File Ref.No.1422/GA - IV - E2/2013/CU

UNIVERSITY OF CALICUT

Abstract

Faculty of Medicine - B.Voc in Medical Laboratory Technology- Question Bank - III to V Semesters - Approved - Orders issued.

G & A - IV - E

U.O.No. 10354/2017/Admn Dated, Calicut University.P.O, 19.08.2017

Read:-1. U.O. No. 928/2017/Admn dated 24-01-2017.

2. U.O. No. 2650/2015/Admn dated 17-03-2015.

3. Email dated 10-07-2017 from the Principal, St. Thomas College, Thrissur.

4. E-mail dated 01.04.2017 from the Chairperson, Board of Studies in Medical Laboratory Technology.

5. E-mail dated 20-04-2017 from the Dean, Faculty of Medicine.

ORDER

As paper read as 1st, the Syllabus and Regulations of B.Voc Medical Laboratory Technology Programme was implemented in accordance with the resolutions of the Academic Bodies.

According to the Regulations for B.Voc programmes implemented vide U.O read as 2nd, at the commencement of each semester, the College should forward Question Bank for that semester to the University for approval.

As paper read as 3rd, the Principal, St. Thomas College, Thrissur, where the the B.Voc in Medical Laboratory Programme is being conducted, forwarded the Question Bank in respect of 3rd and 5th semesters for approval.

The Question Bank was forwarded to the Chairperson, Board of Studies in Medical Laboratory Technology for approval and the same was recommended for approval by the Chairperson vide paper read as 4th.

The recommendation of the Chairperson, alongwith the the Question Bank was forwarded to the Dean, Faculty of Medicine for approval.

Vide paper read as 5th above, the Dean, Faculty of Medicine has approved the Question Bank.

Considering the urgency of the the matter , the Hon'ble Vice Chancellor in exercising the powers

of the Academic Council, approved the Question Bank as recommended by the Dean, Faculty of Medicine, and the Chairperson, Board of Studies in Medical Laboratory Technology and accorded sanction to implement the same subject to ratification by the Academic Council.

The following orders are therefore issued

The question bank of 3rd to 5th semesters of B.VoC in Medical Laboratory Technology is approved, subject to ratification by the Academic Council.

(Question Bank appended.)

Ajitha P.P

Joint Registrar

To

The Principal, St. Thomas College, Thrissur.

Copy to: PS to VC/PA to PVC/PA to Registrar/PA to CE /EX sn/EG I sn/
Chairman, BoS in MLT / Dean, Faculty of Medicine/SA(with a request to upload the U.O in the University website)/SF/DF/FC

Forwarded / By Order

Section Officer

B.Voc. MLT (Medical Laboratory Technology)

Question Bank

3rd Semester Papers

Course No	Name of the Paper	Code	Remarks
3.1	Inspiring Expressions	GEC3EG07	Approved By BOS OF English UG
3.2	Fundamental Instrumentation & Computer Skills for MLT	GEC3IC08	
3.3	Environmental Science	GEC3ES09	
3.4	General & Applied Microbiology	SDC3AM09	
3.5	Blood Bank Procedures, Coagulation Studies & Transfusion Technology	SDC3BT10	

FUNDAMENTAL INSTRUMENTATION & COMPUTER SKILLS FOR MLT

CODE : GEC3IC08

I. Answer the following. Each questions carries 1 mark

1. The components of CPU are registers, control unit and ……
2. Two basic types of semi conductor memory are random access memory and …….
3. The CPU is called ……. Of the memory.
4. …….. are temporary storage locations within the CPU, where the data fetched from the memory can be held.
5. In computer terminology information means……..
6. The primary memory of a computer consists of ……..
7. The collection of instructions is called …….
8. A character that is raised and smaller above the baseline is known as ……..
9. The ability to combine name and addresses with a standard document is called …….
10. "Ctrl + N" is used to …….
11. Which short-cut key is used to open Find and Replace Dialog box ?
12. Portrait and Landscape are ……..
13. Except for the …….. function, a formula with a logical function shows the word "TRUE" or "FALSE" as a result
14. What happens when you press Ctrl + X after selecting some cells in Excel?
15. You can add an image to a template by clicking the Insert Picture From File button on the ……. Toolbar.
16. Special effects used to introduce slides in a presentation are known as ?
17. Which key can be used to view slide show ?
18. To open the existing presentation, press ……
19. Medical Transcription is also known as ……
20. An individual who performs medical transcription is known as a …….
21. Name the device that measure the absorbance of a solution.
22. Name an electrical device used in sterilisation.
23. Name the device used to sterilise equipments.
24. Name the device used to maintain the cell /bacterial culture.
25. Cotton wool swab can be sterilised by
26. Culture media can be sterilised by
27. What is inspissations?
28. Name a filter used in sterilisation.
29. What is a buffer?
30. SI unit of length.
31. The study of blood and its components.
32. The study of microorganisms.
33. The study of serum and its constituents.
34. A solution contains maximum amount of dissolved solute.
35. Name the device used for distillation process.
36. Define working distance.
37. Name two chemicals used for sterilisation.
38. Define pH.

39. SI unit of weight.
40. What do you mean by w/w solution?
41. What do you mean by w/v solution?
42. Define normality.
43. What do you mean by v/v solution?
44. Define molarity.
45. What do you mean by salt?
46. Name the device used to mix small vials of liquid.
47. The most commonly used eye piece magnification is….
48. The maximum speed that can be attained by a hand centrifuge is …..
49. Water with high mineral content is called…..
50. Define distillation.

II. Answer any EIGHT. Each question carries 2 marks.

1. Differentiate between data and information.
2. Define the term software.
3. Define the term Topology.
4. Define the term Network.
5. Explain different functions of operating systems.
6. Prepare a short note on different types of computers.
7. Explain about social Networking.
8. How to open an existing document in Ms Word?
9. Describe about Start topology.
10. Explain different types of operating systems.
11. Explain advantages of Network.
12. Describe about Bus topology.
13. Define the term hardware.
14. Explain the role of Medical Transcriptionist in Medical transcription.
15. Prepare a short note on Medical transcription editing.
16. Define focal length.
17. Define sensitivity of a balance.
18. Differentiate AC and DC.
19. Define the term accuracy.
20. Define the term precision.
21. Define standards.
22. Define controls.
23. Explain serial dilution.
24. What is SI units? .Give an example.
25. Enumerate the personal errors during analytical procedure.
26. Write any two functions of clinical laboratories.
27. Write short notes on homogenizer.
28. Write short notes on Magnetic stirrer.
29. What is laboratory desiccator?
30. What do you mean by magnification?
31. Write short notes on water bath.
32. Write short notes on hand centrifuge.

III. Answer any SIX. Each question carries 4 marks

1. Define resting point of a balance. Explain the procedure for calculating the resting point.
2. Discuss the parts of an analytical balance.
3. Explain the safety measures that should be taken in a medical lab.
4. Write an essay on different calibration methods in laboratory.
5. Explain the term quality control.
6. Discuss the quality control approaches in biochemistry.
7. Explain the preparation of medium concentration quality control serum.
8. Explain the preparation of high concentration quality control serum.
9. Quality control approaches in microbiology.
10. Quality control approaches in Histopathology.
11. Explain the preparation of high concentration quality control serum.
12. Quality control approaches in urinalysis.
13. Differentiate saturated and supersaturated solution.
14. State and explain Beer's law.
15. Discuss different methods to determine the concentration of test sample.
16. Enumerate the instrumental errors during Analytical procedure.
17. Briefly explain the functional components of a clinical laboratory.
18. Explain the principle and use of Centrifuge in Laboratory
20. Explain the principle of Autoclaving and its use in laboratory
21. Explain any four input devices.
22. Explain any four output devices.
23. Different types of Networks.
24. Applications of internet in medicine.
25. Different types of operating system.
26. Differentiate between star and bus topology.
27. Explain social networking sites.
28. How can you create a mail account?
29. Prepare a short on Software.
30. Explain the advantages of Network.
31. Differentiate between LAN and WAN.
32. Explain about medical transcription process.
33. What is medical transcription editing?
34. What are the skills required for medical transcriptionist?
35. What are the duties and responsibilities of a medical transcriptionist?

IV. Answer any TWO. Each question carries 15 marks.

1. Explain the architecture of computer.
2. Explain the advantages and disadvantages of Computer Networks.
3. Explain about Network Topologies.
4. What is an operating system? Explain the functions of OS.
5. Explain the input and output devices.
6. What is medical transcription editing? Explain the skills required for a medical transcriptionist.
7. What are the duties and responsibilities of a medical transcriptionist?
8. Write an essay on different parts of a compound microscope.

9. Explain basic types of lab accidents and its first aid.
10. Write an essay on approaches of quality control in haematology.
11. Write an essay on approaches of quality control in blood banking.
12. Write an essay on sterilization by heat.

MODEL QUESTION PAPER

FUNDAMENTAL INSTRUMENTATION & COMPUTER SKILL FOR MLT

CODE: GEC3IC08

Time: 3hrs Max. Marks: 80

I. Answer the following. Each question carries 1 mark

1. The components of CPU are registers, control unit and ……
2. Two basic types of semi conductor memory are random access memory and …….
3. The CPU is called ……. of the memory.
4. …….. are temporary storage locations within the CPU, where the data fetched from the memory can be held.
5. Which key can be used to view slide show ?
6. To open the existing presentation, press ……
7. Medical Transcription is also known as ……
8. Culture media can be sterilized by
9. What are inspissations?
10. Name a filter used in sterilization.

(10×1=10)

II. Answer any EIGHT. Each question carries 2 marks

11. Explain different functions of operating systems.
12. Prepare a short note on different types of computers.
13. Explain about social Networking.
14. How to open an existing document in Ms Word?
15. Prepare a short note on Medical transcription editing.
16. Define focal length.
17. Define sensitivity of a balance.
18. Differentiate AC and DC.
19. What is SI units? .Give an example.
20. Enumerate the personal errors during analytical procedure.
21. Write any two functions of clinical laboratories.
22. Write short notes on homogenizer.

(8×2=16)

III. Answer any SIX. Each question carries 4 marks.

23. Explain the safety measures that should be taken in a medical lab.
24. Write an essay on different calibration methods in laboratory.
25. Explain the term quality control.
26. Discuss the quality control approaches in biochemistry.
27. Explain the preparation of medium concentration quality control serum
28. Explain the principle and use of Centrifuge in Laboratory
29. Explain the principle of Autoclaving and its use in laboratory
30. Explain any four input devices.

31.Explain any four output devices.

(6×4=24)

IV. Answer any TWO. Each question carries 15marks.

32. Explain about Network Topologies.
33. Explain the architecture of computer
34. Write an essay on different parts of a compound microscope.
35. Explain basic types of lab accidents and its first aid.

(2×15=30)

ENVIRONMENTAL SCIENCE

CODE: GEC3ES09

I. Answer the following. Each question carries 1 mark.

1. Name a biodiversity hotspot in India.
2. Which are the three general types of ecological pyramid?
3. What is species diversity?
4. World food day is observed on _____
5. Name two metallic minerals.
6. Give an example for endangered species in India.
7. Name any two air pollutants.
8. Name two areas which are frequently water logged in India.
9. Name any two green house gases.
10. What is food web?
11. What is genetic diversity?
12. Define food chain.
13. What is ecosystem diversity?
14. Write any two examples for zooplanktons.
15. What is hydro sere?
16. Name any Ramsar site in India.
17. Give an example for endemic species in India.
18. What is climax community?
19. Which ecological pyramid is always upright?
20. Write an example for pioneer species.
21. Expand IUCN.
22. Write any two examples for consumers.
23. Name two metallic minerals.
24. Name two non- metallic minerals.
25. What is deforestation?
26. Expand LPG & CNG.
27. What are the components of Natural gas?
28. What is mean by desertification?
29. Define sewage?
30. What is mean by eutrophication?
31. Which are the major gases that cause acid rain?
32. What is holocaust?
33. World Environmental Day is observed on _____
34. Define flood.
35. Non clotting of blood is caused by the deficiency of _____
36. Expand BOD.
37. The term ecosystem was proposed by _____
38. Name a biosphere reserve in India.
39. Decomposers are also known as _____

40. Write an example for grazing food chain.
41. Crop land ecosystem is also known as_____.
42. What is halosere?
43. World Wetland day is observed on_____
44. An eltonian pyramid is also known as_____.
45. World biodiversity day is observed on _____.
46. Minamata disease is caused by_____.
47. What is trophic level?
48. Second trophic level comprise of _____ category of animals
49. Give an example for oil eating bacteria.
50. What are aerosols?

II. Answer any EIGHT. Each question carries two marks.

1. Give any two examples for renewable resources.
2. Explain the pyramid of biomass.
3. Write a short note on ecosystem.
4. What is photochemical smog?
5. What is the role of detritivores in a food chain?
6. What are endangered species? Give two examples.
7. What is IUCN red list?
8. Write a short note on drought.
9. What are green house gases?
10. How acid rain is formed?
11. Write a short note on biodiversity hotspot.
12. What is the role of producer in ecosystem?
13. Distinguish between BOD and COD?
14. Distinguish between biotic and abiotic components.
15. Describe the characteristic features of decomposers.
16. What are endemic species? Give two examples.
17. Differentiate between grazing food chain and detritus food chain.
18. Give any two examples for Non- renewable resources.
19. Explain different stages of hydrosere.
20. Define biodiversity.
21. Write a short note on desert ecosystem.
22. What are the major air pollutants?
23. Describe the causes of solid wastes.
24. What is green house effect?
25. Describe environmental protection act.
26. Write a note on balanced diet with examples.
27. Mention major environmental effects of extracting mineral resources.
28. What is BOD?
29. Write a short note on soil erosion.
30. What are the causes and effects of nuclear accidents?
31. What are wildlife sanctuaries?
32. What are the types of ecosystem?

