2. List all the hormones secreted by the anterior pituitary gland. Discuss physiological actions of growth-hormone. Add a note on pituitary dwarf (1+7+2)

SHORT ESSAY QUESTIONS (Answer any TWO):
2 X 5 = 10

3. Discuss the mechanism of Co_2 transport in the body.
4. Describe various physiological activities during 2^{nd} stage of deglutition.
5. List all family planning methods in female. Discuss about oral contraceptive pills.

SHORT ANSWER QUESTIONS (All are compulsory):
5 X 2 = 10

6. Define lung compliance. Mention 2 factors that either increase or decrease it.
7. Functions of proximal convoluted tubule.
8. Gastrin.
9. Actions of adrenaline.
10. Functions of seminiferous tubules & Vas deferens.

---------- SECTION B : BASICS OF BIOCHEMISTRY – II Q.P. CODE : 1908 [30 Marks]

Question Number
Marks

LONG ESSAY QUESTIONS (Answer any ONE): **1**
X 10 = 10

1. Describe the sources, RDA and biochemical functions of vitamin A. add a note on deficiency manifestations. (1+1+4+4)
2. Define gluconeogenesis. Mention the substrates for gluconeogesis. Trace the pathway from pyruvate to glucose. (1+2+7)

SHORT ESSAY QUESTIONS (Answer any TWO):
2 X 5 = 10

3. Describe about digestion and absorption of carbohydrates.
4. Explain the absorption, transport and storage of iron in the body.
5. Discuss about the regulation of plasma calcium level.

SHORT ANSWER QUESTIONS (All are compulsory):
5 X 2 = 10

6. What are isoenzymes? Give examples.
7. What calorific value? Write the calorific value of carbohydrates and lipids.
8. Mention the NPN substances and write their normal values.
9. Write in brief about preparation of protein free filterate.
10. What is transamination? Give examples.

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B.SC. MLT / RADIOGRAPHY / ALLIED HEALTH SCIENCES
B.SC. IN RENAL DIALYSIS TECHNOLOGY
B.SC. OPTOMETRY
I SEMESTER – MARCH 2021

Time: 3 Hours **Max. Marks: 60**

HEMATOLOGY & CLINICAL PATHOLOGY AND MICROBIOLOGY-I

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.
Use separate answer books for Section A and Section B

SECTION A : PATHOLOGY- BASIC HAEMATOLOGY Q.P. CODE : 1904 [30 Marks]

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any ONE): **1 X 10 = 10**

11. What is hemoglobin? What are the normal values in adult male and female? Describe in detail the principle, procedure, advantages of hemoglobin estimation by cyanmethemoglobin method. (2+2+6)
12. Enumerate the different types of blood films. Describe the techniques of preparation and staining of various types of blood films. (3+7)

SHORT ESSAY QUESTIONS (Answer any TWO): **2 X 5 = 10**

13. Describe RBC and WBC pipette and mention their uses.
14. What are the various blood group systems? Describe the procedure of determination of ABO blood group.
15. Describe the morphology od eosinophil. Describe briefly the method of absolute eosinophil count. Mention the normal values.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 2 = 10**

16. Enumerate the RBC indices and their normal values.
17. Reticulocyte count and its clinical significance.
18. Name the anticoagulants in hematology laboratory.
19. What is the composition of Giemsa stain?
20. List the sites of bone marrow aspiration.

SECTION B : MICROBIOLOGY-I…Q.P. CODE : 1905 [30 Marks]

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any ONE): **1 X 10 = 10**

11. What is sterilization? Classify the methods. Describe the autoclaving. (1+3+6)
12. Enumerate the types of microscopes used in diagnostic laboratories. Describe the mechanism, disadvantages and applications of fluorescent microscope. (2+2+2+4)

SHORT ESSAY QUESTIONS (Answer any TWO): **2 X 5 = 10**

13. Filtration as a method of sterilization.
14. Contributions of Louis Pasteur.
15. Principle of electron microscope and its uses.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 2 = 10**

16. UV Radiation as a method of sterilization.
17. Mention any one important contribution of
    a. Alexander Fleming
    b. Robert Koch
    c. Paul Ehrlich
18. Draw a neat labeled diagram of Bacterial Growth Curve.
19. Name any three disinfectants.

20. Name any three articles sterilized by Hot Air Oven.

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B.SC. MLT / RADIOGRAPHY / ALLIED HEALTH SCIENCES
B.SC. IN RENAL DIALYSIS TECHNOLOGY
II SEMESTER – MARCH 2021

Time: 3 Hours **Max. Marks: 60**

HAEMATOLOGY & CLINICAL PATHOLOGY- AND MICROBIOLOGY -II

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.
Use separate answer books for Section A and Section B

SECTION A : HAEMATOLOGY & CLINICAL PATHOLOGY Q.P. CODE : 1909 [30 Marks]

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any ONE): **1 X 10 = 10**

1. Enumerate & discuss briefly about methods of collection of urine sample with a note on precautions to be taken for collection of urine sample. Discuss in detail physical examination of urine. (4+6)
2. Define and classify hemolytic anemia. Describe brief the laboratory tests for diagnosis of hemolytic anemia. (4+6)

SHORT ESSAY QUESTIONS (Answer any TWO): **2 X 5 = 10**

3. Describe briefly the procedure and interpretation of schillings test.
4. Discuss briefly about Apheresis.
5. How do you estimate total iron binding capacity. Write its normal value.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 2 = 10**

6. Describe the procedure and interpretation of Benedict's test.
7. Enumerate the abnormal morphological form of sperm.
8. How do demonstrate hemosiderin in urine.
9. Discuss briefly about cross matching.
10. Write about the preparation & uses of buffy coat.

SECTION B : MICROBIOLOGY -II…Q.P. CODE : 1910 [30 Marks]

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any ONE): **1 X 10 = 10**

1. Enumerate various culture media. Explain in detail about enriched media and enrichment media. (3+4+3)
2. Name the antigen antibody reaction. Write the principle and application of agglutination reaction.

SHORT ESSAY QUESTIONS (Answer any TWO): **2 X 5 = 10**

3. Write the difference between active and passive immunity.
4. Discuss biomedical waste management.
5. Draw neat labelled diagram of IgA and write its properties.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 2 = 10**

6. Name **two** anaerobic culture media.
7. Classify acquired immunity and give example for each.
8. Name **two** liquid medias.
9. What is Herd Immunity?
10. Write **two** applications of precipitation reaction.

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B.SC. IN RADIOGRAPHY-VI SEMESTER
APRIL 2021

Time: 3 Hours Max. Marks: 80

PROFESSIONAL TRAINING

Q.P. Code:1101

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS: **2 X 10 = 20**

1. PCPNDT Act, discuss in detail about the provisions of it.
2. Principles of MRI and precautions to be taken by the radiographer.

SHORT ESSAY QUESTIONS: **12 X 5 = 60**

3. Explain how to manipulate Fluoroscopy system.
4. Mention the factors affecting the radiographic image quality.
5. MRI shoulder joint.
6. Operation of portable X-ray machine.
7. Steps taken in calibration of X-ray tube.
8. Management of patient with asthma.
9. SPECT.
10. Digital subtraction.
11. HRCT thorax study.
12. CT contrast agents-storage and usage.
13. Management of adverse contrast reactions.
14. Lower limb colour Doppler study.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.
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B.SC. MLT/ RADIOGRAPHY / ALLIED HEALTH SCIENCES
B.SC. IN RENAL DIALYSIS TECHNOLOGY
B.SC. OPTOMETRY
I SEMESTER – AUGUST 2021

Time: 3 Hours Max. Marks: 60

HUMAN ANATOMY

Q.P. Code:1901

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

16. Describe the Gross features of spinal cord. Add a note on its blood supply. (8+2)

17. Explain Heart under following headings: (5+3+2)
    a) Arterial supply
    b) Venous drainage
    c) Applied aspect

18. Describe pharynx under following headings: (2+3+3+2)
    a) Parts & Extent
    b) Relations
    c) Muscles
    d) Applied anatomy

SHORT ESSAY QUESTIONS (Answer any FIVE): **5 X 5 = 25**

19. Types of bones with examples.
20. Anatomical position.
21. Fibrous pericardium.
22. Histology of lung.
23. Pleura.
24. Broncho pulmonary segments.
25. Classification of synovial joints.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

26. Functions of connective tissue.
27. Name paired dural venous sinuses.
28. Name the paranasal air sinuses
29. Nerve supply of heart.
30. Name the meninges covering cerebrum.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.

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B.SC. IN MEDICAL LABORATORY TECHNOLOGY

III SEMESTER – AUGUST 2021

Time: 3 Hours Max. Marks: 60

BIOCHEMISTRY-III

Q.P. Code:1911

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. Define isoenzymes. Mention the principle used for separation of isoenzymes. Write about the clinical importance of isoenzymes. (1+3+6)
2. What is the biomedical importance of muscle and liver glycogen? Describe the process of glycogen synthesis with its regulation. (2+8)
3. Describe the β-oxidations of fatty acids. Give its energetics and explain the regulation. (6+4)

SHORT ESSAY QUESTIONS (Answer any FIVE): **5 X 5 = 25**

4. Describe how Bilirubin is metabolized in the body. Write the normal values of serum bilirubin.
5. Discuss the manifestation, molecular basis and laboratory diagnosis of sickle cell disease.
6. Name and explain the functions of plasma proteins with clinical significance.
7. Write a short note on Galactosemia.
8. Name ketone bodies and explain ketoacidosis.
9. Explain salting in and salting out techniques.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

10. How does insulin regulate blood glucose?
11. Name the cholesterol rich lipoproteins.
12. Normal serum total protein level and **two** causes of hypoproteinemia.
13. Name the isoenzymes of LDH. Mentions their significance.
14. Mention the normal types of haemoglobin.

