BIOCHEMISTRY

S. No.	Topic
Observational (Descriptive)
1.	Still -Birth risk prediction using Genetic -Bio markers
2.	Role of Epi-genetic regulation in cancer therapeutics.
3.	Effect of maternal lipid levels on cord blood lipid profile in Gestational Diabetes Miletus.
4.	Role of Flavonoids/Vit E in Non-alcoholic fatty liver disease- Pre-clinical & clinical studies.
5.	Role of Sirtuin (SIRT1) protein in obesity.
6.	Role of Fibroblast Growth Factor-21 in prostate cancer.
7.	Connecting links between Acetyl-L-Carnitine and depression.
8.	Mothers against decapentaplegic homolog 4 (SMAD-4) in adenocarcinoma cervix and its association with survival rate.
9.	Human histone deacetylase (HDAC) and 5-methylcytosine (5mC) levels in maternal and cord blood in preeclampsia
10.	Identification and validation of predictive biomarkers of mental disorders (schizophrenia, major depressive disorder, bipolar disorder) using genomics, transcriptomics, proteomics, or metabolomics (OMICS) technologies.
11.	Role of immune system in the pathogenesis and treatment response of mental disorders (schizophrenia, major depressive disorder, bipolar disorder).
12.	Another two questions that can be done in medical colleges with good resources.
13.	Association of genetic variation with changes in biomarker levels and/or clinical symptoms or treatment response in mental disorders (schizophrenia, major depressive disorder, bipolar disorder).

14.	Assessment of the vitamin/trace element deficiency or heavy metal burden among occupationally exposed individuals.
15.	Status of metabolic parameters and their relationship with clinical symptoms or treatment response in mental disorders (schizophrenia, major depressive disorder, bipolar disorder).
16.	The prevalence of hemoglobinopathies and their characterisation in a (North/South/West/East/Central) Indian rural population - how to identify them at an early age for better management.
17.	The role of homocysteine and serum beta-amyloid in cognitive functions in subjects above 50 years of age.
18.	The role of iron, vitamin B12, folate, red cell folate, zinc and tri-iodothyronine in subjects with anaemia.
19.	The role of high sensitive Troponin I for cardiac risk stratification of an apparently healthy population.
20.	The role of TIMP (tissue inhibitors of metalloproteinases) 2 and IGFBP-7 (insulin-like growth factor binding protein 7) in early detection of kidney injury in critically ill patients.
21.	The role of fractional excretion of magnesium in the management of refractory hypokalaemia.
22.	The role of trans-tubular potassium gradient in the identification of potassium homeostasis in critically ill patients.
23.	Establishing age and sex specific biological reference interval for renin-aldosterone ratio in the Indian population.
24.	The prevalence of lead toxicity in children below 18 years of age and its correlation with other divalent ions like copper, zinc, magnesium and calcium.
25.	Assessing the association of extrachromosomal DNA markers in oral cancers.
26.	Correlating expression of miRna with chemo-radio resistance in hereditary breast ovarian cancer.

27.	Autoimmune disease: Evaluating levels of cytokines in active & stable vitiligo.
28.	Inborn error of immunity: Estimating IgA antibody deficiency in Crohn's disease.
29.	Nutritional disorders: Evaluating impact of micronutrient deficiency in tribal population of Madhya Pradesh.
30.	Knockdown of common fusion transcripts (ETV6-RUNX1, E2A-PBX1, MLL-AF4) using CRISPR based vectors in ALL cell lines followed by phenotypic analysis using cell proliferation, cell cycle and apoptosis assays.
31.	Prevalence of LDL-R (low density liporotein receptor) mutations in Indian patients with hypercholesterolemia using Sanger sequencing and correlation with cholesterol levels and response to statins.
32.	Therapeutic drug monitoring of tacrolimus levels and its correlation with treatment outcomes in patients with liver/kidney transplants.
33.	Levels Lactate Dehydrogenase in patients with cognitive impairment and sickle cell anaemia.
34.	Cystatin-C as a marker of severity of renal injury in patients with chronic kidney diseases.
35.	Correlation of Pro Brain Natriuretic Peptide with cardiac ejection fraction in patients with Congestive Heart Failure in a secondary/tertiary care.
36.	Gene polyphorphism in thalassemia in Indian patients.
37.	Serum B12 levels in mild cognitive impairment.
38.	Proteomic analysis of breast cancer patients from histopathology specimens.
39.	Assessment of creatinine standardized urinary Alkaline Phosphatase and Gamma Glutamyl Transferase as early diagnostic marker for hypertensive nephropathy: a hospital-based case control study at tertiary-care centres in Central India.