33. What are the significance of biodiversity hotspot?
34. Explain different types of consumers.
35. Differentiate between primary and secondary succession.
36. Write a note on sacred grove.
37. Write a note on Project Tiger.
38. What is the significance of super bugs?
39. What are the adverse effects of noise pollution?
40. What are the direct use values of biodiversity?

III. Answer any SIX. Each question carries four marks.

1. Write a note on In- Situ conservation with example.
2. What are the benefits and problems associated with dams?
3. What are the problems caused by the use of fertilizers?
4. What are the sources of water pollution?
5. Describe the characteristic features of aquatic ecosystem.
6. What are the causes and effects of ozone depletion?
7. Write a note on Ex- Situ conservation with example.
8. What are the changes caused by overgrazing?
9. What are the sources of soil pollution?
10. What are the consequences of green house effect?
11. Write a short note on Western Ghats.
12. Distinguish between renewable and Non- renewable energy sources.
13. What are the sources of air pollution?
14. Briefly explain the importance of forest.
15. Briefly explain the threats to biodiversity.
16. Write a short note on ecological pyramids.
17. Briefly describe different types ecological succession.
18. What are the problems caused by the use of pesticide?
19. What is soil erosion and suggest the methods to prevent it?
20. What are the peculiarities of forest ecosystem?
21. Briefly explain the values of biodiversity.
22. Differentiate between biotic and abiotic components with examples.
23. Briefly explain environment protection acts.
24. Briefly explain energy flow in ecosystem.
25. What are the causes and impacts of deforestation?
26. Describe the different types of pollutants with examples.
27. Describe the effects of ozone layer depletion?
28. What are the causes of ozone layer depletion?
29. Briefly explain the classification of solid wastes.
30. Differentiate national park and wildlife sanctuary.

IV. Answer any TWO .Each question carries 15 marks.

1. Explain In- Situ and Ex- Situ conservation of biodiversity.
2. Write a note on ecological succession.
3. Write an essay on bio- geographical classification of India.
4. Write an essay on the threats to biodiversity.
5. What are the cause, effects and control measures of air pollution?
6. Write an essay on water pollution?
7. Describe different aspects of Aquatic ecosystem.
8. Explain solid waste management?
9. Discuss the problems of global warming and climate change.
10. Write an essay on the structure and function of ecosystem?

MODEL QUESTION PAPER

ENVIRONMENTAL SCIENCE

CODE: GEC3ES09

Time: 3 Hours Max. Marks: 80

I. Answer the following. Each question carries 1 mark.

1. Name a biodiversity hotspot in India.
2. Expand IUCN.
3. World Environmental Day is observed on _____
4. Name a biosphere reserve in India.
5. World Wetland day is observed on_____
6. Name any two air pollutants.
7. Name any Ramsar site in India.
8. What is climax community?
9. What is trophic level?
10. Give an example for oil eating bacteria. (10×1=10)

II. Answer any EIGHT. Each question carries two marks.

11. What is photochemical smog?
12. What are endangered species? Give two examples.
13. What is IUCN red list?
14. What is the role of producer in ecosystem?
15. Distinguish between BOD and COD?
16. Write a note on Project Tiger.
17. What are the adverse effects of noise pollution?
18. Give any two examples for renewable resources.
19. Give any two examples for Non- renewable resources.
20. Write a short note on soil erosion.
21. What are the causes and effects of nuclear accidents?
22. What are wildlife sanctuaries?

(8×2=16)

III. **Answer any SIX. Each question carries four marks.**

23. Briefly explain the threats to biodiversity.
24. Write a short note on ecological pyramids.
25. Differentiate between biotic and abiotic components with examples.
26. What are the causes of ozone layer depletion?
27. Differentiate national park and wildlife sanctuary.

28. Briefly describe different types ecological succession.
29. What are the problems caused by the use of pesticide?
30. What is soil erosion and suggest the methods to prevent it?
31. Write a note on In- Situ conservation with example.

(6×4=24)

IV. Answer any TWO .Each question carries 15 marks.

32. Explain In- Situ and Ex- Situ conservation of biodiversity.
33. Write an essay on bio- geographical classification of India Describe different staining methods in details with examples.
34. Write an essay on the structure and function of ecosystem?
35. Write an essay on water pollution.

(15×2=30)

GENERAL & APPLIED MICROBIOLOGY

CODE : SDC3AM09

Time: 3 Hours Max. Marks: 80

I. Answer the following. Each question carries 1 mark.

1. _____ is the father of microbiology.
2. Process of Killing of pathogenic microorganism is called as _____.
3. Process of Killing of Micro Organism is called as _____.
4. Sterilization of metallic objects by holding them in flame is called as _____.
5. Bacteria is defined as _____ organisms.
6. Engulfment of cells is called as _____.
7. A cluster of polar flagella is called
8. Foot of the microscope is _____ shaped.
9. Example for solid culture media is _____.
10. Example for semisolid media is _____.
11. Example for enriched media is _____.
12. The protein from which hook and filaments of flagella are composed of, is_____
13. Example for gram positive *Cocci* _____.
14. The *Cooci* which mostly occur in single or pairs are_____
15. The cholera stool is called as _____.
16. The *Cocci* which forms a chain is_____
17. The arrangement, in which flagella are distributed all round the bacterial cell, is known as
18. The bacteria deficient in cell wall is
19. Single or clusters of flagella at both poles is known as
20. The common word for bacteria which are straight rod in shape is
21. The bacteria which can grow in alkaline pH?
22. The solidifying agent commonly used in preparation of media is
23. For most bacteria, the optimum pH for growth lies between--------to----------
24. Mac-Conkey medium is an example of
25. *Pseudomonas aeruginosa* forms a blue water soluble pigment called
26. Example of enriched medium?
27. Name the bacteria which can grow in alkaline pH?
28. When a substance is added to a liquid medium which inhibits the growth of unwanted bacteria and favors the growth of wanted bacteria, it is known as_____

29. When a substance is added to a solid medium which inhibits the growth of unwanted bacteria but permits the growth of wanted bacteria, it is known as

30. Stuart's transport medium is used for transport of specimen containing

31.Holding period of hot air oven?

32. Holding period of autoclave?

33. Example of oxidase-positive bacteria?

34. Nagler's reaction is useful for the identification of

35. *Clostridium botulinum* food poisoning is due to

36. Drumstick appearance is characteristic of

37. Example of an obligate anaerobe?

38. Cell wall protein of *Streptococcus pyogenes crossreacts* with human----------

39. *Streptococcus pyogenes* can be differentiated from other hemolytic *Streptococci* on the basis of----------test.

40. Streptolysin O is oxygen ----------

41. Example of urease positive organism?

42.Temperature used in holder method

43. Temperature used in flash method

44.Plastic IV bags are sterilized by ------ method.

45. A major difference between EHEC and EPEC is----------

46. Example of a gram +ve organism

47. Example of a gram -ve organism

48. Example of an anaerobic organism

49. The primary stain of Gram's method is

50. What is the color of gram positive bacteria on a gram staining?

II. Answer any EIGHT. Each question carries two marks.

1. Define Microbiology
2. Define sterilization
3. Coagulase test
4. What is pasteurization?
5. Cholera red reaction.
6. Name two zoonotic bacterial diseases
7. What is streak culture methd?
8. What is culture media?
9. What is Blood agar?

10. Define pathogen?

11. What is Gram staining?

12. Name four culture media used for Vibrio cholerae

13. What is plasmid?

14. What is Cold sterilization

15.Give two examples of Gaseous Disinfectants

16. Describe briefly about Quellung reaction.

17.Name the infections caused by E.coli

18.Describe about bacterial spore

19. Define sterilization and disinfection

20.What is the principle of AFB staining?

21.Classify bacteria based on the morphology?

22.Difference between prokaryotes and eukaryotes?

23.Describe the difference between gram positive and gram negative cell wall?

24. Give two examples of gram negative cocci and name the diseases caused by them?

25.What is Stormy fermentations?

26. Give two examples for anaerobic gram positive spore bearing bacilli and the diseases caused by them.

27.Name 4 non sporing anaerobes and the diseases caused?

28.Name the important antigens and virulence factors of ecoli?

29.What are protoplasts?

30. What are spheroplasts?

31.Name any two methods of the detection of motility and two examples of motile bacteria?

32. Sterilization by Radiation?

33. What are the Materials sterilized by hot air oven?

34. What are the sterilization controls for hot air oven?

35. What are the sterilization controls for autoclave?

36. What is thermal death time?

37. Principle of aterilization by autoclave?

38.What is CAMP test?

39.Describe MacConkey agar.

40.Describe of Urease test.

III. Answer any SIX. Each question carries four marks.

1. Write about chemical sterilization.

2. Screening tests for urinary tract infection?
3. Pasteurization
4. What are the types of culture media?
5. Write about motility test (Hanging drop method)
6. Write about simple staining.
7. Write about pili and fimbriae
8. Principle, parts and functioning of Autoclave.
9. Write about methyl - red test.
10. Describe Tyndallisation
11. Enumerate various types of carriers with examples.
12. Ingredients of MacConkey's medium.
13. Write about Flagella in detail.
14. Describe Bacterial growth curve.
15. Describe principle and procedure of Gram staining
16. Describe Indole test with example?
17. Describe oxidase test with example?
18. Staphylococcal food poisoning
19. Describe various virulence factors of bacteria.
20. Haemolysins of Streptococcus pyogenes
21. Bile solubility test.
22. Describe about Nagler's reaction
23. Toxins of *Clostridium perfringens*.
24. Describe in detail about gas gangrene?
25. Describe the Antigenic structure of E.coli
26. Write in detail about the Antigenic structure of salmonella.
27. Describe Widal Test.
28. Describe the pigments produced by Pseudomonas aeruginosa?
29. Deascibe the technique of Fumigation
30. Define the terms sterilization, disinfection, asepsis, antiseptics, bacteriostatic agents, bactericidal agents and decontamination.

IV. Answer any TWO .Each question carries 15 marks.

1. Classify culture media and describe each one in detail with examples?
2. Write in detail about sterilization methods.
3. Write about microscope and draw diagram.

4. Describe the morphology of a bacterial cell with the help of a diagram and mention the functions of various appendages
5. Describe in detail about the antigenic structure and antigenic variation in Samonella and describe WIDAL test in detail.
6. Discuss the morphology, cultural characters, pathogenicity and laboratory diagnosis of staphylococcus aureus
7. Define Sterilization. Discuss in detail the sterilization methods by moist heat?
8. Describe in detail about the culture methods used in microbiology. Elaborate anaerobic culture methods?
9. Describe different staining methods in details with examples.
10. Describe classification of streptococci. Write I details about streptococcus pyogenes.

MODEL QUESTION PAPER

GENERAL & APPLIED MICRIBIOLOGY

CODE : SDC3AM09

Time: 3 Hours Max. Marks: 80

I. Answer the following. Each question carries 1 mark.

1. _____ is the father of microbiology.
2. What is the colour of gram -postive bacteria on a gram staining?
3. Process of Killing of Micro Organism is called as _____.
4. Sterilization of metallic objects by holding them in flame is called as _____.
5. Example of enriched medium?
6. Engulfment of cells is called as _____.
7. Example of oxidase-positive bacteria?
8. Foot of the microscope is _____ shaped.
9. Example of a gram +ve organism
10. Example for semisolid media is _____. (10×1=10)

II. Answer any EIGHT. Each question carries two marks.

11. Give two examples of Gaseous Disinfectants
12. Name the infections caused by *E.coli*
13. What is pasteurization?
14. Classify bacteria based on the morphology?
15. Name two zoonotic bacterial diseases
16. What is streak culture method?
17. What is CAMP test?
18. What is culture media?
19. Difference between prokaryotes and eukaryotes?
20. Define pathogen?
21. What is Gram staining?
22. Name four culture media used for *Vibrio cholerae* (8×2=16)
23.

III. Answer any SIX. Each question carries four marks.

23. Describe Bacterial growth curve
24. Principle, parts and functioning of Autoclave
25. Write about motility test (Hanging drop method)
26. Describe the pigments produced by *Pseudomonas aeruginosa*?
27. Describe about Nagler's reaction
28. Write about Flagella in detail.
29. What are the types of culture media?
30. Describe Widal Test.
31. Write about simple staining. (6×4=24)

IV. Answer any TWO .Each question carries 15 marks.

32. Discuss the morphology, cultural characters, pathogenicity and laboratory diagnosis of S*taphylococcus aureus*
33. Describe in detail about the culture methods used in microbiology. Elaborate anaerobic culture methods?
34. Describe different staining methods in details with examples.
35. Describe the morphology of a bacterial cell with the help of a diagram and mention the functions of various appendages

(15×2=30)

BLOOD BANK PROCEDURES, COAGULATION STUDIES &TRANSFUSION TECHNOLOGY

CODE : SDC3BT10

I. Answer the following. Each question carries 1 mark.

1. Who invented blood group system
2. Subgroups of A group
3. What is packed red cells
4. Natural antibodies
5. Australian antigen
6. Function of platelet.
7. Normal temperature of platelet agitator
8. What is autoagglutin
9. ----------is a natural antibody
10. What is Roulex formation
11. TTI is .....
12. DIC is.....
13. ---------- weak RH
14. Temperature of water bath is .....
15. Temperature of blood bank refrigerator.....
16. Temperature of platelet agitator.....
17. Temperature of plasma deep freezer.....
18. Rh system discoverd by .....
19. Lectins are from .....
20. Blood donation can made in every ..... months
21. SAGM is .....
22. Anticoagulant used in blood bag.....
23. SDP is .....
24. FFP is----------
25. Syphilis is caused by .....
26. Malaria is caused by .....parasite
27. Function of anticoagulant
28. ..... is a natural anticoagulant
29. .....cell helps in clotting
30. Factor 8 deficiency is .....