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B.SC. IN ANESTHESIA TECHNOLOGY/PERFUSION TECHNOLOGY/CARDIAC CARE TECHNOLOGY -III SEMESTER AUGUST 2021

Time: 3 Hours Max. Marks: 80

APPLIED PHARMACOLOGY

Q.P. Code:1917

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. Enumerate various routes of drug administration with suitable examples. Add a note on Bioavailability? (8+2)
2. Classify skeletal muscle relaxant drugs. Explain the mechanism of action, therapeutic uses and adverse effect of Succinylcholine? (4+1+3+2)
3. Classify anti-adrenergic drugs. Explain the mechanism of action, therapeutic uses and adverse effect of Prazosin? (4+1+3+2)

SHORT ESSAY QUESTIONS (Answer any SIX): **6 X 5 = 30**

4. Therapeutic uses and adverse effect of oral hypoglycaemic agents.
5. Salient features of combined effect of drugs.
6. Drugs used in treatment of cough.
7. Therapeutic uses and adverse effect of atropine substitutes.
8. Common adverse effect of corticosteroids.
9. Factors influencing drug absorption with suitable examples.
10. Therapeutic uses and adverse effect of anti- thyroid drugs.

SHORT ANSWER QUESTIONS (All are compulsory): **10 X 3 = 30**

11. Name **three** insulin preparation, their uses and adverse effect.
12. Name **three** fixed dose combination drugs and their uses.
13. Name **three** drugs used in gout and mention their adverse effect.
14. Name **three** corticosteroids and their uses.
15. Name **three** beta blockers, their uses and adverse effect.
16. Mention **three** uses and adverse effect of morphine.
17. Name **three** non-steroidal anti-inflammatory drugs, their uses and adverse effect.
18. Mention **three** uses and adverse effect of adrenaline.
19. Mention **three** factors prolonging the action of drug with suitable examples.
20. Name **three** nasal decongestants, their uses and adverse effect.

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B.SC. IN NEUROSCIENCE TECHNOLOGY -III SEMESTER
AUGUST 2021

Time: 3 Hours Max. Marks: 60

BASIC NEUROSCIENCES-I

Q.P. Code:1924

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS: **2 X 10 = 20**

1. Draw a neat, labelled diagram of brachial plexus and describe its anatomy. (2+8)
2. Draw a labelled diagram of visual pathway and describe its anatomy. (2+8)

SHORT ESSAY QUESTIONS: **5 X 5 = 25**

3. Physiology of muscle contraction.
4. Spinothalamic sensory pathway.
5. Motor unit.
6. Sympathetic nervous system.
7. Anatomy of median nerve.

SHORT ANSWER QUESTIONS: **5 X 3 = 15**

8. Muscles innervated by ulnar nerve.
9. Muscles innervated by radial nerve.
10. Acetylcholine.
11. Muscle stretch reflex.
12. Action potential.

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B.SC. IN MEDICAL LABORATORY TECHNOLOGY-V SEMESTER
AUGUST 2021

Time: 3 Hours Max. Marks: 60

CLINICAL BIOCHEMISTRY-II

Q.P. Code:1982

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. What is the normal pH of blood? Explain the role of plasma buffers and renal mechanism in the maintenance of acid base balance of the body. (1+4+5)
2. Write in detail about Biomedical waste management.
3. What is the normal serum level of phosphorus? Mention its RDA, sources and functions of phosphate. Name the method by which it is estimated in the laboratory. (2+4+4)

SHORT ESSAY QUESTIONS (Answer any FIVE): **5 X 5 = 25**

4. Renal calculi.
5. Write a note on fractional gastric analysis.
6. Automation in clinical laboratory.
7. Principle and uses of RIA (Radio Immune Assay).
8. Cardiac marker enzymes.
9. Levy Jennings's chart.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

10. Internal Quality control.
11. Maple syrup urine disease.
12. Batch analysers.
13. Explain isoenzyme with an example.
14. Laboratory diagnosis of Hypothyroidism.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.
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B.SC. IN ANESTHESIA TECHNOLOGY -V SEMESTER
AUGUST 2021

Time: 3 Hours Max. Marks: 60

ANAESTHESIA TECHNOLOGY

Q.P. Code:1987

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. a) Discuss acid aspiration syndrome (Mandelson syndrome) (2+5+3)
   b) How can it be prevented?
   c) Describe management of acid aspiration syndrome.

2. a) Define COPD (2+5+3)
   b) How do you evaluate a patient with chronic obstructive pulmonary disease (COPD) posted for surgery?
   c) Mention the intra-operative complications in a patient with COPD.

3. a) What are the pathophysiological changes in a patient with chronic renal failure? (4+6)
   b) How do you evaluate and optimize a patient with chronic renal failure posted for Inguinal Hernia Repair?

SHORT ESSAY QUESTIONS (Answer any FIVE) **5 X 5 = 25**

4. Bain's circuit.
5. Cardio-pulmonary bypass pump (CPB pump).
6. Humidification.
7. Bi-spectral Index (BIS) monitoring in anaesthetic.
8. Pulse oximetry.
9. Arterial blood pressure monitoring.
10. PONV (post-operative nausea vomiting).

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

11. CPAP (Continuous Positive Airway Pressure).
12. Oxytocin.
13. LMA (Laryngeal Mask Airway).
14. Soda lime.
15. ASA grading.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.
(Declared as Deemed-to-be-University u/s 3 of the UGC Act, 1956)

Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

B.SC. MLT / RADIOGRAPHY / ALLIED HEALTH SCIENCES
B.SC. IN RENAL DIALYSIS TECHNOLOGY
B.SC. OPTOMETRY- I SEMESTER – AUGUST 2021

Time: 3 Hours **Max. Marks: 60**

HUMAN PHYSIOLOGY-I AND BIOCHEMISTRY

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.
Use separate answer books for Section A and Section B

SECTION A : HUMAN PHYSIOLOGY-I Q.P. CODE : 1902 [30 Marks]

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any ONE): **1 X 10 = 10**

21. Define erythropoiesis. Describe the stages of erythropoiesis. (3+7)
22. With help of neat diagram explain the neuromuscular transmission. (4+6)

SHORT ESSAY QUESTIONS (Answer any TWO):
2 X 5 = 10

23. Components of reflex arc.
24. Functions of middle ear.
25. Name the cell organelles. Explain any **two**.

SHORT ANSWER QUESTIONS (All are compulsory):
5 X 2 = 10

26. Functions of skin.
27. Functions of platelets.
28. Define homeostasis.
29. Draw and label neat diagram of neuron.
30. Function s of WBC's

SECTION B : BASICS OF BIOCHEMISTRY…Q.P. CODE : 1903 [30 Marks]

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any ONE): **1 X 10 = 10**

21. Define lipids. Classify lipids with an example for each type. Mention the functions of the lipids. (1+5+4)
22. Write in detail on safety measures taken in the laboratory. Add a note on First aid. (6+4)

SHORT ESSAY QUESTIONS (Answer any TWO):
2 X 5 = 10

23. Nam different types of balances used in the laboratory. What is the application of analytical balance?
24. Describe the structure and biomedical importance of homopolysaccharides.
25. Classification of amino acids based on nutritional significance and metabolic fate.

SHORT ANSWER QUESTIONS (All are compulsory):
5 X 2 = 10

26. Define acids, bases and indicators
27. Benedict's test and its importance.
28. Give **two** examples of polyunsaturated fatty acids.
29. Distinguish between RNA and DNA.
30. Compare and contrast starch and glycogen.

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Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

B.SC. IN ANESTHESIA TECHNOLOGY-III SEMESTER
AUGUST 2021

Time: 3 Hours Max. Marks: 80

INTRODUCTION TO ANESTHESIA TECHNOLOGY

Q.P. Code:1918

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

31. Discuss pulse oximetry and capnography. (5+5)
32. Define a vaporizer and discuss hazards of vaporizers.
33. With help a neat labelled diagram describe AMBU bag.

SHORT ESSAY QUESTIONS (Answer any SIX): **6 X 5 = 30**

34. Intubating LMA.
35. Magill's breathing circuit.
36. Flow meter assembly.
37. Colour coding and different sizes of cylinders.
38. Burdon's pressure gvage.
39. Venturi principle and its applications in anaesthesia.
40. Non-invasive blood pressure monitoring (NIBP)

SHORT ANSWER QUESTIONS (All are compulsory): **10 X 3 = 30**

41. Ayre's T-piece.
42. Boyle's law.
43. Guedel's airway.
44. HME (Heat and Moisture Exchanger)
45. Pin Index safety system.

46. LMA classic.
47. Parts of Anatomical face mask.
48. Lambert's Beer Law.
49. Complications of orotracheal intubation.
50. Different types of vaporizers.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.
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Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

B.SC. IN NEUROSCIENCE TECHNOLOGY -III SEMESTER
AUGUST 2021

Time: 3 Hours Max. Marks: 60

BASICS OF CLINICAL NEUROPHYSIOLOGY & ELECTROENCEPHALOGRAPHY

Q.P. Code:1925

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS: **2 X 10 = 20**

1. Describe the principles of analog electroencephalogram (EEG) recording.
2. Describe the EEG changes during non-rapid eye movement (NREM) sleep.

SHORT ESSAY QUESTIONS: **5 X 5 = 25**

3. Describe principles of 10-20 EEG electrode placement system.
4. High frequency filter.
5. Analog to digital conversion.
6. Non-biological artefacts seen during electroencephalography.
7. Use of averaging in clinical neurophysiology.

SHORT ANSWER QUESTIONS: **5 X 3 = 15**

8. Notch filter.
9. K-complexes.
10. Importance of sampling rate.
11. Calibration in clinical neurophysiology.
12. Common mode rejection.