40.	Assessment of "Metallome" of breast cancer: a hospital based cross sectional study at tertiary care center in Central India.
41.	Leptin levels in metabolic syndrome at tertiary care center.
42.	Vitamin D levels in diabetes type-II and its correlation with bone mineral density.
43.	Serum homocysteine levels in patients with acute myocardial infarction.
44.	Serum Homocysteine in patients with risk factor for stroke at tertiary centre.
45.	Expression of soluble programmed death protein 1/ soluble programmed death receptor ligand 1 in breast cancer.
46.	Adiponectin/leptin ratio in metabolic syndrome and diabetes at tertiary care.
Observational (Analytical)	
47.	The role of micronutrients magnesium, calcium, copper, zinc, vitamin B12 and folate in the development of diabetic complications in patients with long-standing diabetes mellitus.
48.	The role of homocysteine, lipid peroxides and lipoprotein(a) in re-deposition of plaques in coronary arteries after coronary artery bypass surgery - a 1 year follow-up study.
49.	Comparison of commonly over expressed genes between naive and relapsed ALL (acute lymphoblastic leukemia) patient samples and correlation with patient prognostic parameters.
50.	Comparison of commonly over expressed genes between naive and relapsed AML (acute myeloid leukemia) patient samples and correlation with patient prognostic parameters.
51.	Analysis of mutation profile in the glucocerebrosidase gene in Gaucher's patients using Sanger sequencing and correlation with enzyme activity.
52.	Inter-instrument cost effectives comparison of thyroid function tests.
53.	Six sigma matrix as a tool for laboratory performance.

54.	miRibonucleic acid as a predictor of Parkinson's disease in Indian patients
55.	A comparative study of serum vitamin D3 in Alzheimer's diseases and mild cognitive impairment.
56.	Comparative study of serum cortisol in patients with mild cognitive impairment and dementias of Alzheimer's type.
57.	Comparison of cognitive impairment between subjects with controlled and un-controlled diabetes mellitus using standardized tools for cognitive assessment and serum markers: a hospital based comparative cross-sectional study in a tertiary care center of Central India
58.	Comparative assessment of 18 bp Insertion deletion polymorphism in promoter region Vascular Endothelial Growth Factor gene in subjects with Pregnancy induced hypertension and normal pregnant subjects: a hospital-based case control study in a tertiary care center of Central India.
59.	Correlation of LipoproteinsP (a) levels and metabolic syndrome
60.	Comparison of seminal oxidative stress markers in male factor infertility subjects with diabetes mellitus and non-diabetic subjects: A hospital-based case control study at tertiary care center in Central India.
61.	Comparative study of dyslipidemia in patients with mild cognitive impairment and dementia of Alzheimer's type with healthy controls as reference subjects.
62.	Predictive performance of human epididymis protein 4 (HE4) in ovarian cancer in comparison to Cancer Antigen (Ca125).
63.	Sensitivity of female genital tuberculosis detection by Immunohistochemistry Versus Gene expert.
Experimental	
64.	Pre-natal genetic testing in the Era of next generation sequencing for congenital Hypo-thyroidism.
65.	Studies on herbal / Pharmacotherapeutic drug as (GIP) gastric inhibitory polypeptide /(GLP-1) glucagon-like peptide-1 receptor agonist for the management of Type 2 diabetes mellitus and its complications.