31. Tube method is for .....
32. Forward grouping is also known as .....
33. Reverse grouping is also known as .....
34. Minimum age for blood donation is.....
35. ----------%is normal HB.
36. Agglutination
37. Serum hepatitis is caused by .....
38. Separation of blood components is called .....
39. Normal life of red cells in body is ..... days
40. Normal PT is ..... sec
41. Normal APTT is ..... sec
42. Rh antibody is ..... in nature
43. Two types of HDN are ..... and .....
44. Platelet are stored in .....
45. Components should be prepared within ..... hrs of collection
46. VDRL is .....
47. Normal bleeding time is.....
48. Normal clotting time is .....
49. Normal platelet count
50. Thrombocytosis

II. Answer any EIGHT. Each question carries two marks.

1. Define the term Immunohematology?
2. How are blood groups classified?
3. Copper sulphate screening of haemoglobin
4. Different methods for blood grouping.
5. What are Autoagglutinis?
6. Agglutinogen and Agglutinins.?
7. Auto control
8. Antiseras
9. What are lectins
10. What is blood grouping discrepancies
11. What is Autologous blood donation?
12. What is hem agglutination.?
13. Coombs test?

14. Cell grouping and serum grouping
15. What is red cell antigen?
16. ABO subgroups?
17. Name different types of anaemia.?
18. A and B cell preparation
19. Compatibility testing
20. Guidelines for using blood products
21. Name different blood products.
22. Storage of blood
23. Screening of donors
24. Heath checkups before donation
25. What is haemagglutination?
26. Adverse donor reactions?
27. Infectious agents in blood?
28. Blood bag labelling?
29. Immune antibodies
30. Natural antibodies
31. Antigen antibody reaction
32. Cold antibodies
33. Warm antibodies
34. Other blood groups
35. ABO blood group system
36. Rh blood group systems
37. IgG and IgM immunoglobulin's
38. Rhogam
39. Coombs reagent
40. Karl Landsteiner

III. Answer any SIX. Each question carries four marks.

1. Bacterial contaminated blood
2. DIC
3. Coagulation factors
4. Extrinsic and intrinsic pathway.
5. What are clinical aspects of HIV
6. What is thrombocytopenia
7. Detail on transfusion reaction?

8. Write notes on ICT
9. What notes on DCT
10. Different types of blood donors
11. Short notes on blood bank records.
12. Donor screening test
13. Blood bank stock sheet
14. Blood bank temperature sheets
15. Blood bank temperature charts?
16. Master register in blood bank
17. What is blood donor card
18. How is Blood bag transported
19. Short notes on Coombs test?
20. How are blood grouping done
21. Malaria
22. HIV
23. syphilis
24. hepatitis
25. Tests for coagulation studies
26. What are different methods to detect clotting time
27. How are blood transfusion transmitted diseases diagnosed in laboratory
28. Haemophilia
29. Thalassemia
30. Blood components.
31. Quality control in blood bank
32. Record maintained in blood bank
33. Blood donor questionnaire
34. Procedures during phlebotomy
35. Antiseptics and disinfectants
36. Donor reactions
37. Components and their storage temperatures
38. Blood component register
39. Blood grouping register
40. Cross match register.

IV. Answer any TWO .Each question carries 15 marks.

1. Essay on ABO Blood Group System?
2. Write an essay on preparation of blood components?
3. Essay on blood component storage devices.
4. Essay screening tests in blood bank
5. Essay on bleeding disorders
6. Essay on haemostasis
7. Essay on transfusion transmitted diseases.
8. Write an essay on follow up for transfusion reactions.
9. Essay on different tests in haemostasis.
10. Essay on blood banking techniques
11. Essay on Cross matching techniques.
12. Essay on Coombs test
13. Essay on quality control in blood bank
14. Essay on record maintance in blood bank
15. Essay on QC of blood products.

MODEL QUESTION PAPER

BLOOD BANK PROCEDURES, COAGULATION STUDIES &TRANSFUSION TECHNOLOGY.

CODE: SDC3BT10

Time: 3 Hrs Max. Marks: 80

I. Answer the following. Each question carries 1 mark.

1. Normal temperature of platelet agitator is _____
2. Function of platelet.
3. Temperature of blood bank refrigerator_____
4. Anticoagulant used in blood bag_____
5. SDP is _____.
6. Malaria is caused by _____ parasite
7. Normal platelet count
8. Serum hepatitis is caused by _____
9. Tube method is for _____
10. Forward grouping is also known as _____ (10×1=10)

II. Answer any EIGHT. Each question carries two marks.

11. Antiseras
12. What are lectins
13. Name different types of anaemia.?
14. Adverse donor reactions?
15. Infectious agents in blood?
16. ABO blood group system
17. Karl Landsteiner
18. IgG and IgM immunoglobulins
19. Blood bag labelling?
20. Coombs test?
21. How are blood groups classified?
22. Agglutinogen and Agglutinins.? (8×2=16)

III. Answer any SIX. Each question carries four marks

23. Short notes on blood bank records.
24. Malaria
25. Blood grouping register
26. How are blood transfusion transmitted diseases diagnosed in laboratory?
27. Coagulation factors
28. Extrinsic and intrinsic pathway.
29. Donor screening test
30. Record maintained in blood bank
31. HIV

(6×4=24)

IV. Answer any two .Each question carries 15 marks.

32. Write an essay on preparation of blood components?
33. Essay on record maintenance in blood bank
34. Essay on ABO Blood Group System?
35. Essay on transfusion transmitted diseases. (2×15=30)

4th Semester Papers

Course No	Name of the Paper	Code	Remarks
4.1	Reading on Society	GEC4EG10	Approved by BOS of English UG
4.2	Community Health & Hygiene	GEC4CH11	
4.3	Immunology & Serology	GEC4IS12	
4.4	Clinical Biochemistry & Automation	SDC4CB13	
4.5	Histotechnology	SDC4HT14	

COMMUNITY HEALTH & HYGIENE

CODE: GEC4CH11

I. Answer the following. Each question carries 1 mark.

1. Define the term ‘hygiene’.
2. The disease among persons who work in the poultry industry and information technology is _____
3. What is meant by home hygiene
4. Define the term ‘health’.
5. What is meant by incubation period?
6. What is biocide?
7. Define the term ‘illness’.
8. Write an example for obsessive compulsive disorder.
9. Mention different types of flossing?
10. Define the term ‘occupational health’
11. Expand WHO
12. Define the term ‘disease’.
13. What is culinary hygiene?
14. Define hand hygiene.
15. Name any two occupational lung diseases.
16. Write an example for disease caused by virus.
17. What is vasectomy?
18. Expand ART
19. What are chemical disinfectants?
20. _____ is the causative organism of malaria
21. What is antibacterial product?
22. What is meant by the term ‘germs’?
23. Expand UNICEF
24. Name the two hosts of malarial parasite
25. Name two large NGO’s active in refugee and disaster relief.
26. What should we chose in situations where hand washing with soap is not an option?
27. According to Sigmund Freud, define mental health
28. _____ is the vector that transmits dengue fever.

29. What is oral hygiene?
30. Expand NVBDCP.
31. _____ test is used to detect tuberculosis.
32. Expand AIDS
33. Expand HIV
34. World health day is observed on _____
35. World mental health day is observed on _____
36. Give an example for air borne disease.
37. World AIDS day is observed on_____
38. World TB day is observed on
39. Differentiate between hygiene and cleanliness.
40. What is a sanitizer?
41. Expand DOTS
42. What is mean by geriatrics?
43. What is osteoporosis?
44. _____ causes tuberculosis.
45. Expand RNTCP.
46. What is spacing children?
47. Expand STD
48. Headquarters of WHO is located in_____
49. World contraception day_____
50. _____ causes typhoid.

II. Answer any EIGHT. Each question carries two marks.

1. Write the methods of respiratory hygiene.
2. What is meant by communicable diseases? Write few examples.
3. Which are the hygiene practices that prevent food poisoning?
4. Write a short note on social security.
5. What are the modes by which communicable diseases are spread?
6. Write a note on laundry hygiene.
7. Write a note on WHO
8. Which are the different kinds of vectors that spread diseases?
9. Write notes on the objectives of national health tuberculosis programme
10. What is the role of a psychotherapist?

11. Write a short note on tubal ligation .
12. What is the role of a psychiatric counsellor
13. What is meant by mental retardation?
14. Briefly describe the methods to prevent diseases.
15. Briefly explain WFP
16. Write a note on the voice disorders among occupational groups.
17. Briefly describe chemical disinfectants.
18. What is hygiene hypothesis?
19. Write down the modern methods of family planning.
20. Which are the main organisations providing long term health care?
21. What are the main hazardous chemicals seen in work places?
22. Which are the tools used to clean between the teeth?
23. What is tooth decay?
24. What are the health problems faced by garment workers?
25. Write a note on occupational skin diseases.
26. Briefly describe dental sealants.
27. Write notes on National Malaria Eradication Programme.
28. Name any four compensation acts.
29. Write notes on National tuberculosis control Programme.
30. Write down any four common signs of school problems.
31. What is calculus?
32. Mention the systemic diseases which are affected due to the absence of oral hygiene?
33. Write a short note on Geriatrics.
34. What are the measures used to prevent the spread of communicable diseases.
35. Explain about the traditional contraceptive methods
36. What are the health problems in infants?
37. Write a note on typhoid .
38. Write a note on biological hazards in work places.
39. What are the symptoms of Tuberculosis.?
40. How Copper T prevents fertilisation?

III. Answer any SIX. Each question carries four marks.

1. Write a note on home hygiene.
2. Describe the methods of treatment of drinking water.

3. Explain different types of occupational hazards.
4. Suggest some measures to keep bathroom hygienic.
5. Explain the practices of personal hygiene.
6. Briefly explain the types of occupational diseases.
7. What is plaque?
8. Write a note on harmful foods which affect oral hygiene
9. Briefly explain about " the employees compensation (amendment) act , 2017"
10. What are the health problems during pregnancy?
11. Explain "The maternity benefit (amendment) act, 2017"
12. Write a note on the employees' provident fund and miscellaneous provisions (amendment) act 1996.
13. Briefly explain UNICEF.
14. Briefly explain USAID
15. Explain about the activity of International Red Cross and Red Crescent movement.
16. Write a note on NRHM.
17. What are the main objectives of occupational health programme?
18. Briefly explain the life cycle of Plasmodium.
19. Write a note on Rabies.
20. Briefly explain the causes, symptoms and treatment for dengue fever.
21. Classify communicable diseases on the basis of their mode of transmission.
22. Describe the role of psychotherapist in mental health problems
23. Explain the role of socio-economic and cultural environment in health and diseases.
24. What are the advantages of National family Planning methods?
25. What are the disadvantages of National family Planning methods?
26. What are the objectives of national AIDS control programme
27. Briefly explain contraception.
28. Explain about the modern contraceptive methods.
29. Differentiate between the role of psychologist and psychiatrist
30. What are the role of social workers in mental health problems

IV. Answer any TWO .Each question carries 15 marks.

1. What are the different aspects of hygiene?
2. Explain about compensational acts.
3. Explain the concept of health and diseases with reference to pre-pathogenic and pathogenic phases.
4. Write an essay on health problems in vulnerable groups?
5. Explain the activities of international health agencies.
6. Write an essay on air borne diseases.
7. Explain family planning and write down the various methods with benefits and drawbacks.
8. Write an essay on causes, symptoms and treatment of cholera, malaria , & Typhoid.
9. Write an example on mental health and role of therapists in mental health problems.
10. Write an essay on different National Health programmes in India

MODEL QUESTION PAPER

COMMUNITY HEALTH & HYGIENE

CODE: GEC4CH11

Time: 3 Hours Max. Marks: 80

I. Answer the following. Each question carries 1 mark.

1. What is biocide?
2. Write an example for obsessive compulsive disorder.
3. Name any two occupational lung diseases.
4. What is vasectomy?
5. Expand ART
6. _____ is the causative organism of malaria
7. Expand NVBDCP.
8. World mental health day is observed on _____
9. Give an example for air borne disease.
10. What is meant by the term 'germs'? (10×1=10)

II. Answer any EIGHT. Each question carries two marks.

11. Write the methods of respiratory hygiene.
12. What is meant by communicable diseases? Write few examples.
13. Which are the hygiene practices that prevent food poisoning?
14. Write notes on the objectives of national health tuberculosis programme
15. Write a short note on tubal ligation.
16. What is hygiene hypothesis?
17. Write down the modern methods of family planning.
18. Which are the main organisations providing long term health care?
19. Briefly describe dental sealants.
20. Write notes on National Malaria Eradication Programme.
21. What is calculus?
22. What are the symptoms of Tuberculosis? (8×2=16)

III. Answer any SIX. Each question carries four marks.

23. Describe the methods of treatment of drinking water.
24. Briefly explain about " the employees compensation (amendment) act , 2017"
25. What are the main objectives of occupational health programme?

26. Briefly explain the life cycle of Plasmodium.
27. Write a note on Rabies.
28. Classify communicable diseases on the basis of their mode of transmission.
29. Explain the role of socio-economic and cultural environment in health and diseases.
30. Briefly explain contraception.
31. Differentiate between the role of psychologist and psychiatrist (6×4=24)

IV. Answer any TWO .Each question carries 15 marks.

32. Write an essay on different National Health programmes in India
33. Write an essay on air borne diseases.
34. Explain family planning and write down the various methods with benefits and drawbacks.
35. Write an essay on causes, symptoms and treatment of Cholera, Malaria, & Typhoid.