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(Declared as Deemed-to-be-University u/s 3 of the UGC Act, 1956)

Accredited 'A' Grade by NAAC (2nd Cycle) Placed in 'A' Category by MHRD (GoI)

B.SC. IN ANESTHESIA TECHNOLOGY-V SEMESTER
AUGUST 2021

Time: 3 Hours Max. Marks: 60

REGIONAL ANAESTHESIA TECHNOLOGY

Q.P. Code:1988

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. a) Mention the various approaches of Brachial plexus block. (4+6)
   b) Supra-Clavicular block: indications contraindications, techniques and complications.

2. a) How are local anaesthetics classified? (2+4+4)
   b) Elaborate on toxicity of various local anaesthetic drugs and their diagnosis.
   c) Management of local anaesthetic drug toxicity.

3. a) With the help of a neat diagram explain the anatomy of sub-arachnoid space. (5+5)
   b) Mention the complications of spinal anaesthesia and their management.

SHORT ESSAY QUESTIONS (Answer any FIVE): **5 X 5 = 25**

4. What is post dural puncture headache (PDPH) how is it managed?
5. I.V.R.A technique.
6. Write a note on labor analgesia.
7. Femoral nerve block indications & technique.
8. Write a note on ankle block.
9. Ropivacaine.
10. Wrist blocks uses and complications.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

11. Adjuvants used with local anaesthetics.
12. High spinal anaesthesia.
13. Spinal needles.
14. Epidural steroid injection.
15. Lignocaine hydrochloride.

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Accredited 'A' Grade by NAAC (2nd Cycle) Placed in 'A' Category by MHRD (GoI)

B.SC. MLT / RADIOGRAPHY / ALLIED HEALTH SCIENCES
B.SC. IN RENAL DIALYSIS TECHNOLOGY
B.SC. OPTOMETRY
I SEMESTER – AUGUST 2021

Time: 3 Hours **Max. Marks: 60**

HEMATOLOGY & CLINICAL PATHOLOGY AND MICROBIOLOGY-I

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.
Use separate answer books for Section A and Section B

SECTION A : PATHOLOGY- BASIC HAEMATOLOGY Q.P. CODE : 1904 [30 Marks]

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any ONE): **1 X 10 = 10**

31. Describe the composition and morphology of cellular components of the blood. Mention their important uses. (2+5+3)
32. Classify the various methods of hemoglobin estimation by Sahli's method. (3+3+4)

SHORT ESSAY QUESTIONS (Answer any TWO): **2 X 5 = 10**

33. Describe the safety measures in hematology laboratory.
34. Enumerate the various Romanowsky stains. Describe the principle of staining and procedure of staining using Leishman stain.
35. Describe the principle of blood grouping. Enumerate the various blood group systems.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 2 = 10**

36. What are normal values of Packed cell volume and red cell indices?
37. What is the mechanism of action of EDTA?
38. What are normal values of differential leucocyte count?
39. What is the clinical significance of ESR?
40. Describe briefly procedure of reticulocyte count.

SECTION B : MICROBIOLOGY-I…Q.P. CODE : 1905 [30 Marks]

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any ONE): **1 X 10 = 10**

31. Enumerate different types of microscopes used in the laboratory. Discuss the operational principle and uses of electron microscope.
32. What is sterilization? Enumerate the physical methods of sterilization. Describe the principle and uses of sterilization by filters.

SHORT ESSAY QUESTIONS (Answer any TWO): **2 X 5 = 10**

33. Describe bacterial growth curve with help of a neat labelled diagram.
34. Discuss the methods of gene transfer in bacteria.
35. Classify chemical disinfectants. Write the properties and uses of different group of disinfectants in health care settings.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 2 = 10**

36. Classify pathogenic micro-organisms based on their morphology with suitable examples.
37. Write four important contributions of Louis Pasteur to microbiology.
38. List the uses of autoclave.
39. Write **two** applications of fluorescent microscope.
40. What is sterilization control? Give **two** examples.

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Accredited 'A' Grade by NAAC (2nd Cycle) Placed in 'A' Category by MHRD (GoI)

B.SC. IN ANESTHESIA TECHNOLOGY -III SEMESTER
AUGUST 2021

Time: 3 Hours Max. Marks: 80

APPLIED TECHNOLOGY IN ANESTHESIA

Q.P. Code:1919

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

51. Explain PAE Pre-anaesthetic evaluation.
52. Explain caudal anaesthesia in paediatric children.
53. Explain waste disposal to colour coding dust bins.

SHORT ESSAY QUESTIONS (Answer any SIX): **6 X 5 = 30**

54. Intra operative vitals monitoring and recording.
55. Blood transfusion-what are the precautions you take.
56. Discuss the uses and different agents used in nebulizers.
57. Safety features used in anaesthesia machine.
58. Instruments used for disinfection of anaesthesia equipment.
59. Epidural anaesthesia technique.
60. Mismatched blood transfusion and immediate treatment.

SHORT ANSWER QUESTIONS (All are compulsory): **10 X 3 = 30**

61. Hydroxyethyl starch.
62. AMBV bag.
63. Thiopentone.
64. Vecuronium.
65. Care of fiberoptic bronchoscope after use.
66. Bupivacaine.
67. Sterilization using ethylene oxide.
68. C.V.P. monitoring.
69. Illustrate in anaesthesia practice.
70. Basic investigation requires in age of 44 years adult male/female as AI monitoring regional anaesthesia.

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B.SC. IN PERFUSION TECHNOLOGY -III SEMESTER
AUGUST 2021

Time: 3 Hours Max. Marks: 60

BASICS OF PERFUSION TECHNOLOGY-II

Q.P. Code:1921

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS: **2 X 10 = 20**

1. Explain the principles of gas exchange in bubble and membrane oxygenators.
2. Describe in detail various blood products, its management and uses.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Cardioplegia solution & write about antegrade cardioplegia cannula.
4. Explain heat exchanger and temperature management in cardiopulmonary bypass.
5. Measurement of acid base status and monitoring.
6. Explain various components of heart lung machine.
7. Draw a diagram of aorta showing cannulation site of carioplegia cannula, aortic cannula, cross clamp with proper labelling & what are the different types of arterial cannulas. (3+2)

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Cardioplegia delivery system and its uses.
9. Positive displacement pump.
10. Management of carbon dioxide in membrane oxygenator.
11. Sodium bicarbonate and its uses in acid base balance.
12. Flow meters.

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B.SC. IN NEUROSCIENCE TECHNOLOGY -III SEMESTER
AUGUST 2021

Time: 3 Hours Max. Marks: 60

BASIC OF NERVE CONDUCTIONS, ELECTROMYOGRAPHY AND EVOKED POTENTIALS

Q.P. Code:1926

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS: **2 X 10 = 20**

1. Describe the principles of sensory nerve conductions.
2. Describe the principle and procedure of recording visual evoked potentials.

SHORT ESSAY QUESTIONS: **5 X 5 = 25**

3. Discuss the principles of F wave recording.
4. Motor nerve conduction of median nerve.
5. Decremental response.
6. Steps in recording qualitative electromyography.
7. Evaluation of Heart rate variability.

SHORT ANSWER QUESTIONS: **5 X 3 = 15**

8. Sympathetic skin response.
9. H-reflex.
10. Anatomical location of auditory evoked potentials waves.
11. Differences between concentric and monopolar electromyography needles.
12. Calculation of nerve conduction velocity.

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B.Sc. IN MEDICAL LABORATORY TECHNOLOGY–V SEMESTER

AUGUST 2021

Time: 3 Hours Max. Marks: 60

PARASITOLOGY & MYCOLOGY

Q.P. Code:1984

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **10 X 2 = 20**

1. Enumerate protozoa causing diarrhoea. Describe the pathogenesis, laboratory diagnosis of Giardia lamblia. (3+3+4)
2. Classify fungus. Describe the pathogenesis and laboratory diagnosis of candidiasis. (3+3+4)
3. Describe the life cycle, laboratory diagnosis and prevention of Hookworm infestation. (4+4+2)

SHORT ESSAY QUESTIONS (Answer any FIVE): **5 X 5 = 25**

4. Dermatophytes.
5. Entamoeba histolytica.
6. Laboratory diagnosis cryptococcal meningitis.
7. Trichomonas vaginalis.
8. Taenia saginata.
9. Rhinosporidiosis.
10. Stool concentration techniques.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

11. Draw a neat labelled diagram of Ascaris lumbricoidesova.
12. Name three dimorphic fungi.
13. Draw a neat labelled diagram of Hookworm ova.
14. Lesions produced by Aspergillus.
15. Fungal culture media.

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Accredited 'A' Grade by NAAC (2nd Cycle) Placed in 'A' Category by MHRD (GoI)

B.SC. IN ANESTHESIA TECHNOLOGY -V SEMESTER
AUGUST 2021

Time: 3 Hours Max. Marks: 60

ANAESTHESIA FOR PATIENTS WITH MEDICAL DISORDERS

Q.P. Code:1989

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. a) How is the patient evaluated preoperatively for ischemic Heart Disease? (2+3+3+2)
   b) How a 60 year old male patient with stable angina and HTN prepared for major surgery. How the explained risk consent is recorded?
   c) What precautions will be mandatory during induction and maintenance of anaesthesia?
   d) What post-operative monitoring is required in such patients?

2. a) What are optimal blood sugar levels in chronic diabetic patients? (2+4+4)
   b) Discuss various methods and drugs to reduce blood sugar levels in pre-operative period.
   c) What are the complications of uncontrolled blood sugar levels in intraoperative period?

3. a) What are the anaesthetic challenges in chronic renal failure (CRF) patients? (4+3+3)
   b) How are the metabolic complications of CRF corrected before surgery in a 45 year old patients requiring a vaginal hysterectomy?
   c) What will be the premedication, monitoring during anaesthesia and fluid management in above patient?