(15×2=30)

IMMUNOLOGY AND SEROLOGY

CODE: GEC4IS12

V. Answer the following. Each question carries 1 mark.

1. Name the secondary lymphoid organs.
2. A living microbe with reduced virulence that is used for vaccination is considered:…….
3. B cells that produce and release large amounts of antibody are called:……
4. An antibody molecule contain …….. and ……..chains.
5. Name different types of light chains.
6. A toxin with reduced toxicity and retained antigenicity is called……
7. In agglutination reactions, the antigen is a……
8. in precipitation reactions, the antigen is a……
9. The ability of the immune system to recognize self antigens versus nonself antigen is an example of:……
10. B-cell maturation occurs in……..
11. T-cells maturation occurs in ……
12. Name two auto immune diseases.
13. Light chains and heavy chains are joined by…….
14. An antibody molecule has …… F'ab region and …….Fc region
15. The ability of antigen to stimulate antibody production is called……
16. The antigen binding site is situated in ……..region of antibody.
17. Define antigen
18. Skin is an example of ……immunity.
19. Zone of antigen excess in known as……
20. Zone of Antibody excess is known as ……
21. Which immunoglobulin class is found in the highest concentration in normal human serum?
22. The immunity developed by natural processes like infection is called……
23. The immunity developed by using vaccines is called……
24. The immunoglobulin class which can cross placenta is …….
25. Name the auto immune disease which affects the muscle function.
26. Grave's disease is an auto immune disease which affects the functioning of …….organ in our body.

27. Antibodies are produced in …….immune response.
28. ……is the first immunoglobulin produced during infection.
29. ……..immunoglobulin is present in mucosal surface.
30. ……immunoglobulin responsible for allergic response.
31. Which are the different types of light chains seen in immunoglobulin?
32. Antigen binds to the ……region of the immunoglobulin.
33. Ag-Ab reaction occurs in vitro in knows as …….
34. Name the different zones of a precipitation curve?
35. Write an example of a precipitation reaction in gel.
36. Name a fluorescent dye used for immuno fluorescent reactions.
37. Expand CRP.
38. Expand SLE.
39. What are haptens?
40. Expand MHC.
41. Name a primary lymphoid organ.
42. Cell mediated immunity is mainly due to
43. Humoral immunity is mainly due to
44. Antibodies are produced by…….. cells.
45. Largest immunoglobulin
46. Expand RIA.
47. Immunoglobulin present in breast milk is…..
48. Immunoglobulin with pentavalent structure
49. An example for RNA virus.
50. Define antigenecity.

II. Answer any EIGHT. Each question carries two marks.

1. Name four bacterial vaccines.
2. Mention two live attenuated vaccines.
3. Name the different types of immunoglobulins.
4. Name different Agglutination reactions.
5. Define Agglutination. Give two examples
6. Define precipitation reaction. Give two examples.
7. Write two examples of type I hypersensitivity reaction.
8. Write two examples of type II hypersensitivity reaction.
9. Example of a killed vaccine.

10. Example of a toxiod used for immunization.

11. Which is the largest immunoglobulin molecule?

12. ……..immunoglobulin is responsible for allergic reactions.

13. Define sensitivity.

14. Define specificity.

15. Define affinity

16. Write two examples of autoimmune disease with the name of antibodies responsible.

17. Describe natural passive immunity with example.

18. Name 4 antibodies associated with auto immune diseases.

19. Differentiate Type I and Type II hypersensitivity.

20. Differentiate innate and adaptive immunity.

21. Differentiate Antigen and immunogen.

22. Differentiate B cell and T cell.

23. Differentiate T_C cells and T_H cells.

24. Differntaite agglutination and precipitation.

25. Differentiate plasma cell and memory cell.

26. Give an example for organ specific and systemic immune disorder.

27. Differentiate agglutinin and agglutinogen.

28. Define opsonization.

29. Two application of flow cytometry.

30. What is complement fixation?

31. Monoclonal antibody.

32. Bursa fabricius

33. Cytokines

34. Differentiate epitope and paratope

35. Natural killer cells

36. Application of Monoclonal antibodies

37 Attenuated vaccine with example.

38. Cross reactivity.

39. Hybridoma technology,

40. What is CRP?

III. Answer any Six. Each question carries 4 marks.

1. Classify immunity and describe active immunity with examples.
2. Classify immunity and describe Passive immunity with examples.
3. What is innate immunity and discuss its mechanism.
4. Write four important properties of antigen.
5. Definition and examples of heterophile antigen.
6. What are the main attributes that make a substance a good antigen?
7. Describe the structure of IgG with diagram.
8. Draw a neatly labelled diagram of IgA molecule
9. What is ELISA? Describe the principle. Name different types of ELISA.
10. Write about the Central lymphoid organs? Describe their functions.
11. What is Immunological tolerance? Describe with two examples.
12. Define Hypersensitivity. Classify Hypersensitivity.
13. What are carriers? Enumerate various types of carriers with examples.
14. Describe SRID.
15. Describe immuno electrophoresis with example.
16. Describe the difference between active and passive immunity.
17. What are the different mechanisms of auto immunity? Describe in detail about sequestered antigen theory with example.
18. Classify lymphoid organs. Write functions of each one of them.
19. Enumerate different classes of Lymphocytes.
20. Activation of B Cell.
21. Activation of T cell
22. Auto immune disorders.
23. Western blotting and its application.
24. Explain the role of skin as a Physical barrier.
25. Cells of immune system.
26. Briefly explain primary lymphoid organs.
27. Explain secondary lymphoid organs.
28. Explain the serological test for syphilis
29. How can we diagnose Streptococcal infection?
30. Production and application of Monoclonal antibodies.

IV. Answer any Two. Each question carries 15 marks.

1. Define and classify immunity. Explain the different types of immunity with examples.
2. Enumerate antigen antibody reactions. Describe the principle, methodology and clinical applications of agglutination reactions with suitable examples.
3. Define Hypersensitivity. Classify with examples. Explain in detail Delayed Type Hypersensitivity.
4. What is ELISA? What is its principle? Describe various types of ELISA in detail?
5. Define Antibody. List the different classes of antibodies. Discuss in detail the structure and function of Immunoglobulin M.
6. Define Immunity. Classify Immunity and give examples. Discuss in detail Active immunity.
7. What is and antigen? Write in detail about properties of an antigen?
8. Write an essay of Cells of immune system and their functions.
9. Write an essay of Organs of Immune system.
10. Briefly explain the following immune techniques and their application a) Immuno electrophoresis b)Flow cytometry c)Immuno fluorescence

---

MODEL QUESTION PAPER

IMMUNOLOGY & SEROLOGY

CODE: GEC4IS12

Time: 3hrs Max. Marks: 80

I. Answer the following. Each question carries 1 mark

1.Name the secondary lymphoid organs.

2. A living microbe with reduced virulence that is used for vaccination is considered:…….

3. B cells that produce and release large amounts of antibody are called:……

4. An antibody molecule contain …….. and ……..chains.

5. Name different types of light chains.

6. T-cells maturation occurs in ……

7. Name two auto immune diseases.

8. Light chains and heavy chains are joined by…….

9. The ability of antigen to stimulate antibody production is called……

10. The antigen binding site is situated in ……..region of antibody (10×1=10)

II. Answer any EIGHT. Each question carries 2 marks

11. Mention two live attenuated vaccines.

12. Name the different types of immunoglobulins.

13. Name different Agglutination reactions.

14. Define Agglutination. Give two examples

15. Define precipitation reaction. Give two examples.

16. Example of a toxiod used for immunization.

17. Which is the largest immunoglobulin molecule?

18. Define specificity.

19. Define affinity

20. Write two examples of autoimmune disease with the name of antibodies responsible.

21. Describe natural passive immunity with example.

22. Name 4 antibodies associated with auto immune diseases. (8×2=16)

III. Answer any SIX. Each question carries 4 marks.

23. What is innate immunity and discuss its mechanism.

24. Write four important properties of antigen.

25. Definition and examples of heterophile antigen.

26. What are the main attributes that make a substance a good antigen?

27. Describe the structure of IgG with diagram.
28. Draw a neatly labelled diagram of IgA molecule
29. What is ELISA? Describe the principle. Name different types of ELISA.
30. Write about the Central lymphoid organs? Describe their functions.
31. Describe immuno electrophoresis with example. (6×4=24)

IV. Answer any TWO. Each question carries 15marks.

32. Define Antibody. List the different classes of antibodies. Discuss in detail the structure and function of Immunoglobulin M.
33. Define Immunity. Classify Immunity and give examples. Discuss in detail Active immunity.
34. Enumerate antigen antibody reactions. Describe the principle, methodology and clinical applications of precipitation reactions with suitable examples.
35. Define Hypersensitivity. Classify with examples. Explain in detail Delayed Type Hypersensitivity.

(15×2=30)

CLINICAL BIOCHEMISTRY AND AUTOMATION

CODE: SDC4CB13

Time: 3 Hours Max. Marks: 80

I. Answer the following. Each question carries 1marks.

1. The waste products that are excreted by kidney_____
2. Abnormal constituentes of urine are _____
3. Example for urine preservatives_____
4. The types of casts found in urine_____
5. Proteinuia means_____
6. Ketonaemia means_____
7. The normal special gravity of urine _____
8. Principle of colorimeter_____
9. Osmotic pressure_____
10. What do you mean by PH of a solution?
11. The normal pH of blood_____
12. Normal fasting blood glucose level_____
13. Coenzyme means_____
14. Disorders of carbohydrate metabolism_____
15. Enzyme is a_____
16. Prothrombin activity is measured by the determination of_____
17. Hormones secreted by Thyroide are _____
18. What is increase in urine volume called?
19. What is decrease in urine volume called?
20. Absence of urine is called……..
21. The mount of light absorbed by as coloured solution is directly proportional to the _____in the solution.
22. _____is used to select the light of a particular wave length in a colourimeter.
23. _____ is used to hold the sample in the colorimeter.
24. _____is a known concentration of solution used in colorimetric procedure.
25. Colour produced by the reagent is ruled out by using _____
26. Normal fasting blood sugar level is _____mg/dl

27. Renal threshold for glucose is _____mg/dl
28. What is known as ‘Bad cholesterol’?
29. What is known as good cholesterol?
30. Increase in blood glucose level is known as _____
31. Decrease in blood glucose level is known as _____
32. Normal value of serum total cholesterol is _____ md/dl
33. Expand SGPT AND SGOT.
34. Name the method used for the Bilirubin estimation in blood.
35. What is PCR?
36. An example of non-reducing sugar is
37. Normal serum calcium is_____
38. Two examples of ketone bodies in blood
39. Normal value of SCOT i_____
40. Glucose level in the blood is regulated by_____
41. Expand ELISA
42. Expand GFR
43. What is RIA?
44. Name the enzyme used in PCR.
45. Example for a trace element.
46. Example for a heavy metal.
47. Name a vitamin deficiency disorder.
48. Example for a fat soluble vitamin.
49. Example for a water soluble vitamin.
50. Give an application of PCR.

II. Answer any Eight. Each question carries 2marks.

1. State Beer’s and Lambert’s Law
2. Enumerate the parameters included in lipid profile testing.
3. Enumerate the parameters included in kidney profile testing.
4. Name the method used for bilirubin estimation. Describe the principle.
5. Define hyper glycemia and hypo glycemia.
6. Name different types of jaundices.
7. Define Alkaptonuria.
8. Define phenylketonuria.
9. Name the disorders of carbohydrate metabolism?

10. Name the disorders of protein metabolism?
11. Describe the principle of Glucose oxidase method.
12. Describe the principle of urea estimation.
13. Describe the principle of uric acid estimation by uricase method.
14. Describe the principle of enzymatic estimation of total cholesterol.
15. Write the normal values of Total cholesterol, Triglycerides, HDL, LDL and VLDL.
16. What do you mean by GFR?
17. What do you mean by renal clearance?
18. Cerebro spinal fluid.
19. Name the parts of a Photometer.
20. Laws of Photometry.
21. Application of Photometry.
22. What is Titrimetry?
23. Write short notes on Creatine kinases.
24. Hypertension
25. Drug monitoring.
26. Angina.
27. Give two examples for fat and water soluble vitamins.
28. PCR.
29. Fully automated analyser.
30. Flame photometry.
31. Spectrophotmetry.
32. Flurometry.
33. Transaminases.
34. LDH.
35. Drug screening.
36. Briefly explain RIA.
37. Give sources of Vit.A and Vit. D
38. Enzyme produced by heart.
39. Define dehydration.
40. Any two application of ELISA.

III. Answer any Six. Each question carries 4 marks.

1. What is colourimetry? Describe Beer's - Lanbert's Law. Explain the formula for the calculation of concentration with example.
2. Describe enzymatic method of cholesterol estimation in detail.
3. Describe the principle, procedure and normal values of blood urea estimation.
4. Describe the principle, procedure and normal values of blood uric acid estimation.
5. Describe the principle, procedure and normal values of blood creatinine estimation.
6. Enumerate the fat soluble and water soluble vitamins.
7. What are the different types of jaundice? Describe in detail about Obstructive jaundice.
8. Differentiate between Gluconeogenesis and Glycogenesis. How is blood Glucose regulated in the body ?
9. Define a) Glycolysis b) Urea cycle
10. Describe Hepatic Jaundice.
11. Describe Creatinine clearance test.
12. Functions of vitamin A
13. Describe the principle and normal values of total protein estimation by biuret method.
14. Procedure of the 24 hour's urine collection?
15. Which are the different types of biochemical analyzers used in the lab?
16. What is flow cytometer? What is it used for?
17. Explain the enzymes?