SHORT ESSAY QUESTIONS (Answer any FIVE): **5 X 5 = 25**

4. Differences between diabetic Ketoacidosis and Hyperosmolar Coma.
5. Low Flow anaesthesia.
6. Propofol Infusion syndrome.
7. Oxygen therapy.
8. Lithotripsy and anaesthesia.
9. Delayed complications of blood transfusion.
10. Magnesium sulphate.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

11. High frequency jet ventilation.
12. Mismatched blood transfusion reaction under anaesthesia.
13. Lithotomy position for prolonged surgery and its complications.
14. Metabolic Alkalosis.
15. AED (Automatic External Defibrillator)

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.
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Accredited 'A' Grade by NAAC (2nd Cycle) Placed in 'A' Category by MHRD (GoI)

B.SC. MLTC, RADIOGRAPHY, ANAESTHESIA, PERFUSION, CARDIAC CARE, NEUROSCIENCE, RENAL DIALYSIS AND OPTOMETRY
II SEMESTER – SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

HUMAN ANATOMY -II

Q.P. Code:1906

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

71. Describe the stomach under the following headings: (3+2+2+3)
    a) External features
    b) Relations of stomach
    c) Blood supply
    d) Applied anatomy

72. Describe kidney under the following headings: (3+3+2+2)
    a) External features
    b) Relations
    c) Blood supply
    d) Applied anatomy

73. Describe Pancreas under the following headings: (3+3+2+2)
    a) External features
    b) Relations
    c) Blood Supply
    d) Applied anatomy

SHORT ESSAY QUESTIONS (Answer any Five): **5 X 5 = 25**

74. Parathyroid glands.
75. Sub mandibular gland.
76. Testis.
77. Urethra.
78. Suprarenal gland.
79. Cervix.
80. Histology of oesophagus.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

81. Interior of urinary bladder.
82. Mention any **three** ligaments of liver.
83. Name the hormones produced by thyroid gland.
84. Name the parts of uterine tube.
85. Mention structure forming Extrahepatic biliary apparatus.

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Accredited 'A' Grade by NAAC (2nd Cycle) Placed in 'A' Category by MHRD (GoI)

B.SC. IN MEDICAL LABORATORY TECHNOLOGY
IV SEMESTER – SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

ANALYTICAL BIOCHEMISTRY AND CLINICAL BIOCHEMISTRY-I

Q.P. Code:1963

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. Write the functions of kidneys. Discuss the tests done in clinical laboratory to assess the functions of kidneys.
2. Define photometry. Describe the principle, instrumentation and applications of atomic absorption spectrophotometer.
3. What are buffers? Discuss in detail the role of respiratory regulation and renal regulation in maintenance of acid base balance.

SHORT ESSAY QUESTIONS (Answer any Five): **5 X 5 = 25**

4. Write about various biochemical markers used in the diagnosis of myocardial infarction.
5. External quality assessment program.
6. Metabolic acidosis.
7. What is normal fasting blood glucose range? Write the principle and procedure of blood glucose estimation in clinical laboratory.
8. Importance of record maintenance in clinical laboratory.
9. Describe the tests done in clinical laboratory to assess the synthetic and excretory functions of liver.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

10. What is Hyponatremia? Give **two** causes.
11. Write the normal concentration of a) Serum bilirubin b) Serum total protein c) Serum urea.
12. Levy-Jening chart.
13. Write about commonest hazards encountered in laboratory.
14. Role of ADH in water electrolyte balance.

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Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

B.SC. IN RADIOGRAPHY-IV SEMESTER
SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

PHYSICS OF RADIOLOGY

Q.P. Code:1966

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (All are compulsory): **2 X 10 = 20**

1. Explain in detail about construction and working of battery powered storage generators.
2. Explain in details about construction and working principle of image intensifier tube.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Write a note on dedicated mammography unit.
4. Write a note on **five** quality assurance tests done for diagnostic X-ray equipment.
5. Explain about the types of generation of electrical energy.
6. Write a note on grid controlled X-ray tube.
7. Write a note on evaluation of grid performance.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Write a note on Fuses.
9. Write a short note on tube rating.
10. Write a short note on merits and demerits of rectifiers.
11. Write a short note on magnification Radiography.
12. Write a short note on properties of Electromagnetic spectrum.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.

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B.SC. IN ANESTHESIA TECHNOLOGY/PERFUSION TECHNOLOGY/CARDIAC CARE TECHNOLOGY -IV SEMESTER SEPTEMBER 2021

Time: 3 Hours Max. Marks: 80

APPLIED PHARMACOLOGY

Q.P. Code:1969

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. Classify antihypertensive drugs. Explain the mechanism of action, therapeutic uses and adverse effect of propranolol. (4+1+3+2)
2. Classify beta lactam antibiotics. Explain the mechanism of action, therapeutic uses and adverse effect of Penicillin. (4+1+3+2)
3. Classify anti-epileptic drugs. Explain the mechanism of action, therapeutic uses and adverse effect of phenytoin sodium. (3+1+3+3)

SHORT ESSAY QUESTIONS (Answer any SIX) **6 X 5 = 30**

4. Merits and de-merits of intravenous general anesthetics.
5. Enumerate **five** advantages of combining sulfonamide and trimethoprim.
6. Discuss the **five** clinical uses of alcohol.
7. Mention the advantages and disadvantages of combining lignocaine with adrenaline.
8. Mention the various intravenous fluids and their clinical uses.
9. Name **five** benzodiazepines, their therapeutic uses and adverse effect.
10. Name **five** iron preparations, their therapeutic uses and adverse effect.

SHORT ANSWER QUESTIONS (All are compulsory): **10 X 3 = 30**

11. Mention **three** therapeutic uses and adverse effect of streptomycin.
12. Mention **three** merits and demerits of ether.
13. Name **three** pre-anesthetic drugs and their therapeutic uses.
14. Enumerate **three** therapeutic uses of sodium thiopental.
15. Enumerate **three** types of shock and their management.
16. Mention **three** diuretics their therapeutic uses and adverse effect.
17. Mention **three** anti-coagulant drugs their therapeutic uses and adverse effect.
18. Mention **three** advantages of giving nitroglycerin by sublingual administration.
19. Name **three** anti-anxiety drugs their therapeutic uses and adverse effect.
20. Mention **three** therapeutic uses and adverse effect of digoxin.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.
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Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

B.SC. IN NEUROSCIENCE TECHNOLOGY -IV SEMESTER
SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

BASIC NEUROSCIENCES-II

Q.P. Code:1980

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (All are compulsory): **2 X 10 = 20**

1. Discuss the classification and clinical features of generalized epilepsies.
2. Discuss the aetiology, clinical features and treatment of pyogenic meningitis.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Carbamazepine.
4. Clinical features of left cerebral infarction.
5. What are the causes and treatment of intracerebral haemorrhage?
6. Herpes simplex encephalitis.
7. What are features of brain death?

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Pyridostigmine.
9. Parasomnias.
10. Benzodiazepines.
11. Stupor.
12. Meningioma.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.
(Declared as Deemed-to-be-University u/s 3 of the UGC Act, 1956)

Accredited 'A' Grade by NAAC (2nd Cycle) Placed in 'A' Category by MHRD (GoI)

B.SC. IN MEDICAL LABORATORY TECHNOLOGY
VI SEMESTER – SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

CLINICAL BIOCHEMISTRY-VI

Q.P. Code:0101

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. Define Automation. Explain the different types of analyzers. Describe the advantages and disadvantages of autoanalyzers. (1+5+4)
2. Explain the west guard rules. Its different types rules of rejection and interpretation of Levy-Jennings's charts. (1+3+3+3)
3. List Good safe laboratory principles.

SHORT ESSAY QUESTIONS (Answer any Five): **5 X 5 = 25**

4. Describe the collection methods of various biological fluids.
5. What are the benefits of NABL accreditation process?
6. Describe the segregation & disposal methods for different types of biomedical waste.
7. Write the normal ranges of liver function test.
8. Explain preanalytical errors.
9. Explain about the maintenance of clinical laboratory records.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

10. Define normality and molarity.
11. List **three** indicators.
12. Define Accuracy and Precisions.
13. List three post analytical errors.
14. Define Buffers. Give examples.

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Accredited 'A' Grade by NAAC (2nd Cycle) Placed in 'A' Category by MHRD (GoI)

B.SC. IN ANESTHESIA TECHNOLOGY-VI SEMESTER
SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

APPLIED ANAESTHESIA TECHNOLOGY-I

Q.P. Code:0104

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. Discuss monitoring in general anaesthesia? Write in detail about any one.
2. a. What is central venous pressure?
   b. Discuss the technique of monitoring in CVP.
3. With the help of neat and label diagram draw neuromuscular junction and write in detail about neuromuscular monitoring.

SHORT ESSAY QUESTIONS (Answer any Five): **5 X 5 = 25**

4. Discuss about pulse oximeter.
5. Enumerate site of temperature monitoring and care of probe.
6. Discuss end tidal carbon dioxide monitoring.
7. Arterial blood pressure monitoring.
8. Importance of monitoring in patient in post anaesthetic care unit.
9. ASA grading.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

10. Glucose monitoring and its significance intra-operatively.
11. Non- invasive arterial pressure monitoring.
12. BIS.
13. Site of collection for arterial gas monitoring.
14. Method of endotracheal intubation and complication.

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Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

B.SC. IN CARDIAC CARE TECHNOLOGY -VI SEMESTER
SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

PROFESSIONAL TRAINING

Q.P. Code:0107

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (All are compulsory): **2 X 10 = 20**

1. Cardio-pulmonary resuscitation.
2. Approach to Narrow QRS complex tachycardia.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Recognition and management of complete heart block.
4. Echo features of Ischemic cardiomyopathy.
5. Echo features of pericardial disease.
6. ECHO features of Aortic regurgitation.
7. Usefulness of TEE in Cathlab.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Contrast echocardiography.
9. Echo features of LV thrombus.
10. Echo features of MVP.
11. Polymorphic ventricular tachycardia.
12. Echo assessment of severe aortic stenosis with low trans aortic valve gradient.

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B.SC. IN RADIOGRAPHY-VI SEMESTER
SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

NUCLEAR MEDICINE (NM)

Q.P. Code:0109

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (All are compulsory): **2 X 10 = 20**

1. Briefly enumerate about various radioisotopes used in medical imaging and list their uses.
2. Explain in detail DTPA & DMSA scans and list their indication and uses.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Gamma camera.
4. Rectilinear scanner.
5. Photo multiplier.
6. PET.
7. Importance of documentation in nuclear imaging.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Radioactivity.
9. List the isotopes used in medical imaging.
10. Radioactive Decay.
11. Define HIDA.
12. Radioactive disintegration law.

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B.SC. IN NEUROSCIENCE TECHNOLOGY –VI SEMESTER
SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

APPLIED NEUROLOGY-II

Q.P. Code:0111

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. Classify peripheral neuropathies and describe clinical features and evaluation of carpal tunnel syndrome.
2. Describe the clinical features and investigations for multiple sclerosis.
3. Describe the clinical features of myelopathies.

SHORT ESSAY QUESTIONS (Answer any Five): **5 X 5 = 25**

4. Parkinson's disease.
5. Mononeuritis multiplex.
6. Common peroneal neuropathy.
7. Clinical features of polymyositis.
8. Hansen's disease.
9. Tremors.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

10. Tarsal tunnel syndrome.
11. Dystonia.
12. Optic neuritis.
13. Median neuropathy.
14. Chorea.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.

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Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

B.SC. IN PERFUSION TECHNOLOGY-VI SEMESTER
SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

PERFUSION TECHNOLOGY-ADVANCED

Q.P. Code:0113

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (All are compulsory): **2 X 10 = 20**

1. What are the complications of CPB?
2. How cannulation strategies differ in minimally invasive cardiac surgery.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. How will you manage hypercarbia on ECMO?
4. How will you assess effective weaning from VV ECMO?
5. Role of TEE during minimal invasive cardiac surgery.
6. How will you evaluate oxygenator failure on ECMO?
7. What is the ventilation strategy on ECMO support?

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Indication for VA ECMO.
9. Complications of LVAD.
10. Arterial filter on CPB circuit.
11. Management of respiratory acidosis.
12. Contraindications for peripheral cannulation.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.

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Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

B.SC. IN MEDICAL LABORATORY TECHNOLOGY-VI SEMESTER SEPTEMBER (2017 Batch)

Time: 3 Hours Max. Marks: 90

PATHOLOGY, MICROBIOLOGY AND BIOCHEMISTRY

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.
Use separate answer books for Section A, Section B and Section C

SECTION A: PATHOLOGY Q.P. CODE : 0111/1 [30 Marks]

Question Number **Marks**

LONG ESSAY QUESTIONS: **1 X 10 = 10**

1. Discuss tissue processing. Add a note on histokinettie.

SHORT ESSAY QUESTIONS: **1 X 5 = 05**

2. Describe various methods for estimation of ESR with normal value.

SHORT ANSWER QUESTIONS: **5 X 3 = 15**

3. Sickling test.
4. Clotting time.
5. Name **three** anticoagulants & their uses in haematology.
6. Name **six** types of abnormal sperms.
7. Name **six** automated instruments used in pathology lab and their uses.

SECTION B: MICROBIOLOGY Q.P. CODE :0111/2 [30 Marks]

Question Number **Marks**

LONG ESSAY QUESTIONS: **1 X 10 = 10**

1. Define antigen-antibody reactions. Enumerate the types of antigen-antibody reactions. Write the principle and applications of ELISA test. (2+2+3+3)

SHORT ESSAY QUESTIONS: **1 X 5 = 05**

2. What are transport media? Discuss their applications with four examples.

SHORT ANSWER QUESTIONS: **5 X 3 = 15**

3. Define antisepsis. Give **two** examples of commonly used antiseptics.
4. Enumerate **three** examples of sterilization controls.
5. What is pasteurization? Give examples of **two** methods of pasteurization.
6. Enlist biological safety levels.
7. Enumerate **three** parasites seen in the peripheral smear.

SECTION B: BIOCHEMEISTRY Q.P. CODE : 0111/3 [30 Marks]

Question Number **Marks**

LONG ESSAY QUESTIONS: **1 X 10 = 10**

1. Define a laboratory error. List the different types of error encountered in the laboratory. Discuss briefly about the different types of error & how they can be minimized.

SHORT ESSAY QUESTIONS: **1 X 5 = 5**

2. Describe the colour code is segregation of biomedical waste and their disposal.

SHORT ANSWER QUESTIONS: **5 X 3 = 15**

3. Mention the enteries mode in equipment maintenance register.
4. Describe a primary standard and a secondary standard.
5. List any two preservatives used to preserve urine specimen.
6. Explain how IM Hcl is prepared.
7. Mention the reference range of
   i) Serum total cholesterol
   ii) Serum Alanine Transaminase (AST)
   iii) Serum Aspartate Transaminase (AST)

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B.SC. IN PERFUSION TECHNOLOGY -VI SEMESTER
(2017 Batch) SEPTEMBER 2021

Time: 3 Hours Max. Marks: 80

PROFESSIONAL TRAINING

Q.P. Code:0113/A

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS: **2 X 10 = 20**

1. Compare the perfusion techniques in paediatric age group & adult patients.
2. Write a note on
   a. Complications of CPB
   b. Safety measures during CPB

SHORT ESSAY QUESTIONS: **12 X 5 = 60**

3. Endo aortic cross clamp.
4. Contraindications for femoral cannulation in minimal invasive cardiac surgery.
5. Management of Hyperkalemia.
6. Pre ECMO patient evaluation.
7. Write a note on preservative solutions during heart transplant & lung transport.
8. Enumerate any **five** complications of ECMO.
9. Causes of low Po_2 (Partial Pressure of Oxygen) post membrane on ECMO.
10. Compare ST Thomas & Del-Nido Cardioplegia.
11. Management of respiratory acidosis.
12. Types of venous cannula.
13. How will you evaluate weaning from VA ECMO?
14. LVAD

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THIRD YEAR B.Sc. RADIOGRAPHY
DEGREE EXAMINATION – SEPTEMBER 2021

Time: 3 Hours **Max. Marks: 80**

RADIO-DIAGNOSIS IMAGING TECHNIQUE

Q.P. Code:1132

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. Discuss in detail data acquisition, presentation, and image reconstruction in CT.
2. Discuss in detail about T1 relaxation, T2 relaxation and free induction decay.
3. What are the commonly used radiopharmaceuticals? How are they prepared and what are the precautions taken while handling them?

SHORT ESSAY QUESTIONS (Answer any SIX): **6 X 5 = 30**

4. Positron emission tomography (PET).
5. Discuss interventional techniques and procedures in ultrasound imaging.
6. Virtual CT bronchoscopy.
7. Explain principles of tracer technique.
8. MR Angiography.
9. Gradient coils.
10. Discuss radioactive transformation.
11. Transducer in ultrasound.

SHORT ANSWER QUESTIONS (All are compulsory): **10 X 3 = 30**

12. MRI artefacts.
13. Pulsed wave Doppler.
14. Hounsfield units.
15. K space.
16. Quality assurance in MRI imaging.
17. Inversion recovery sequence.
18. A mode in ultrasound.
19. Diffusion in MRI.
20. Mention various isotopes used in nuclear medicine imaging.
21. Piezoelectric effect.

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Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

THIRD YEAR B.Sc. MEDICAL LABORATORY TECHNOLOGY DEGREE EXAMINATION – SEPTEMBER 2021

Time: 3 Hours **Max. Marks: 80**

PATHOLOGY – III

Q.P. Code: 1129

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. Mention methods of collection of cervical smear, fixation and staining by Papanicoloau's staining method.
2. Explain classification and nomenclature of human chromosomes.
3. Describe methods of collection & preparation of sample of urinary tract. Add a note on cytology of cells in urinary tract.

SHORT ESSAY QUESTIONS (Answer any SIX): **6 X 5 = 30**

4. C.S.F. analysis.
5. Plasmapheresis.
6. Uses of flow cytometry.
7. How do you identify sex chromatin?
8. Mention different methods for karyotypic analysis.
9. What are monoclonal antibodies? Give examples.
10. Direct Coomb's test.
11. Cross-matching in blood bank.

SHORT ANSWER QUESTIONS (All are compulsory): **10 X 3 = 30**

12. Diseases transmitted by blood transfusion.
13. Transfusion Reactions.
14. List any six criteria for selection of donar.
15. Enumerate the methods of collection of sample from respiratory tract.
16. Karyotyping – a diagnostic tool.
17. Anticoagulants used in blood bank.
18. Cytochemical stains used in leukemia's.
19. Cytological features of malignant effusion.
20. Importance of 'Rh' blood group.
21. Methods of fixation of cytological smears.