    1. Serum amylase 2. SGOT 3. SGPT 4. LDH 5. Creatine kinase
18. Briefly explain Myocardial infarction.
19. Briefly describe different vitamin deficiency disorders.
20. Principle and applications of PCR.
21. What are heavy metals? Give examples.
22. Merits and demerits of different auto analysers.
23. Differentiate micro and macro elements .
24. Differentiate water and mineral metabolism.
25. GFR and Renal clearance.
26. Explain routine biochemical test for glucose and protein.
27. Routine biochemical test for Creatinine and Urea
28. Routine biochemical test for Tryglyceride and Cholesterol.
29. Pancreatic function test.

30. Processing of blood for biochemical analysis.

IV. Answer any Two. Each question carries 15marks.

1. What is colourimetry? Describe in detail the principle, parts and calculation with example.
2. Write Briefly the different method of blood glucose estimation. Describe principle, procedure, calculation and normal values of glucose oxidase method in detail.
3. What are the parameters included in liver function test? Describe in details about the bilirubin estimation.
4. What are the parameters included in kidney function test. Describe in detail about blood urea estimation.
5. What are the parameters included in lipid profile test? Describe in details about the enzymatic method of cholesterol estimation.
6. Write an essay on different methods of Cholesterol estimation.Discuss the advantages and disadvantages of each method.
7. Write an essay on Vitamins with deficiency disorders.
8. Write an essay on different types of discrete analysers.
9. Write an essay on principle and applications of RIA and ELISA .
10. Write an essay on different types of Photometric techniques.

MODEL QUESTION PAPER

CLINICAL BIOCHEMISTRY & AUTOMATION

CODE: SDC4CB13

Time: 3hrs Max. Marks: 80

I. Answer the following. Each question carries 1 mark

1. Ketonaemia means_____
2. The normal special gravity of urine _____
3. Principle of colorimeter_____
4. Osmotic pressure_____
5. What do you mean by PH of a solution?
6. The normal pH of blood_____
7. Normal fasting blood glucose level_____
8. Coenzyme means_____
9. Disorders of carbohydrate metabolism_____
10. Enzyme is a_____ (10×1=10)

II. Answer any EIGHT. Each question carries 2 marks

11. Enumerate the parameters included in lipid profile testing.
12. Enumerate the parameters included in kidney profile testing.
13. Name the method used for bilirubin estimation. Describe the principle.
14. Define hyper glycemia and hypo glycemia.
15. Name different types of jaundices.
16. Define Alkaptonuria.
17. Define phenylketonuria.
18. Name the disorders of carbohydrate metabolism?
19. Name the disorders of protein metabolism?
20. Describe the principle of Glucose oxidase method.
21. Describe the principle of urea estimation.
22. Describe the principle of uric acid estimation by uricase method. (8×2=16)

III. Answer any SIX. Each question carries 4 marks.

23. What is colourimetry? Describe Beer's - Lanbert's Law. Explain the formula for the calculation of concentration with example.
24. Describe enzymatic method of cholesterol estimation in detail.

25. Describe the principle, procedure and normal values of blood urea estimation.
26. Describe the principle, procedure and normal values of blood uric acid estimation.
27. Describe the principle, procedure and normal values of blood creatinine estimation.
28. Enumerate the fat soluble and water soluble vitamins.
29. Describe Creatinine clearance test.
30. Functions of vitamin A
31. Describe the principle and normal values of total protein estimation by biuret method.

(6×4=24)

IV. Answer any TWO. Each question carries 15marks.

32. Write Briefly the different method of blood glucose estimation. Describe principle, procedure, calculation and normal values of glucose oxidase method in detail.
33. What are the parameters included in liver function test? Describe in details about the bilirubin estimation.
34. What are the parameters included in kidney function test. Describe in detail about blood urea estimation.
35. What are the parameters included in lipid profile test? Describe in details about the enzymatic method of cholesterol estimation. (15×2=30)

HISTOTECHNOLOGY

CODE: SDC4HT14

I. Answer the following. Each question carries 1 mark.

1. What is histology?
2. What is histopathology?
3. Mention the general organization of histopathology lab.
4. What is squash preparation?
5. What is teased preparation?
6. Mention the aim of fixation
7. What are the advantages and disadvantages of formalin?
8. Name any two simple fixatives.
9. What is secondary fixation?
10. What is dehydration?
11. Mention the qualities of fixatives.
12. What is the aim of clearing?
13. Name any four clearing agents.
14. Mention the aim of calcification.
15. What is fixation?
16. Name any four decalcifying agents.
17. What are the qualities of ideal decalcifying agent?
18. Give two examples of decalcifying agents.
19. What is end point determination?
20. Mention different types of embedding media.
21. Give the advantages of embedding.
22. What is vacuum embedding?
23. What is ester wax embedding?

24What is gelatin embedding?

25What is celloidin embedding?

26 What is double embedding?

27 What is resin embedding?

28. What is mould?

29. Mention the principle of rotary microtome.

30. Mention the principle of rocking microtome.

31 Mention the principle of sledge microtome.

32 Mention the principle of sliding microtome.

33 Mention the principle of freezing microtome

34. Name any two different types of microtome knives.

35. What is knife angle?

36. What is honing?

37. What is water bath method of fixation?

38What is hot stage method of fixation?

39What is warmed slide method of fixation?

40. Mention the basic staining techniques

41. What are the uses of albumenized slides?

42What are the uses of starched slides?

43. What is the principle of dye chemistry?

44. What are mordents?

45What are accentuators?

46.What are acceleratos?

47. Mention the principle of haematoxylin staining.

48. What is the staining principle of myelin?

49. How collagen is staining?

50. What is cryostat?

II. Answer any EIGHT. Each question carries two marks.

1. What is biological staining?
2. How trimming of blocks occurs?
3. Mention the technique of casting.
4. Distinguish between rocking microtome and rotary microtome.
5. Distinguish between rocking microtome and sledge microtome.

6,. Distinguish between sliding microtome and rotary microtome.

7. Distinguish between sliding microtome and sledge microtome.
8. Distinguish between freezing microtome and rotary microtome.
9. What is stropping techniques?
10. Mention the technique of section cutting.
11. Distinguish between albumenized and starched slides.
12. What are the theories of staining?
13. What is basic staining techniques?
14. Give the principle of dye chemistry.
15. Mention the principle of mordents.
16. Briefly mention the principle of accentuators
17. Mention the principle of accelerators
18. Give the composition and preparation of haematoxylin

19 .Give the composition and preparation of eosin

20. What is artifact?
21. How bile pigments are stained?

22 .How melanin pigments are stained?

23. What are the disadvantages of all the different haematoxylin?
24. How minerals are staining?
25. What is celloidin embedding?

26 What is celloidin embedding?

27 What is double embedding?

28 What is ester wax embedding?

29 What is water embedding?

30. What is resin embedding?

31. What are the qualities of ideal decalcifying agents?

32. What is end point determination?

33. Mention the aim of dehydration.

34. Mention the advantages of Zenker's fluid.

35 Mention the disadvantages of Bouins's fluid.

36 Mention the advantages of Carnoy's fixatives.

37 Mention the advantages of Hellys fluid.

38 Mention the advantages of Flemming's fluid.

39. Mention the disadvantages of formalin.

40. How is the impregnation occur?

41. Mention the name of few dehydrating agents

42. Explain principle and operation of cryostat.

43. What is PAP staining?

44. What are the parts of a microtome?

45. Name any four haematoxylin stains.

46. How haemosiderin act?

47. What is the action of lipofuscins?

48. What is the aim of clearing in tissue processing?

49. Name any four clearing agents.

50.Name different types of strops.

III. Answer any SIX. Each question carries four marks.

1. Write brief account on automatic tissue processors.

2. Explain the staining methods of connective tissues.

3. Write a brief account on artifact.

4. Explain the staining of minerals.

5. Explain the composition, preparation and uses of haematoxylin.

6. What are the methods of fixation of slides?

7. Explain the fixation and use of albumenized slides.

8. Explain the cutting of celloidin embedded section.

9. What are the steps of cutting of paraffin wax section?

10. Explain the techniques of casting.

11. Explain the different types of microtome.

12. Explain the operations and specification of freezing microtome.

13. What are the different types of microtome knives?

14. Explain the parts care and operation of automatic knives sharpening machine.

15. Mention different types of embedding media.

16. Explain the methods of embedding.

17. Explain the principle and advantages of vacuum embedding.

18. Explain different types of decalcifying agents.

19. Write an account on techniques of dehydration.

20. Explain the fixation and processing of bones.

21.Explain the fixation and processing of cartilage.

22.Explain the fixation and processing of CNS.

23. Explain the qualities of fixatives.

24.Mention the advantages and disadvantage of formalin fixatives.

25. Write an account of squash preparation.

26. Explain the role of histopathology in diagnosis of disease.

27. Mention the steps of reception of specimen.

28. What are the basic requirement of histopathology laboratory?

29. Write a brief account on histopathological techniques.

30.Write an account on frozen sections.

IV. Answer any TWO. Each question carries 15 marks.

1. Write an essay on cryostat, its principle and their uses.
2. Explain the processing of tissues.
3. Write an essay on decalcification.
4. Explain different types of embedding media
5. Explain the different fixatives in histotechnology
6. Write an account on casting.
7. What are the different staining methods of carbohydrates?
8. Write an account on principle and theory of staining.
9. Explain different types of fixatives,
10. Explain methods of examinations of fresh tissue specimens.

MODEL QUESTION PAPER

HISTOTECHNOLOGY

CODE SDC4HT14

Time: 3 Hrs. Max Marks: 80

I. Answer the following. Each question carries 1 mark.

1. Name any two simple fixatives.
2. What is dehydration?
3. Mention the general organization of histopathology lab.
4. What is squash preparation?
5. Name any four clearing agents.
6. Mention the aim of calcification.
7. Name any four decalcifying agents.
8. Mention different types of embedding media.
9. What is double embedding?.
10. What is honing? (10×1=10)

II. Answer any EIGHT of the following. Each question carries 2 marks

11. What is biological staining?
12. What is stropping techniques?
13. What are the theories of staining?
14. What is basic staining techniques?
15. Give the principle of dye chemistry.
16. Briefly mention the principle of accentuators
17. What is artifact?
18. How bile pigments are stained?
19. What are the disadvantages of all the different haematoxylin?
20. What is ester wax embedding?
21. What are the qualities of ideal decalcifying agents?
22. What is PAP staining? (8×2=16)

III. Answer any SIX of the following. Each question carries 4 marks

23. Explain the staining methods of connective tissues.

24. Explain the staining of minerals.
25. Explain the operations and specification of freezing microtome.
26. Mention different types of embedding media.
27. Explain different types of decalcifying agents.
28. Write an account on techniques of dehydration..
29. Explain the qualities of fixatives.
30. Explain the role of histopathology in diagnosis of disease.
31. Write an account on frozen sections. (6×4=24)

IV. Answer any TWO of the following. Each question carries 15 marks

32. Write an essay on cryostat, its principle and their uses.
33. Write an essay on decalcification.
34. What are the different staining methods of carbohydrates?
35. Explain different types of fixatives. (15×2=30)

5th Semester Papers

Course No	Name of the Paper	Code	Remarks
5.1	Biomedical Instrumentation & Quality Laboratory Management	GEC5BA13	
5.2	Psychology & Personal Growth	GEC5BE14	Approved By BOS of Psychology UG
5.3	Life Skill Development	GEC5LS15	Approved by BOS of Sociology UG
5.4	Parasitology & Medical Entomology	SDC5PM17	
5.5	Endocrinology & Cancer Biology	SDC5EC18	

BIOMEDICAL INSTRUMENTATION & QUALITY LABORATORY MANAGEMENT

CODE: GEC5BA13

I. Answer the following. Each question carries 1 mark.

1. The study of electrical activity of heart is called
2. The instrument used to measure electrical activity of heart is called
3. The unipolar electrodes have ……electrode
4. The bipolar electrodes have ……electrodes
5. The ECG wave form is also called …….
6. What is called the asynchronous contraction of heart muscles ?
7. The instrument is used for providing electric shock to the heart muscles called ……
8. ……..defibrillator is used when the chest is opened
9. Internal defibrillator shock voltage range…….
10. Internal defibrillator impedance ……..
11. Internal defibrillator current passing to the heart is……
12. The energy range in internal defibrillator is ……..
13. What type of electrode is used in external defibrillator ?
14. The voltage range in external defibrillator
15. The contact impedance in external defibrillator is……..
16. The energy range in external defibrillator is……
17. The current passing through the external defibrillator is……..
18. What is natural pacemaker ?
19. Which are the parts are present in a pacemaker ?
20. Short time pacemaker is also called …….
21. Long time pacemaker is also called …….
22. ……is the study of recording electrical activity along the scalp
23. …… is the machine used for taking the EEG
24. …… is the recorded wave form of EEG
25. Frequency of delta wave form
26. The EEG placement location and names are called ……..
27. What is the human EEG voltage range ?
28. Which are the 3 types of evoked potentials ?
29. The test to see how fast the electrical signals move through the nerve is called____
30. What is called the electrical activity of muscle fibers ?
31. Which types of electrodes are used in EMG ?
32. The EMG signals voltage & frequency ranges are……
33. The current frequency range in ESU
34. The electrode used in cutting procedure
35. The electrode used in coagulation procedure
36. The electrode used in desiccation procedure
37. How many active electrodes used in bipolar surgery
38. The device used for artificial ventilation is called ……..