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B.SC. MLTC, RADIOGRAPHY, ANAESTHESIA, PERFUSION, CARDIAC CARE, NEUROSCIENCE, RENAL DIALYSIS AND OPTOMETRY II SEMESTER – SEPTEMBER 2021

Time: 3 Hours **Max. Marks: 60**

HUMAN PHYSIOLOGY-II AND BASICS OF BIOCHEMISTRY- II

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.
Use separate answer books for Section A and Section B

SECTION A : HUMAN PHYSIOLOGY-II Q.P. CODE : 1907 [30 Marks]

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any ONE): **1 X 10 = 10**

8. Define blood pressure & give its normal value. Discuss the short-term regulation of blood pressure. Add a note on Hypertension. (2+7+2)
9. Give the composition and functions of bile juice. Add a note on Jaundice. (4+3+3)

SHORT ESSAY QUESTIONS (Answer any TWO): **2 X 5 = 10**

10. Explain oxygen Hb dissociation curve & mention factors affecting it. (3+2)
11. Micturition reflex.
12. Discuss action of oxytocin

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 2 = 10**

13. Endocrine functions of testis.
14. Functions of the placenta.
15. Composition & functions of surfactant.
16. Name all the lung volume & capacities & give their normal value.
17. Name all salivary glands. Write functions of saliva

SECTION B : BASICS OF BIOCHEMISTRY - II…Q.P. CODE : 1908 [30 Marks]

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any ONE): **1 X 10 = 10**

1. Define enzymes. Classify enzymes according to IUBMB classification. Describe the factors affecting enzyme activity. (1+4+5)
2. Describe the sources, RDA, functions and deficiency manifestation of Vitamin D. (1+1+4+4)

SHORT ESSAY QUESTIONS (Answer any TWO): **2 X 5 = 10**

3. Explain the digestion and absorption of proteins in our body.

4. Define BMR. Name the factors affecting BMR.
5. Explain the metabolism of glucose to pyruvate.

SHORT ANSWER QUESTIONS (All are compulsory):
5 X 2 = 10

6. Define transamination. Give **one** example.
7. Describe the biochemical functions of selenium in the body.
8. Explain the significance of dietary fibre.
9. Write the normal levels of a. Calcium b. Phosphorus
10. Define isoenzymes. Give examples.

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B.Sc. IN MEDICAL LABORATORY TECHNOLOGY
IV SEMESTER – SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

HEMATOLOGY AND CLINICAL PATHOLOGY

Q.P. Code:1964

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. List the investigations for Haemorrhagic disorders. Write in detail about Prothrombin time. (4+6)
2. Discuss the organization and quality control in Haematology laboratory. (5+5)
3. Describe the technique of bone marrow aspiration. Write the procedure for staining bone marrow slides. (5+5)

SHORT ESSAY QUESTIONS (Answer any Five): **5 X 5 = 25**

4. Procedure and normal values of coagulation time.
5. Write the procedure for platelet count.
6. Discuss seminal fluid examination.
7. Collection & anticoagulation for clotting tests.
8. L.E. Cell preparation & staining.
9. Cytochemistry in acute leukaemia's.
10. Discuss biomedical waste management in haematology laboratory.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

11. Enumerate functions of platelets.
12. Name tests done for fibrinolytic system.

13. List factors of Extrinsic coagulation pathology.
14. What is INR? Write the importance of INR.
15. Tests to measure Methemoglobin.

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B.SC. IN RADIOGRAPHY-IV SEMESTER
SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

RADIOGRAPHY TECHNIQUE-I

Q.P. Code:1967

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number
Marks

LONG ESSAY QUESTIONS (All are compulsory): **2 X 10 = 20**

13. Explain in detail about basic projections for vertebral column.
14. Explain in details about basic projections for skull.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

15. Write a note on AP and PA view of Thumb.
16. Write a note on Fisk method.
17. Write a note on Judet method.
18. Write a note Skyline view.
19. Write a note on Abdomen Erect View.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

20. Write a short note on Chest X-ray PA View.
21. Write a short note on Frog lateral view.
22. Write a short note on names of cranial and facial bones.
23. Write a short note on submento vertical view.
24. Write a short note on mortise projection.

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B.SC. IN CARDIAC CARE TECHNOLOGY -IV SEMESTER
SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

ELECTROCARDIOGRAPHY-I

Q.P. Code:1973

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (All are compulsory): **2 X 10 = 20**

1. Discuss ECG changes in pericarditis, pericardial effusion and cardiac temponade.
2. Discuss the different types of waves and intervals in normal ECG.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Principles of Electro cardiogram.
4. ECG in VSD.
5. Exercise protocols in TMT.
6. ECG changes in Mitral stenosis.
7. ECG changes in HOCM.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Various ST patterns described in Treadmill test.
9. ECG criteria for LBBB.
10. Generis of QRS complex.
11. ECG in hypertension.

12. Hexagonal method for cardiac axis determination.

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B.SC. IN NEUROSCIENCE TECHNOLOGY -IV SEMESTER
SEPTEMBER 2021

Time: 3 Hours Max. Marks: 80

APPLIED ELECTROENCEPHALOGRAPHY

Q.P. Code:1981

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (All are compulsory): **2 X 10 = 20**

86. Discuss the maturation of electroencephalograph in neonates.
87. Discuss the electroencephalographic findings in primary generalised epilepsies.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

88. EEG findings in brain death.
89. What are principles of magneto encephalography?
90. Discuss the role of long term EEG recording in epilepsies.
91. What are EEG findings in herpes simplex encephalitis?
92. EEG findings during non-rapid eye movement sleep.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

93. Alpha activity.
94. EEG changes due to benzodiazepines.
95. EEG findings in cerebral abscess.
96. Video EEG
97. Triphasic complex in EEG.

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B.SC. IN PERFUSION TECHNOLOGY-IV SEMESTER
SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

APPLIED PERFUSION TECHNOLOGY-I

Q.P. Code:1975

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (All are compulsory): **2 X 10 = 20**

1. Explain the different factors affecting adequacy of perfusion
2. What is Haemodilution? Describe the various priming fluids used during CPB

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5= 25**

3. Principles and function of heat exchanger
4. Explain modified ultrafiltration
5. Management of gaseous micro emboli and filters used in Cardiopulmonary bypass
6. Explain reverse autologous priming and its advantages
7. Explain the safety devices used during cardiopulmonary bypass

SHORT ANSWER QUESTIONS (All are compulsory): **5X 3 = 15**

8. What are Antiplatelet drugs?
9. Causes of low urine on bypass
10. Bubble oxygenator
11. Conventional ultrafiltration
12. Anaesthetic drugs used during cardiopulmonary bypass.

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B.SC. IN ANESTHESIA TECHNOLOGY-IV SEMESTER
SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

BASICS OF ANAESTHESIA TECHNOLOGY

Q.P. Code:1970

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (All are compulsory): **2 X 10 = 20**

1. Write about classification of breathing circuits and discuss in detail about Bain circuit.
2. Describe the physiology of neuromuscular transmission. Describe the physiological conditions producing altered response to neuromuscular blocking drugs.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Oxygen dissociation curve.
4. Safety Pin Index.
5. Write a note on supraglottic airway device.
6. Write about safety features in an Anaesthesia machine.
7. Write a note on nitrous oxide.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Shivering in Anaesthesia.
9. Discuss about Neostigmine.
10. Mallampati classification.
11. Valsalva Manoeuvre.
12. Pulse oxymetry.

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B.Sc. IN MEDICAL LABORATORY TECHNOLOGY
VI SEMESTER – SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

MICROBIOLOGY-VI

Q.P. Code:0102

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. Discuss the role of stool examination in diagnosis of various parasitic infections. Add a note on egg counting techniques and their implications. (15+5)
2. Classify medically important fungi. Discuss the laboratory diagnosis of fungal infections in detail. (4+6+10)
3. Discuss the principle, procedure and diagnostic applications of ELISA test.

SHORT ESSAY QUESTIONS (Answer any Five): **5 X 5 = 25**

4. Explain the functions of Central Sterile Supply Department (CSSD) in a hospital.
5. Discuss blood culture in detail.
6. Discuss automation in diagnostic microbiology laboratory.
7. Explain viral transport media with examples.
8. Classify biosafety cabinets explain their applications in the laboratory.
9. Classify culture media and discuss the role of transport media in laboratory diagnosis of diseases.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

10. What is inceneration? Give examples of item that go for inceneration.
11. Enlist **three** different colour coded bins for waste management with examples of items those of into each of them.
12. Define agglutination reactions with **two** examples of diagnostic tests based on agglutination.
13. Define nosocomial infections. List **four** major pathogens causing such infections.
14. Write **three** reasons for rejection of clinical samples.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.
(Declared as Deemed-to-be-University u/s 3 of the UGC Act, 1956)

Accredited 'A' Grade by NAAC (2nd Cycle) Placed in 'A' Category by MHRD (GoI)

B.SC. IN ANESTHESIA TECHNOLOGY -VI SEMESTER
SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

APPLIED ANESTHESIA TECHNOLOGY-II

Q.P. Code:0105

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. What is post anaesthesia care unit, its concepts, scoring system used and commonly encountered complication?
2. How to present and manage electrical hazards in the operation theatres.
3. Describe in detail about Bio medical waste management. Discuss waste disposal of HIV infected patient.

SHORT ESSAY QUESTIONS (Answer any Five): **5 X 5 = 25**

4. Laryngospasm and its treatment.
5. Diathermy electrode.
6. Laser hazards in OT.
7. Difficult airway cart.
8. Earthing in OT
9. Fire triangle.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

10. Needle Prick Injury.
11. Scavenging system.
12. Enumerate steps for fibro-optic bronchoscopy.
13. Labels for bio medical waste containers.
14. Post-operative hypotension and its management.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.
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Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

B.SC. IN CARDIAC CARE TECHNOLOGY -VI SEMESTER
SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

CARDIAC CATHETERIZATION

Q.P. Code:0108

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (All are compulsory): **2 X 10 = 20**

1. Write in detail about the procedure, materials used and complications of coronary angioplasty.
2. Write in detail about the procedure, materials used and complications of Balloon mitral valvotomy.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Write a short note on oximetry and pressure recording.
4. Electrophysiological study.
5. Elaborate the steps for performing ASD device closure.
6. Describe in brief about right heart catheterization.
7. Short note on contrast agents used in cardiac catheterization lab.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Name **three** catheters used for right heart catheterization.
9. Indications for PPI.
10. Complications of Balloon aortic valvoplasty.
11. Name **three** ionic iodinated contrast media.
12. Contraindications for coronary angiography.

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Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

B.SC. IN RADIOGRAPHY-VI SEMESTER
SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

BIOMEDICAL RESEARCH AND MEDICAL ETHICS IN RADIOLOGY

Q.P. Code:0110

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (All are compulsory): **2 X 10 = 20**

1. Discuss the basic principles of ethics in epidemiology and medical research.
2. Write in detail about sampling in qualitative research.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Explain and mention the advantages of Cohort study.
4. Note on basic and applied research.
5. Informed consent.
6. Merits and demerits of RCT.
7. Experimental study.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Disadvantages of cross sectional study.
9. Null hypothesis.
10. Experimental study.
11. Mention about contents of research proposal.
12. Define research hypothesis.

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B.SC. IN NEUROSCIENCE TECHNOLOGY -VI SEMESTER
SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

APPLIED TECHNOLOGY-VII ELECTROMYOGRAPHY (ENMG) AND EVOKED POTENTIALS (EP)

Q.P. Code:0112

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. What are the various abnormalities of electromyography in motor neuron disease?
2. Discuss the various methods of neurophysiological intraoperative monitoring.
3. Write in detail about single fibre EMG.

SHORT ESSAY QUESTIONS (Answer any Five): **5 X 5 = 25**

4. Fibrillation and polyphasic potentials.
5. Motor unit potentials.
6. Interference pattern.
7. Tremor recording.
8. Abnormalities of BAER in deafness.
9. Turns amplitude ratio.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

10. Complex repetitive discharge.
11. Miniature endplate potential.
12. Fibre density.
13. Polyphasics.
14. Vestibular myogenic evoked potentials.

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B.SC. IN PERFUSION TECHNOLOGY -VI SEMESTER
SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

CLINICAL PERFUSION TECHNOLOGY

Q.P. Code:0114

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (All are compulsory): **2 X 10 = 20**

1. What are the changes occurring during pregnancy important from perfusionist point of view.
2. What are the bleeding disorders? What is the laboratory tests used to diagnose bleeding disorders?

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Write a note on mitral stenosis.
4. Classify congenital heart diseases.
5. Pulmonary function tests in COPD
6. What are the effects of parasympathetic stimulation on cardio vascular system?
7. Management of pulmonary edema & LV failure.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Name **three** cyanotic congenital heart diseases.
9. Compare PFTs in obstructive & restrictive lung diseases.
10. Write a short note on nervous supply of heart.
11. Enumerate any **three** causes of cerebrovascular events.
12. Name any **three** laboratory tests to assess renal failure.

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B.SC. RENAL DIALYSIS TECHNOLOGY-III SEMESTER-SEPTEMBER 2021

Time: 3 Hours **Max. Marks: 60**

APPLIED ASPECTS OF PATHOLOGY AND MICROBIOLOGY

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.
Use separate answer books for Section A and Section B

SECTION A : APPLIED ASPECTS OF PATHOLOGY Q.P. CODE : 0116 [30 Marks]

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any ONE): **1 X 10 = 10**

1. Classify Glomerulonephritis. Add a note on post sheptococcal Glomerulonephritis.
2. Classify polycystic kidney disease. Add a note on renal dysplasia.

SHORT ESSAY QUESTIONS (Answer any TWO): **2 X 5 = 10**

3. Nephrotic syndrome.
4. Tubercular pyelonephritis.
5. Renal pathology in diabetes mellitus.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 2 = 10**

6. Gross of pyelonephritis.
7. Benign nephrosclerosis.
8. Nephrotic syndrome.
9. Hydronephrosis-gross finding in kidney.
10. Microscopy of chronic glomerulonephritis.

SECTION B : MICROBIOLOGY …Q.P. CODE : 0117 [30 Marks]

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any ONE): **1 X 10 = 10**

1. List the micro-organisms causing opportunistic infections. Describe their mode of transfusion and pathogenesis.
2. Discuss vascular access infections in detail. Add a note on sample collection method for culture and sensitivity.

SHORT ESSAY QUESTIONS (Answer any TWO): **2 X 5 = 10**

3. Enlist the bacteria causing urinary tract infections. Write their mode of transmission.
4. Discuss universal safety precautions.
5. Describe the mode of transmission of Hepatitis viruses.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 2 = 10**

6. Write a note on transfusion associated infections.
7. Draw a labeled diagram of HIV.
8. Write the mode of transmission of hepatitis A, Hepatitis B and Hepatitis C and Hepatitis E viruses.
9. Describe the precautions to be taken while collecting samples for culture and sensitivity.
10. Write the modes of transmissions of HIV.

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THIRD YEAR B.Sc. RADIOGRAPHY
DEGREE EXAMINATION – SEPTEMBER 2021

Time: 3 Hours **Max. Marks: 80**

RADIOGRAPHIC TECHNIQUE – II

Q.P. Code: 1133

Answers should be specific to the Questions asked.

Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. Describe indications, contraindications, patient preparation and how to perform a Barium meal follow through procedure.
2. Discuss in detail : a) Cervical Myelography b) Lumbar myelography
3. Discuss in detail : a) Barium swallow b) Barium meal

SHORT ESSAY QUESTIONS (Answer any SIX): **6 X 5 = 30**

4. Bronchography.
22. Ten day rule.
23. Magnetic resonance cholangiopancreatography.
24. Sono salphingography.
25. Ventriculography.
26. CT myelography.
27. Macroradiography.
28. Fistulography.

SHORT ANSWER QUESTIONS (All are compulsory): **10 X 3 = 30**

29. Positive contrast media.
30. Pre requisites of CT abdomen contrast study.
31. Vesiculography.
32. Transfemoral arteriography.
33. Pressure injector.
34. Dacrocystography.
35. List **three** non-ionic contrast media.
36. Pre procedure preparation of barium enema.
37. Orbital venography.
38. Nasopharyngography.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.
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THIRD YEAR B.Sc. MEDICAL LABORATORY TECHNOLOGY DEGREE EXAMINATION – SEPTEMBER 2021

Time: 3 Hours **Max. Marks: 80**

MICROBIOLOGY – III

Q.P. Code:1130

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. Classify hypersensitivity. Describe in detail type I hypersensitivity. (4+6)
2. Describe morphology, modern of transmission and lab diagnosis of HIV. (2+3+5)
3. Describe the infections caused by Candida albicans and write a note on laboratory diagnosis of candidiasis.

SHORT ESSAY QUESTIONS (Answer any SIX): **6 X 5 = 30**

4. Write the principle and applications of ELISA test.
5. Discuss polio vaccines.
6. Describe Aspergillosis.
7. Discuss opportunities fungal infections.
8. Artificial passive immunity.
9. Discuss the laboratory diagnosis of hepatitis B virus infection.
10. Describe monoclonal antibodies.
11. Describe viral inclusion bodies.

SHORT ANSWER QUESTIONS (All are compulsory): **10 X 3 = 30**

12. Name any **three** agglutination reactions.
13. Write modern of transmission of hepatitis B virus.
14. Name any **three** viruses causing diarrhoea.
15. Name any **three** dermatophyter.
16. Name any three oncogenic viruses.
17. KOH preparation.
18. Negri bodies.
19. Herd immunity.
20. IgM.
21. Enumerate DNA viruses.

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KLE ACADEMY OF HIGHER EDUCATION AND RESEARCH, BELAGAVI.
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Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

B.SC. MLTC, RADIOGRAPHY, ANAESTHESIA, PERFUSION, CARDIAC CARE, NEUROSCIENCE, RENAL DIALYSIS AND OPTOMETRYII SEMESTER – II SEMESTER – SEPTEMBER 2021

Time: 3 Hours **Max. Marks: 60**

HAEMATOLOGY & CLINICAL PATHOLOGY- AND MICROBIOLOGY -II

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Use separate answer books for Section A and Section B

SECTION A : HAEMATOLOGY & CLINICAL PATHOLOGY Q.P. CODE : 1909 [30 Marks]

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any ONE): **1 X 10 = 10**

18. Discuss semen analysis.
19. Define and classify anemia. Describe the laboratory tests for diagnosis of sickle cell anemia.

SHORT ESSAY QUESTIONS (Answer any TWO): **2 X 5 = 10**

20. Discuss briefly about microscopic examination of urine.
21. Laboratory test for diagnosis for G-6-PD deficiency.
22. Discuss test for urine proteins.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 2 = 10**

23. Benzidine test.
24. Oliguria
25. Normal values of sr. iron and total iron binding capacity.
26. What is Bence Jones protein? How do you demonstrate them
27. Uses of buffer coat smears.

SECTION B : MICROBIOLOGY -II…Q.P. CODE : 1910 [30 Marks]

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any ONE): **1 X 10 = 10**

11. Classify bacterial culture media. Add a note on transport media with suitable examples. (3+7)
12. Define antigen – antibody reactions. Describe in detail agglutination reaction with examples & diagnosis applications. (2+2+4)

SHORT ESSAY QUESTIONS (Answer any TWO): **2 X 5 = 10**

13. Describe selective media with **four** examples.
14. Discuss innate immunity.
15. Write the structure and functions of IgG.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 2 = 10**

16. What is supra antigen?
17. Explain enriched media with **two** examples
18. What is herd immunity?
19. Write **two** functions of compliment system.
20. Write the basic components of bacterial culture media.