39. Patient who are unable to breathe on their own is ……..ventilation
40. Patient who are able to breathe but unable to inhale a sufficient amount is used ……. Ventilation
41. The air and O_2 are humidified to give ventilators using ……..
42. Name the device used to give medicines in the form of aerosols
43. What is the principle used in nebulizer ?
44. …….. is used to remove the mucosa & other fluids & waste products from the surgical site.
45. What are the 3 main parts of the suction apparatus ?
46. Which instrument is used to measure the human hearing threshold ?
47. What is the measuring unit used in audiometer ?
48. Measuring frequency range in audiometers are …….
49. …… are used to obtain the air conduction & bone conduction threshold of hearing.
50. …… are used to determine speech reception threshold
51. the intensity range in pure tone audiometer is
52. the determination of percentage of O_2 saturation is called
53. The law applied in oximetry is …….
54. What is the infrared light wave length used in pulsoximeter ?
55. What is the red light wave length used in pulsoximeter ?
56. What is artificial kidney ?
57. In dialysis the waste products are transfused to the dialysate by……
58. What type of membrane used in hollow fiber dialyzer ?
59. The count of hollow fibers used in a dialyzer
60. The approximate length and diameter of a dialyzer is……..
61. The blood and dialysate are flows in …….. Direction
62. The dialysate is equal to ……..
63. The temperature maintained in dialysis is
64. How many time taken for the peritoneal dialysis procedure ?
65. What is the pH of a neutral solution ?
66. What is the pH of the arterial blood ?
67. ……is the human audible sound range
68. Which material is used to produce the ultrasound wave form ?
69. What you mean by A mode ?
70. What you mean by B mode ?
71. What you mean by M mode ?
72. ……. Used to identify the direction & speed of blood flow through the body
73. What is the principle of fiber optic cables ?
74. Endoscope is used to view …… which is not visible to the naked eyes
75. Which material is used in endoscopes ?
76. Write down the laser phenomenon ?
77. Electrodes are used to pick up ……from the surface of the body
78. What are the 2 types of electrodes ?

II. Answer any EIGHT. Each question carries two marks.

1. Define ECG
2. What are the leads used in ECG ?
3. Name the four bipolar leads in ECG
4. Explain 3 augmented waves
5. Define defibrillator
6. Which are the 6 types of defibrillators ?
7. Define pacemaker
8. Define EEG
9. Explain the different wave forms in EEG &its frequency ranges
10. What is international 10 to 20 system ?
11. What are the different phases of EEG recording ?
12. What is evoked potential?
13. What is the use of visual evoked potential ?
14. What is the use of auditory evoked potential ?
15. What is the use of somatosensory evoked potential ?
16. What is nerve conduction velocity ?
17. What you mean by EMG ?
18. Define surgical diathermy
19. Explain cutting in ESU
20. Explain coagulation in ESU
21. What is blending in ESU ?
22. What is fulguration ?
23. What is mean by desiccation in ESU ?
24. What is mean by control mode ventilation ?
25. What is mean by assist mode ventilation ?
26. What is mean by assist control mode ventilation ?
27. What you mean by respiration ?
28. Explain the use of humidifiers in ventilators
29. What is the use of spirometers in ventilator?
30. What is the use of nebulizer ?
31. What is the use of suction apparatus in medicine ?
32. Explain the main parts of suction apparatus
33. What is the use of infusion pump ?
34. Explain the use of audiometers
35. What are the 3 types of audiometers ?
36. Mention the different types of hearing aids
37. Which are the major parts of digital hearing aids?
38. Which are the two types of oximetry ?
39. What is the main two functions of kidney ?
40. What is the working principle of dialysis machine ?
41. which are the two contents present in dialysate ?
42. Mention the essential parts of the dialysis machine .
43. Which are the classifications of dialyzer ?
44. What is blood gas analyzers ?

45. Write the equation of the pH measurement
46. Why we use piezoelectric crystal in ultrasound production ?
47. What are the different modes in the ultrasound machine ?
48. Use of echocardiography
49. What is the use of endoscope ?
50. Write the full form of laser
51. Write down the name of lasers used in medicine
52. Write any two application of laser in medicine
53. Write the specialties of laser light
54. Write down the parameters measured from a multimeter
55. What is the use of electrodes ?
56. Which types of electrodes are used for ECG measurement ?
57. Which types of electrodes are used for EEG measurement ?
58. Which types of electrodes are used for EMG measurement?
59. What is the use of electronic balance ?
60. What is the use of incubator ?
61. What is the use of deep freezer in laboratories ?

III. Answer any SIX. Each question carries four marks.

1. Briefly explain electrocardiography
2. Explain ECG lead configuration
3. Briefly explain ECG machine
4. Briefly explain ECG arrhythmias
5. Explain internal defibrillator
6. Explain external defibrillators
7. Internal pacemaker
8. External pacemaker
9. Describe the different modes of operation of pacemaker
10. Briefly explain EEG machine
11. Explain EEG wave patterns
12. Explain EEG electrode placement
13. Explain 3 types of evoked potentials
14. Briefly explain nerve conduction velocity(NCV)
15. Briefly explain EMG
16. Explain monopolar surgery &bipolar surgery
17. Briefly explain ESU block diagram
18. Briefly explain ventilators
19. Explain humidifiers
20. Explain spirometers
21. Explain nebulizer
22. Briefly explain the suction apparatus with diagram
23. Briefly explain infusion pump
24. What is pure tone audiometers ?
25. Explain speech audiometers

26. Explain bekesy audiometers
27. Briefly explain hearing aids
28. Briefly explain the dialyzer(Hollow Fiber Dialyzer)
29. Briefly explain the haemodialysis machine
30. Briefly explain the peritoneal dialysis.
31. Explain blood pH measurement
32. Explain blood pCO2 measurement
33. Explain blood pO2 measurement
34. Briefly explain ultrasound
35. Echoencephalography
36. Echocardiography
37. Colour doppler
38. Briefly explain endoscope
39. Explain sigmoid scope
40. Briefly explain lasers & its applications
41. Explain multi- para monitors
42. Explain the use of electrodes in medicine
43. Explain metal strain gauge transducer
44. Explain the linear variable differential transformer(LVDT)
45. Briefly explain digital subtraction angiography
46. Explain radioactivity
47. Briefly explain ionization detectors
48. Explain scintillation detectors
49. Explain photo multiplier tube(PMT)
50. Explain pulse height analyzer (PHA)
51. Explain collimator
52. Briefly explain gamma camera or scintillation camera
53. Explain cyclotron
54. Briefly explain computed tomography (CT)
55. Briefly explain magnetic resonance imaging (MRI)
56. Briefly explain Positron Emissin Tomography
57. Briefly explain Single Photon Emission Computer Tomography
58. Explain the external quality control
59. Explain internal quality control with basic steps.
60. Laboratory results sources of errors and their correction methods,Corrective Action – Preventive Actions (CAPA)
61. Explain source of variation in laboratory results
62. Quality control charts, levey – Jennings and cusum charts

IV. Answer any TWO .Each question carries 15 marks.

1. Explain ECG , lead configuration and explain arrhythmias occurred in ECG
2. Explain cardiac defibrillator , internal defibrillators & external defibrillators, types of defibrillators
3. Explain pacemaker , differentiate internal &external pacemaker

4. Explain electroencephalography(EEG) & EEG machine
5. Explain surgical diathermy(ESU) different process, operating modes and block diagram-
6. Explain the ventilators , modes , humidifiers &spirometers
7. Explain dialysis, dialyzer, and haemodialysis machine
8. Explain ultrasound, echoencephalography, echocardiography, and colour doppler
9. Explain fiber optics, endoscope , sigmoid scope and lasers used in medicines
10. Explain radio activity , radiation detectors and digital subtraction angiography
11. Explain CT and MRI scanning technique
12. Explain PET , SPECT, and cyclotron
13. Explain PMT, PHA, collimator
14. Explain multimeter, calorimeter ,and spectrophotometer
15. Explain source of variation in laboratory results, quality control charts, levey – Jennings and Cusum charts
16. Explain the external quality control internal quality control , basic steps , sources of errors and their correction methods, Corrective Action – Preventive Actions (CAPA)

MODEL QUESTION PAPER

BIOMEDICAL INSTRUMENTATION & QUALITY LABORATORY MANAGEMENT

CODE: GEC5BA13

Time: 3 Hours Max. Marks: 80

I. Answer the following. Each question carries 1 mark.

1. What type of electrode is used in external defibrillator
2. Long time pacemaker is also called …….
3. Which types of electrodes are used for NCV
4. The instrument used to measure electrical activity of heart is called
5. What are the 3 main parts of the suction apparatus
6. The law applied in oximetry is …….
7. What is the infrared light wave length used in pulsoximeter
8. What is the pH of the arterial blood
9. ……is the human audible sound range
10. The study of electrical activity of heart is called

(10×1=10)

II. Answer any EIGHT. Each question carries two marks.

11. Name the four bipolar leads in ECG
12. Explain 3 augmented waves
13. Define defibrillator
14. Define surgical diathermy
15. Explain cutting in ESU
16. What is the use of nebulizer
17. What is the use of suction apparatus in medicine
18. Mention the different types of hearing aids.
19. Write down the name of lasers used in medicine
20. What is the use of incubator
21. What is the use of deep freezer in laboratories
22. Which are the classifications of dialyzer (8×2=16)

III. Answer any SIX. Each question carries four marks.

23. Briefly explain EEG machine
24. Colour doppler
25. Briefly explain endoscope
26. Explain radioactivity
27. Briefly explain ionization detectors
28. Briefly describe ventilators

29. Explain humidifiers
30. Briefly explain the suction apparatus with diagram
31. Describe spirometers

(6×4=24)

IV. Answer any two .Each question carries 15 marks.

32. Explain CT and MRI scanning techniques .
33. Explain dialysis, dialyzer, and haemodialysis machine
34. Explain pacemaker , differentiate internal &external pacemaker
35. Write an essay on cardiac defibrillator , internal defibrillators & external defibrillators, types of defibrillators

(15×2=30)

PARASITOLOGY & MEDICAL ENTOMOLOGY

CODE: SDC5PM17

I. Answer the following. Each question carries 1 mark.

Part 1: PARASITOLOGY

1. Sleeping sickness is caused by _____
2. Exclusion Criteria for rK39 test.
3. What is the expansion for VL which is a parasitic disease of the mononuclear phagocyte syste?
4. Malarial cycle was discovered by _____
5. Name the parasite which causes Kala azar.
6. The intermediate host of Fasciola hepatica belongs to the genus ----
7. The common name of Diphyllobothrium latum is ---------
8. Name the intermediate host of echinococcus.
9. Kala azar is diagnosed by identification of parasites in the aspirates of the spleen, bone marrow, lymph nodes, or liver. T or F
10. The disease caused by larvae of echinococcus is ----------
11. The common name for hymenolepis.
12. Name the two stains used for preparing films of splenic/ bone marrow aspirates
13. Definitive host of Schistosoma haematobium.
14. Definitive hosts of Fasciolopsis buski are ------ & -------
15. The common name of Clonorchis sinensis is ----------
16. Intermediate hosts of Clonorchis sinensis are ---- & ----------
17. Progressive leucopenia and severe anemia are not found during a features of L donovani infection. T or F
18. What is digenetic life cycle?
19. Kala azar is transmitted by the female _____
20. Name the cytoplasmic granules present in Trypanosoma.
21. Leishmania donovani causes ----------
22. Expand PKDL
23. The disease caused by Pneumocystis carinii.
24. Binomial name of Iodamoeba.
25. Two phases in the life history of Giardia are

26. Name any two reservoir hosts groups of the kala azar infection.
27. Common name of Necator americanus.
28. Common name of Trichuris trichiura.
29. Common name of Enterobius vermicularis.
30. Expand IHA
31. Name the parasite which causes Chagas's disease.
32. The parasite which cause sleeping sickness is ----------
33. The intermediate host of Trypanosoma brucei is --------
34. The intermediate host of Trypanosoma cruzi is ----------
35. What is oocyte?
36. Name any for preserving fluids.
37. Mention the safety requirement of specimen collection.
38. What is scolex?

Part 2: MEDICAL ENTOMOLOGY

1. Name the vector transmitting river blindness or Onchocerciasis.
2. Malarial parasite is transmitted by …… mosquitoes.
3. What is the common name of *Musca domestica*?
4. Infestation by head louse is known as ……..
5. Flies belong to the Order……..
6. Name the disease transmitted by trombiculid mite.
7. Name two types of vectors.
8. Halteres are structures found in ……..
9. Give an example for contact insecticide.
10. ……. is the human itch mite.
11. Paris green is a ……. poison.
12. Cyclops has …….. pairs of legs.
13. Mosquito pupae have a characteristic …….. shape.
14. Name a fumigant used for insect control.
15. *Cimexlectularis* is the scientific name for ……
16. Name an insecticide extracted from a plant source.
17. Typhoid,diarrhoea and cholera are diseases spread by ……
18. Lateral float is the characteristic feature of …… eggs.
19. ……. Is an example of a non-biting fly.

20. Name the function of siphon tube in mosquito larvae.
21. …….. is the vector of plague.
22. Relapsing fever is transmitted by ……
23. Name a fish species used in biological control of mosquito larvae.
24. What is diethyltoluamide commonly known as?
25. Name the disease caused by sandflies.

II. Answer any EIGHT. Each question carries 2 marks.

Part 1: PARASITOLOGY

1. Write a note on various control measures of Trypanosoma infection.
2. Write a short note on preventive measures can be taken against amoebic dysentery.
3. What do you mean by 'intermediate host '?
4. Mention various symptoms of Kala azar.
5. What are the parasitic adaptations of Ascaris ?
6. List out the parasitic adaptations of Fasciola hepatica.
7. Discuss development of larvae of Diphyllobothrium latum inside fish.
8. What are the suggested treatments given against pathogenicity caused by Hymenolepis.
9. Discuss the mechanism of egg laying & egg expulsion in Schistosoma haematobium.
10. Give a short note on morphology of Fasciolopsis buski.
11. List out the characteristics of eggs laid by Clonorchis sinensis.
12. Write a short note on mode of infection of Entomoeba histolytica.
13. Enumerate the life cycle of Balantidium coli
14. What are the laboratory diagnosis to measure the pathogenisity caused by Giardia lamblia.
15. Mention the symptoms of cystoisosporiasis.
16. List out general features of Cryptosporidium
17. Write an account on life cycle of Isospora belli.
18. Mention various symptoms of Trichinelliasis.
19. Discuss various modes of infection of Enterobiasis.
20. What are the morphological features of Microfilaria bancrofti.
21. How can haematological test be used as a preliminary diagnosis for Kala Azar?
22. Give an account of diagnosis PKDL.

23. Write Short notes on principle of rK39 Rapid Diagnostic Test.
24. What are the test procedure steps for the rK39 Rapid Diagnostic Test.
25. What is the methodology for the collection of parasite eggs?
26. . How the embryos are collected for parasitology?
27. Mention the qualities of preservating fluids

Part 2: MEDICAL ENTOMOLOGY

1. What are the two types of metamorphosis in insects?
2. Mention the medical importance of sand flies.
3. Give two examples of viral diseases vectored by arthropods.
4. Sketch and label the adult rat flea.
5. Mention the public health importance of Cyclops.
6. Differentiate between biological and mechanical transmission of diseases.
7. Mention modes of transmission of disease by human itch mite.
8. Define medical entomology.
9. What are insecticides? Give examples.
10. Differentiate between the larvae of Culex and Anopheles mosquitoes.
11. Define a vector borne disease with example.
12. What are the signs and symptoms of bed bug infestation?
13. Sketch and label the adult head louse.
14. Differentiate between hard ticks and soft ticks.
15. What are the methods used to control black flies?
16. Define insecticide resistance.
17. Distinguish between insects and arachnids.
18. What are the morphological features of trombiculid mites?
19. Sketch and label the adult bed bug.
20. Distinguish between complete and incomplete development in insects.

III. Answer any SIX. Each question carries 4 marks.

Part 1: PARASITOLOGY

1. Describe the polymorphic forms, mode of transmission & pathogenic effects of Trypanosoma
2. Describe the structure of trophozoite stage of plasmodium.
3. Discuss different morphological forms of Leishmania donovani.
4. What is sexual dimorphism? With the help of labelled diagrams differentiate a male ascaris from its female
5. Write a short note on the following, (a) Hexacanth (b) Cycticercus
6. Write an account of differentiating features of Schistosomes.
7. Describe the pathogenicity caused by Fasciolopsis buski, its diagnosis & treatment.
8. Give an account of life cycle & pathogenicity caused by clonorchis sinensis.
9. Discuss the distinguishing characters in different species of malariae.
10. What are the symptoms of Dientamoebiasis.Mention about the diagnosis & its treatment?
11. Write a note on life cycle of Trichomonas & also mention diagnosis & treatment of Trichomoniasis.
12. Discuss the differentiating features of A.duodenale & N.americanus.
13. Explain different phases in the life cycle of Toxoplasma gondii.
14. Write an account on the morphology & life cycle of Trichinella spiralis.
15. What are the different stages in the development of Microfilaria in the mosquito?
16. Why is the diagnosis and treatment of kala azar considered problematic.
17. Explain Napier's aldehyde test.
18. Explain the preparation of a bone marrow film for the diagnosis of Leihmaniasis.
19. Write brief account on sample collection requirements.
20. Give an account on ova and parasite examination in stool

Part 2: Medical Entomology

1. Describe the different methods of transmission of diseases by the house fly.
2. Give an account of the morphology and habits of *Sacroptesscabiei*.
3. Write short notes on the measures adopted for control of *Pediculis capitis*.
4. Give an account of the salient features of Arthropods.

5. Classify insecticides based on mode of action citing examples.
6. Write short notes on the characteristics of Class Insecta.
7. Describe the life cycle of Culex species with a neat labelled diagram.
8. Give an account of the morphology and habits of the human rat flea.
9. Describe the morphology of Cyclops with the aid of a diagram.
10. Give an account of the role of Arthropods in disease transmission.
11. Describe the life cycle of the common bed bug.
12. Give an account of the morphology and life cycle of the trombiculid mite.
13. Describe the external features of ticks and their public health importance.
14. Write short notes on the morphology and life cycle of the sandfly.
15. Describe the anti-larval measures adopted for mosquito control.
16. Describe the transmission and medical importance of the human itch mite.

IV. Answer any TWO. Each question carries 15 marks.

Part 1: PARASITOLOGY

1. Give an account of life history & pathogenicity of the parasite causing amoebic dysentery in man.
2. Give an account of the life history of malarial parasite.
3. Describe the life history of Anchylostoma duodenale & comment upon its pathogenic effects.
4. Give an account of life history of Fasciola hepatica.
5. Write an essay on Paragonimus westermani,give focus on its general features,life cycle,pathogenicity,clinical features,diagnosis,treatment & prophylaxis.
6. .Write an essay on the life cycle of Plasmodium vivax.
7. Write an account on different species of Leishmania which are pathogenic to man.
8. Discuss the life cycle of Strongyloides stercoralis, its pathogenicity,diagnosis,treatment & prophylaxis.
9. Give a detailed account of serological test helpful for the diagnosis of Kala Azar.
10. Write an essay on the most specific test methods for diagnosis of Kala-Azar.
11. Write an essay on guidelines for the collection of parasitology specimen
12. Write an essay on collection and preservation of parasitology specimen

Part 2: MEDICAL ENTOMOLOGY

1. Give an account of the classification of Arthropods of public health importance
2. Write an essay on the role of arthropods in the transmission of diseases.
3. Describe the morphology, life cycle, medical importance and control of Culex mosquito.
4. Explain the morphology, life cycle, public health importance and control of house fly.
5. Describe the morphology, life cycle, diseases transmitted and control of human itch mite.
6. Give an account of morphology, life cycle, diseases transmitted and control of black fly.
7. Write an essay on the morphology, life cycle, diseases transmitted and control of rat flea.
8. Give an account of the classification of insecticides used for the control of arthropods of public health importance.

MODEL QUESTION PAPER

PARASITOLOGY & MEDICAL ENTOMOLOGY

CODE: SDC5PM17

Time: 3 hrs Max.Marks:80

I. Answer the following. Each question carries 1 mark.

1. Malarial cycle was discovered by _____
2. What is the common name of *Musca domestica*?
3. The common name of Clonorchis sinensis is ----------
4. Infestation by head louse is known as ……..
5. Expand PKDL
6. Paris Green is a ----------poison
7. Name the parasite which causes Chagas's disease.
8. Name a fumigant used for insect control.
9. Name the parasite which causes Kala azar.
10. ……. is an example of a non-biting fly. (10×1=10)

II. Answer any EIGHT. Each question carries 2 marks.

11. What do you mean by 'intermediate host '?
12. Mention various symptoms of Kala azar.
13. Discuss development of larvae of Diphyllobothrium latum inside fish.
14. Write a short note on mode of infection of Entomoeba histolytica.
15. Mention the symptoms of cystoisosporiasis.
16. Give an account of diagnosis PKDL.
17. What are the two types of metamorphosis in insects?
18. Sketch and label the adult rat flea.
19. Differentiate between biological and mechanical transmission of diseases.
20. What are the signs and symptoms of bed bug infestation?
21. Distinguish between insects and arachnids.
22. Define insecticide resistance. (8×2=16)

III. Answer any SIX. Each question carries 4 marks.

23. Describe the polymorphic forms, mode of transmission & pathogenic effects of Trypanosoma
24. Discuss different morphological forms of Leishmania donovani.

25. What is sexual dimorphism? With the help of labelled diagrams differentiate a male Ascaris from its female
26. What are the different stages in the development of Microfilaria in the mosquito?
27. Give an account of the salient features of Arthropods.
28. Classify insecticides based on mode of action citing examples.
29. Write short notes on the morphology and life cycle of the sandfly.
30. Describe the anti-larval measures adopted for mosquito control.
31. Describe the different methods of transmission of diseases by the house fly.

(6×4=24)

IV. Answer any TWO. Each question carries 15 marks.

32. Write an essay on the life cycle of Plasmodium vivax.
33. Give a detailed account of serological test helpful for the diagnosis of Kala Azar.
34. Give an account of morphology, life cycle, diseases transmitted and control of black fly.
35. Give an account of the classification of insecticides used for the control of arthropods of public health importance. (15×2=30)

ENDOCRINOLOGY & CANCER BIOLOGY

CODE: SDC5EC18

I. Answer the following. Each question carries 1 mark.

Part 1: Endocrinology

1. _____ produce hormone.
2. _____ is both an exocrine and endocrine gland.
3. The reactant which acts on an enzyme is called _____
4. _____ is regarded as master gland.
5. Enzyme without a non-protein part is known as _____
6. The gland which links endocrine system with nervous system.
7. What is a prosthetic group?
8. Name two co-factors.
9. What are tropic hormones?
10. Name the hormone which serves as the peripheral vasodilator.
11. Name the emergency gland
12. LH in males is also known as _____
13. Pituitary is connected to hypothalamus via _____
14. The depression in sphenoid bone, location of pituitary gland _____
15. Osteomalacia in children known as _____
16. The condition of milder decalcification in Osteoporosis patients is called _____
17. Paget's disease otherwise called _____
18. Increased production of parathyroid hormone leads to a condition called _____
19. The active form of Vit D?
20. Normal sperm count in male?
21. Hirsutism caused by a hormone called _____
22. Name the hormone produced by the heart.

23. Name the precursor of steroid hormones

24. hCG is produced from _____

25. Name the gonad of females

26. Name the hormone which increases the blood sugar level in human

27. _____ is regarded as pregnancy hormone

28. Erythropoietin is released from _____

29. _____ is the major testicular hormone in humans.

30. Name any two disorders of thyroid gland?

31. What is the cause of acromicria?

32. Expand PCOD.

33. Name any two hormones which have negative feedback control.

34. Expand CRH and ACTH.

35. What is the major stimulus for insulin secretion?

36. What is cretinism?

37. Matured stage of ovarian follicle is called_____

38. Under the influence of which hormone ovulation occur?

39. High level of LH concentration in blood just before ovulation is called……

40. In which stage of menstrual cycle, proliferation of endometrium occurs?

41. What is the chemical nature of the hormones?

42. Name any two second messengers?

43. What is diabetic ketoacidosis?

44. Name any two hydrophilic hormones?

45. What is a synergistic action of a hormone?

46. Name any two peptide hormones

47. What are the functions of carrier proteins for hormone?

48. Cushing's syndrome caused by pituitary adenomas is called……

49. Deficiency of which hormone cause diabetes insipidus?

50. Excess secretions of aldosterone cause which disease?

Part 2: CANCER BIOLOGY

1. Tamoxifen is an antagonist of_____
2. Tamoxifen is a target specific chemotherapeutics suitable for _____
3. What are the key enzymes in phosphorylation and dephosphorylation processes?
4. Write any 2 natural chemotherapeutics which hinder the function of spindle fibres.
5. Mention 2 chemotherapeutic synthetic drugs currently used.
6. Write any 2chemotherapeutics which hinder the function of topoisomerase enzyme.
7. What is tumor?
8. Normal blood levels of CEA is_____
9. Mention the limitations of CEA testing.
10. Explain the disease conditions in which AFP is elevated.
11. What are the conditions where CEA is elevated in blood.
12. What is a cancer biomarker? Give any 2 example.
13. Describe Alpha fetoprotein and its significance in cancer
14. Name two methods for detecting tumour marker?
15. Which is the tumour marker for prostatic cancer?
16. Expand AFP
17. AFP is used to detect _____
18. Name any one hormone that is used as tumour marker?
19. Carcinoembryonic antigens are derived from _____
20. What is the value of prostate specific antigen?
21. What is the normal value of lactate dehydrogenase?
22. What is the normal value of alkaline phosphate?
23. Colorectal cancer is detected by the presence of_____
24. PSA is produced by …… tissue
25. What is mean by cancer recurrence?
26. The first tumor marker reported
27. Which of the following tumor marker is associated with prostate cancer?
28. What is NMP 22?