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B.Sc. IN MEDICAL LABORATORY TECHNOLOGY
IV SEMESTER – SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

VIROLOGY

Q.P. Code:1965

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **10 X 2 = 20**

16. Classify Myxoviruses. Describe the pathogenesis, laboratory diagnosis and prophylaxis of influenza virus infection. (2+3+3+2)

17. Name viruses causing Hepatitis. Describe the pathogenesis, laboratory diagnosis and prophylaxis of Hepatitis B virus infection. (2+3+3+2)

18. Describe the pathogenesis and laboratory diagnosis of HIV. (5+5)

SHORT ESSAY QUESTIONS (Answer any SIX): **5 X 5 = 25**

19. Viral tissue culture.
20. Polio prophylaxis.
21. Embryonated egg.
22. Dengue fever.
23. Lesions produced by Herpes viruses.
24. Universal precautions.
25. Bacteriophage.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

26. Hepatitis A virus.
27. Name **three** viruses transmitted by blood transfusion.
28. Rabies vaccine.
29. Hemagglutination test.
30. MMR.

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Accredited 'A' Grade by NAAC (2nd Cycle) **Placed in 'A' Category by MHRD (GoI)**

B.SC. IN RADIOGRAPHY-IV SEMESTER
SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

QUALITY CONTROL, RADIOBIOLOGY AND RADIATION SAFETY IN RADIODIAGNOSIS/ IMAGING

Q.P. Code:1968

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (All are compulsory): **2 X 10 = 20**

1. Explain in detail about **five** quality assurance tests done for X-ray unit with acceptance limits.
2. Explain in detail about AERB guidelines for setting up Medical Diagnostic X-ray unit.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Write a note on regulatory bodies involved in radiation protection.
4. Write a note on proportional counter.
5. Write a note on Acute radiation syndrome.
6. Write a note on technical considerations and radiation protection in angiography unit.
7. Write a note on radiation dose response curves.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. Write a short note on fluorescence and phosphorescence.
9. Write a short note on ten day rule.
10. Write a short note on TLD Badge.
11. Write a short note on GM counters.
12. Write a short note on CT dose reduction.

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B.SC. IN CARDIAC CARE TECHNOLOGY -IV SEMESTER
SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

CARDIAC CATHETERIZATION

Q.P. Code:1974

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (All are compulsory): **2 X 10 = 20**

1. Right heart catheterization equipements, techniques and limitations.
2. Discuss the indications for PTMC, materials used for PTMC, complications encountered and their management.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

3. Angiographic views.
4. Various guide wires.
5. Brief account on pulmonary valvulo Plasty.
6. Radiofrequency ablation.
7. ASD device closure.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

8. IVUS usefulness in PTCA.
9. Radiation Hazards.
10. Contraindications for coronary angiography.
11. Indications for peripheral angiogram.
12. Catheters used for left heart catheterization.

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B.SC. IN PERFUSION TECHNOLOGY -IV SEMESTER
SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

APPLIED PERFUSION TECHNOLOGY-II

Q.P. Code:1976

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS **2 X 10 = 20**

1. What is myocardial protection? Describe various strategies involved in myocardial protection in cardiac surgery

2. Describe various cannulation techniques used in cardiopulmonary bypass

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5= 25**

3. Explain blood cell trauma caused due to cardiopulmonary bypass
4. Different types of cardioplegia
5. Problems associated with termination of cardiopulmonary bypass
6. Uses of cardiac assist devices
7. Cannulation in MICS

SHORT ANSWER QUESTIONS (All are compulsory): **5X 3 = 15**

8. Left heart venting
9. Clinical use of pulsatile perfusion
10. Management of massive air lock in the venous line
11. Causes of hemolysis on CPB
12. Indications for intra-Aortic Balloon pump

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B.SC. IN ANESTHESIA TECHNOLOGY -IV SEMESTER
SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

APPLIED ANESTHESIA TECHNOLOGY-I

Q.P. Code:1971

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (All are compulsory): **2 X 10 = 20**

98. Describe the safety features of anaesthesia machine.
99. Describe the technique of epidural anaesthesia. Draw diagram wherever necessary.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

100 Explain Bain circuit and Jackson-Rus circuit.

101 Write indications and contraindications of spinal anaesthesia.

102 Write about Igel LMA.

103 Write about various types of Laryngoscopes.

104 Describe the various sizes with age groups of supraglottic airway device.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

105 Name Inhalational agents and their colour coding of vaporisers.

106 Draw normal ECG waveform with labels.

107. Pin index safety system.

108. Drugs used to treat local anaesthesia toxicity.

109. Capnography.

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B.Sc. IN MEDICAL LABORATORY TECHNOLOGY
VI SEMESTER – SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

CLINICAL PATHOLOGY-VI

Q.P. Code:0103

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. Discuss Donor selection and blood collection.
2. Discuss procedure of direct and indirect column test.
3. Discuss preparation of monoclonal antibodies and their application.

SHORT ESSAY QUESTIONS (Answer any Five): **5 X 5 = 25**

4. Bombay blood group.
5. Sex chromatin.
6. S.D.P
7. Clinical applications of blood components.
8. Discuss clinical applications of fluorescence reactions
9. Record keeping in blood bank.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

10. Name **three** anti-coagulants used in blood banking.
11. Name **three** methods of blood grouping.
12. Name **three** adverse transfusion reactions.
13. Procedure of major and minor cross matching.
14. Name **three** chromosomal aberrations.

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B.SC. IN ANESTHESIA TECHNOLOGY -VI SEMESTER SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

APPLIED ANAESTHESIA TECHNOLOGY-III

Q.P. Code:0106

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. 60 years old patient comes for TURP. Write in detail what types of anaesthesia will you administer and its complication.
2. Describe the management of anaesthesia in 50 years old male for laparoscopic surgery.
3. Write in detail about preparation of trolly for spinal and epidural anaesthesia. Enumerated complication.

SHORT ESSAY QUESTIONS (Answer any Five): **5 X 5 = 25**

4. Discuss pre-operative assessment of patient with cardiovascular disease.
5. Caudal anaesthesia.
6. What is day care anaesthesia? Enumerate surgery under day care.
7. Fluid used in patient with hypovolumic shock.
8. Post spinal complication and its management.
9. Pre-anaesthetic evaluation.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

10. Write about post-operative pain.
11. Mallampattic grading
12. Problem of prone position anaesthesia.
13. Delayed recovery from anaesthesia.
14. Anaesthic and MRI.

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THIRD YEAR B.Sc. MEDICAL LABORATORY TECHNOLOGY DEGREE EXAMINATION – SEPTEMBER 2021

Time: 3 Hours **Max. Marks: 80**

BIOCHEMISTRY – III

Q.P. Code:1131

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (Answer any TWO): **2 X 10 = 20**

1. Enumerate functions of the liver. Classify liver function tests. Give the details of estimation of serum bilirubin. (4+6)
2. Discuss the dietary sources, RDA absorption and functions of calcium. (2+1+3+4)
3. Discuss in detail how pH of the blood is regulated. Mention the normal range. (9+1)

SHORT ESSAY QUESTIONS (Answer any SIX): **6 X 5 = 30**

4. Discuss the various cardiac enzyme markers.
5. Discuss the biochemical findings in metabolic alkalosis. Mention any two causes.
6. Discuss Creatinine clearance test and its significance.
7. Discuss how accuracy and precision are checked while performing quality control.
8. Discuss Hays test and fouchets tests.
9. Discuss ketogenesis and ketolysis.
10. Discuss the principle of radio immune assay (RIA) and mention any **two** applications.
11. Name any **three** phospholipids and mention their functions.

SHORT ANSWER QUESTIONS (All are compulsory): **10 X 3 = 30**

12. Mention the biochemical findings in nephrotic syndrome.
13. Discuss the Rothera's test.
14. List the enzyme markers in pancreatic disease.
15. Draw a labeled diagram of urinometer.
16. Discuss the Creatinine kinase isoenzymes.
17. List any **three** tumors.
18. Mention the limitations of semiautoanalyzer.
19. Mention the normal range of serum calcium and phosphorus.
20. List any **three** derivatives of cholesterol.
21. List **three** reasons for pre analytical errors.

B.SC. IN PERFUSION TECHNOLOGY -IV SEMESTER
SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

MEDICINE RELEVANT TO PERFUSION TECHNOLOGY

Q.P. Code:1977

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS **2 X 10 = 20**

28. Define acute and chronic renal failure. Explain CRF with respect to
    a) Etiology b) Clinical Features c) Complications d) Investigations

29. What is cyanotic heart disease? Explain Tetralogy of fallot in detail

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5= 25**

30. Cardiomyopathy
31. End stage renal disease
32. Explain bleeding disorders in detail
33. Hemodialysis and peritoneal dialysis
34. Explain parasympathetic and sympathetic nervous system

SHORT ANSWER QUESTIONS (All are compulsory): **5X 3 = 15**

35. Left ventricular failure and its complications
36. Types of dialysis and indications for dialysis
37. Cardiomyopathy
38. Changes occurring during pregnancy
39. Clinical feature of pulmonary edema.

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B.SC. IN ANESTHESIA TECHNOLOGY -IV SEMESTER SEPTEMBER 2021

Time: 3 Hours Max. Marks: 60

APPLIED ANAESTHESIA TECHNOLOGY-II

Q.P. Code:1972

Answers should be specific to the Questions asked.
Draw neat, labeled diagrams wherever necessary.

Question Number **Marks**

LONG ESSAY QUESTIONS (All are compulsory): **2 X 10 = 20**

110 Discuss preanaesthetic evaluation in a patient undergoing emergency lower segment caesarean section.

111 Write the Algorithm of basic life support.

SHORT ESSAY QUESTIONS (All are compulsory): **5 X 5 = 25**

112 Write about the differences between adult and paediatric airway.

113 Write about Glasgow coma scale.

114 Write about post-anaesthesia discharge criteria.

115 Write about criteria of wearing from mechanical ventilation.

116 Write about the indication of mechanical ventilation.

SHORT ANSWER QUESTIONS (All are compulsory): **5 X 3 = 15**

117 Indications and contraindications of caudal anaesthesia.

118 Write about Ringer lactate solution.

119. Mallampate grading of airway.

120. Write about Lignocaine.

121. Write about PEEP.

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