29. Which cancer is detected through NMP 22 test?
30. Expand CT scan
31. Expand MRI scan
32. Expand PET scan
33. Cancer causing agents are called _____
34. Name any two carcinogenic chemicals_____
35. Mention any two cancer causing RNA viruses
36. Mention the name of cancer causing bacteria
37. Name a carcinogenic fungal toxin _____
38. The term _____denotes any substances which induce cancer or increase its incidence
39. Carcinogens are capable to cause mutation at _____
40. Name any two endogenous factors that cause cancer
41. What is mean by a genotoxic carcinogen?
42. What is mean by a non-genotoxic carcinogen?
43. Name any two ultimate carcinogens (nitrosamides, nitrosoureas, sulfate esters)
44. A chemical substance that becomes a carcinogen only after it is altered by metabolic processes by so-called drug-metabolizing enzymes_____
45. Substances which have induced benign and malignant tumour in well performed experimental studies on animal models are considered to be_____
46. _____ is a complex multistep process whereby the normal cells are transformed to cancer cells
47. The 1st phase of carcinogenic processes is called
48. Name a drug-metabolizing enzyme
49. The mutated version of a proto-oncogene is called
50. The "two-hit" hypothesis was first proposed by _____ a geneticist
51. The transmission of molecular signals from a cell's exterior to its interior is called
52. The molecules transmit the molecular signals in cytoplasm is called (
53. The molecules in cell membrane which received the molecular signals from ligand or growth factors is generally called

54. Several small molecules within the cell act as intracellular messengers are generally called as _____

55. Name two cell growth factors and platelet derived growth factors.

56. Growth factors act in an_____ fashion in cancer cells.

57. What is oncogene?

58. What is carcinogen? Give example

59. What are steps involved in carcinogenesis.

60. What are onco-suppressor genes?

61. What is mean by xenobiotics?

62. What is angiogenesis ?

63. Write the significance of angiogenesis in cancer development.

64. Write on the role of growth factors in cancer.

65. What is mutagenesis?

66. What is carcinogenesis?

67. Name 2 endogenous factors which causes cancer

II. Answer any EIGHT. Each question carries two marks.

Part 1: ENDOCRINOLOGY

1. Differentiate endocrine and exocrine glands.
2. Define hormones and enzyme.
3. What are neurohormones?
4. What is zymogen/ Pro-enzyme?
5. What is an active site of an enzyme?
6. Write short notes on induced fit model of enzyme action.
7. What are the functions of co-enzymes?
8. Write short note on positive feedback system in hormones.
9. Write a note on the functions of Growth Hormone.
10. Write a short note on Adrenal medulla
11. Which are the iodothyronines? What are their functions?
12. What are clinical symptoms of Type 1 and Type 2 diabetes?
13. Define general principals of hormone action.
14. How hormones are classified? Explain with examples.

15. What is adrenal diabetes?
16. Define second messenger system.
17. How are steroid hormones synthesized?
18. Name any two GI hormones with its functions?
19. Name the gonadotropins. What is their role in human body?
20. What is meant by Heterosexual precocity?
21. What are the symptoms of Osteomalacia?
22. Describe Amenorrhea.
23. What are the symptoms of Osteoporosis?
24. Name two pituitary hormones which are responsible for the production of sperm and testosterone?
25. What are the causes of infertility in males?
26. Name the hormones produced by pancreas.
27. What are the main functions of atrial natriuretic peptides (ANP)?
28. What are the causes of euthyroid sick syndrome (ESS)?
29. Mention the physiological effects of renin
30. List out major symptoms of thyroid nodules
31. Name two major gonadal hormones in females
32. What is adrenogenital syndrome?
33. Write a short note on Hashimotos Thyroiditis.
34. Explain the causes of hyperthyroidism.
35. What are the symptoms of hyperinsulinism?
36. What are the differences between Hypogonadism and Hypergonadism?
37. Describe the regulation of testosterone secretion in foetus.
38. What are the symptoms of menopause?
39. Explain major events taking place in the Luteal/Secretory phase of menstrual cycle.
40. Write a note on signs & symptoms of Cushing's syndrome.
41. Explain how diabetes insipidus is diagnosed.
42. Describe the causes for acromegaly.
43. Explain signs and symptoms of Conn's syndrome.

Part 2: CANCER BIOLOGY

1. What is multidrug resistance (MDR) in chemotherapy?
2. Explain basic principles of classical chemotherapy or radiation therapy.

3. What is mean by adjuvant therapy for cancer?
4. What are free radicles?
5. Explain the importance of G1/S check point in cell cycle
6. Write the role of tumor markers in cancer diagnosis
7. Mention the role of telomerase in cancer.
8. Describe the characteristics of tumor cells.
9. Briefly describe metastasis and angiogenesis.
10. Write a short note on anti-oncogene.
11. What is the difference between apoptosis and necrosis?
12. Give a definition for proliferation.
13. Describe about tumor antigen, give two examples
14. What is the difference between benign and malignant tumor?
15. What is tumor suppression gene? Give example
16. What is carcinoembryonic antigen ?
17. Give 3 examples of carbohydrate antigens
18. Provide detection methods for CEA and AFP
19. Clinical importance of CA 50 in cancer detection and therapy
20. Explain the location and physiological function Hyaluronic acid.
21. Define tissue specific antigen?
22. Define tumour markers?
23. Clinical applications of carcinoembryonic antigens?
24. What is the significance of creatine kinase?
25. Explain the role of AFP in cancer diagnostics
26. Write down the functional role of NMP22 inside the cell?
27. What is the other name of NMP22 test? Why it is so called?
28. NMP 22 test utilizes a specific antibody against a particular protein. Name that protein and write down its role in cell division
29. How the intensity of immuno-histochemical staining varied among bladder cancer tissue and normal tissues on the basis of NUMA P1?
30. Explain contact inhibition
31. Mention various factors involved in the causation of cancer
32. How differentiate a mutagenesis and a carcinogenesis?
33. Mention the important ways the body exposure to a carcinogen.

34. What is mean by an ultimate carcinogen?
35. What is mean by a complete carcinogen?
36. What is pro-carcinogen?
37. What is mean by a suspected carcinogen?
38. What is proto-oncogene?
39. What is mean by phosphorylation?
40. Mention the components of signal transduction pathway
41. Give a brief account on the phosphorylation in signal transduction process.
42. Distinguish between proto-oncogene and oncogene
43. Explain the mechanism of carcinogen
44. Write the characteristics of a cancer cell.
45. Explain chemoprevention

III. Answer any SIX. Each question carries four marks.

Part 1: ENDOCRINOLOGY

1. Explain the functions of endocrine system.
2. What are the salient features of enzymes?
3. How do enzymes work?
4. Differentiate competitive inhibitors from non-competitive inhibitors.
5. Explain negative feedback systems in hormones with suitable examples.
6. What is the difference between nerve and hormone control?
7. Explain the lock and key model of enzyme action.
8. What are the factors affecting the action of an enzyme.
9. Write a note on the major hormones found in neurohypophysis with its functions.
10. What is the role of aldosterone? How does it function?
11. What are Glucocorticoids? What are its functions?
12. Why are calcitonin and parathormone known as antogonists?
13. Write down the difference between Type I and Type II osteoporosis?
14. What are the two types of amenorrhea?
15. What are hydrophillic hormones? Explain with mechanism of action.
16. What is diabetes mellitus? Explain with types and symptoms.
17. Short notes on Addison's disease.
18. Explain mechanism of action of steroid hormones.

19. Difference between monostotic and polystotic type of Osteitisdeformans?
20. What are the causes of infertility in females?
21. Describe Hirsutism?
22. Describe different types of thyroid cancer
23. Write short notes on the functions of pancreatic hormones.
24. Describe different diagnostic techniques of thyroid nodules
25. Write short notes on the hormones produced by kidney?
26. What are the major physiological functions of ovarian hormones?
27. What are the differences between a cretin and a dwarf?
28. Write a note on TSH regulation.
29. Explain the feedback mechanism of testosterone secretion.
30. Describe the differences between toxic and nontoxicgoitre.
31. Write a note on postmenopausal symptoms and their treatment
32. Explain how Cushing's syndrome is diagnosed.
33. Write a note on treatment for acromegaly.
34. Write a note on different phases of menstrual cycle.
35. Describe symptoms of Cushing's syndrome.

Part 2: CANCER BIOLOGY

1. Explain the role of cell cycle checkpoints in cancer
2. Give a brief account on phase I and II enzymes in drug metabolism
3. Briefly explain mechanisms of cancer cell invasion and metastasis
4. What are the major components involved in signal transduction pathway and briefly explain its role in cancer.
5. Write short notes on Carcino Embryonic Antigen (CEA) and Prostate Specific Antigen (PSA).
6. Narrate the role of apoptosis in cancer
7. Give brief account about newer trends in cancer therapy
8. Describe several mechanisms for converting proto-oncogenes to oncogenes
9. Explain different blood group antigens that are being used as cancer biomarkers.
10. Explain the role of telomere and telomerase enzyme in cancer detection
11. Briefly explain the detailed procedure of TRAP assay. Explain its clinical significance.
12. Briefly explain common uses of tumour markers in cancer diagnosis
13. Write short notes on prostate specific antigen
14. Write short notes on carcinoembryonic antigens?

15. Write short notes on different types of tumour marker?
16. What are the characteristics of an ideal tumour marker?
17. Write a short note on onco-foetal antigens (tumour-associated antigen)? Name two onco-foetal antigens?
18. Briefly explain anchorage dependant and anchorage dependant growth of a cell
19. Write a short note on biochemical alteration in cancer cells
20. Write short notes on contact inhibition and cancer
21. Give an account on biopsy in cancer patients.
22. Briefly explain the important diagnostic imaging technology in cancer
23. Give a brief not on oncogenes and tumour suppressor genes
24. Explain different types of carcinogen with suitable examples.
25. Briefly explain the mechanism of carcinogenesis.
26. How a non-genotoxic carcinogen act on cell?
27. What is the difference between complete carcinogen and pro-carcinogen?
28. Briefly explain tumour initiation
29. Briefly explain the process of tumour promotion
30. Briefly explain tumour metastasis
31. Explain various types of mutations in the conversion of proto-oncogene to oncogenes.
32. Explain the role of tumour suppressor gene in cancer prevention.
33. Give a brief account on "two hit hypothesis"?
34. Give a brief account on four general classes signal transducing receptors
35. Briefly explain the role of transcription factors (TF) in signal transduction processes.
36. Substantiate the role of anti-oncogene in cancer development
37. Distinguish between oncogene and anti-oncogene
38. Write a comparison on characteristics of cancer cells with normal cells
39. Write a note on detoxification enzymes of liver involved in metabolizing carcinogens
40. Mention the various steps involved in carcinogenesis
41. Write a short essay on tumour kinetics
42. What are the benefits of using blood group antigens as biomarker.

IV. Answer any TWO .Each question carries 15 marks.

Part 1: ENDOCRINOLOGY

1. Explain the endocrine systems and its functions.
2. Classify hormones with examples.

3. Write an account on Enzyme action.
4. What are the endocrine glands and describe their regulation?
5. Why is pituitary gland known as master gland? Explain with their hormones and its functions.
6. Explain the nature and mechanism of action of hormones with suitable diagrams.
7. Write an essay on the biosynthesis and secretion of peptide hormones
8. Write an essay on the regulation of TSH, ACTH, insulin and gonadal hormone secretions.
9. Write a detailed account on the disorders of thyroid gland and their secretions.
10. What are the different types of Gonadal hormones? Explain with their functions, and disorders associated with them.

Part 2: CANCER BIOLOGY

1. What is free radicle? Write different types of free radicles in body. Briefly explain the role of free radicles in carcinogenesis. Explain the role of antioxidants in cancer prevention.
2. Explain various types of carcinogens. Mention the importance of mono-oxygenase and transferases in carcinogenesis. What are the endogenous factors causing cancer?
3. Explain the different types of cancer diagnostic techniques. What are the various drugs used in cancer chemotherapy? What is multidrug resistance?
4. What are the different types of cancer biomarkers? Explain these with suitable examples and their physiological and pathological levels in body. Explain the role of cancer biomarkers in early detection of different organ cancers. Write brief description on advantages cancer biomarkers and their limitations.
5. Explain different type of carcinogens with its mechanism of action on carcinogenic processes
6. Explain the signal transduction process. Give an account the role of signal transduction in pathophysiology of cancer and treatment strategy.
7. Write a note on proto-oncogene and oncogene. Describe the various mechanisms involved in the activation of proto-oncogenes. Describe the role of anti-oncogene in development of cancer
8. Write on different types of biological carcinogens. Describe the factors affecting enzymes metabolizing xenobiotics. Specify chemical carcinogens and steps involved in chemical carcinogenesis
9. Explain various types' treatment regime for cancer management and its advantage and disadvantages.

MODEL QUESTION PAPER

ENDOCRINOLOGY AND CANCER BIOLOGY

CODE: SDC5EC18

Time: 3 Hours Max. Marks: 80

I. Answer the following. Each question carries 1 mark.

1. _____ is both an exocrine and endocrine gland.
2. The reactant which acts on an enzyme is called _____
3. Mention the name of cancer causing bacteria
4. The active form of Vit D?
5. Expand AFP
6. _____ is the major testicular hormone in humans.
7. Expand PCOD
8. Name any two peptide hormones
9. Deficiency of which hormone cause diabetes insipidus?
10. Colorectal cancer is detected by the presence of_____ (10×1=10)

II. Answer any EIGHT. Each question carries two marks.

11. Differentiate endocrine and exocrine glands
12. Name the hormones produced by pancreas
13. Write a note on signs & symptoms of Cushing's syndrome.
14. Write a short note on Adrenal medulla
15. What is meant by Heterosexual precocity?
16. Describe the characteristics of tumor cells
17. Explain the role of AFP in cancer diagnostics
18. What is pro-carcinogen?
19. Write the characteristics of a cancer cell.
20. What are free radicles?
21. What is multidrug resistance (MDR) in chemotherapy?
22. List out major symptoms of thyroid nodules (8×2=16)

III. Answer any SIX. Each question carries four marks.

23. Explain the lock and key model of enzyme action.
24. Short notes on Addison's disease.

25. Explain mechanism of action of steroid hormones.
26. Write short notes on the hormones produced by kidney?
27. Explain the role of telomere and telomerase enzyme in cancer detection
28. Briefly explain the detailed procedure of TRAP assay. Explain its clinical significance.
29. Write short notes on contact inhibition and cancer
30. Give an account on biopsy in cancer patients.
31. Describe different types of thyroid cancer (6×4=24)

IV. Answer any TWO .Each question carries 15 marks.

32. Classify hormones with examples.
33. Write an essay on the regulation of TSH, ACTH, insulin and gonadal hormone secretions.
34. Explain the different types of cancer diagnostic techniques. What are the various drugs used in cancer chemotherapy? What is multidrug resistance?
35. Explain different type of carcinogens with its mechanism of action on carcinogenic processes (15×2=30)