

RAJASTHAN PUBLIC SERVICE COMMISSION, AJMER

SYLLABUS OF COMPETITIVE EXAMINATION FOR THE POST OF ASSISTANT PROFESSOR (Super Speciality) Hepato-Pancreato-Biliary (HPB) Surgery MEDICAL EDUCATION DEPARTMENT

Unit-I Basic knowledge of HPB surgery

1. Hepatobiliary and pancreatic surgery: historical perspective
2. Embryological development of the liver, biliary tract, and pancreas
3. Surgical and radiological anatomy of the liver, biliary tract, and pancreas
4. Assessment of hepatic function: implications for the surgical patient
5. Pancreatic Physiology and Functional Assessment
6. Liver blood flow: physiology, measurement and clinical relevance
7. Liver regeneration: mechanisms and clinical relevance
8. Liver fibrogenesis: mechanisms and clinical relevance
9. Bile secretion and pathophysiology of biliary tract obstruction
10. Molecular pathology of pancreatic cancer and premalignant tumors
11. Molecular pathogenesis of biliary tract cancer
12. Molecular biology of liver carcinogenesis and hepatitis
13. Infections in hepatic, biliary, and pancreatic surgery
14. Ultrasound of the liver, biliary tract, and pancreas
15. Endoscopic ultrasound of the biliary tract and pancreas
16. Role of nuclear medicine in diagnosis and management of hepatopancreatobiliary disease
17. Computed tomography (CT) of the liver, biliary tract, and pancreas
18. Magnetic resonance imaging (MRI) of the liver, biliary tract, and pancreas
19. Direct cholangiography: approaches, techniques, and implication & current role of cholangiography.
20. Diagnostic angiography and percutaneous biopsy or FNAC in hepatobiliary and pancreatic disease
21. Intraoperative diagnostic techniques including IOUS (intra operative USG), Intra operative cholangiogram and staging Laparoscopy
22. Peri operative critical care, Pre operative evaluation, Intraoperative and immediate postoperative management in HPB surgeries
23. Peri operative (Preoperative and postoperative) nutrition in HPB surgeries
24. Postoperative complications in liver, Biliary and pancreatic surgeries: Diagnosis and management.

Unit-II Biliary tract including gallbladder

(A) Inflammatory, Infective, and Congenital biliary tract disease (clinical aspects, Diagnosis and management)

- 1) including cholelithiasis, acute & chronic Cholecystitis, choledocholithiasis (bile duct stones), post cholecystectomy problems, bile duct injury, intra hepatic stones, biliary stricture and fistula.
- 2) Extra hepatic biliary atresia and PSC- Clinical aspects, diagnosis and management.
- 3) Biliary infections and infestation (Biliary parasitic disease) - Cholangitis, Recurrent pyogenic cholangitis (RPC).
- 4) Cystic disease of biliary tract- Clinical aspects, diagnosis and management.
- 5) Benign and pseudotumors of biliary tract

(B) Neoplastic biliary disease-

- 1) Carcinoma gall bladder- clinical aspects, diagnosis and management.
- 2) Extra hepatic cholangiocarcinoma including perihilar, Mid CBD and distal cholangiocarcinoma clinical aspects, diagnosis and management.
- 3) Pre surgical management in perihilar cholangiocarcinoma and CA gall bladder.
- 4) Intra hepatic cholangiocarcinoma- clinical aspects, diagnosis and management

Unit-III The Pancreas & Duodenum-

(A) Congenital and Acquired Non-neoplastic Pancreatic Disease

- 1) Surgical implication in congenital disorders of the pancreas.
- 2) Acute pancreatitis- Definition, Etiology, pathogenesis, classifications, diagnostic assessment, prognosis, complication and management.
- 3) Chronic pancreatitis- Definition, Etiology, pathogenesis, classifications, diagnostic assessment, prognosis, complication and management (Conservative, endoscopic and surgical).

(B) Neoplastic disease of the pancreas

- 1) Pancreatic and periampullary tumors- Classification, pathological features, epidemiology, clinical aspects, diagnosis and management.
- 2) Cystic neoplasm of pancreas- Classification, pathological features, epidemiology, clinical aspects, diagnosis and management.
- 3) Pancreatic neuroendocrine tumors- Classification, pathological features, epidemiology, clinical aspects, diagnosis and management.

(C) Techniques of pancreatic resections including minimally invasive:

- 1) Pancreaticoduodenectomy
- 2) Distal pancreatectomy
- 3) Segmental pancreatectomy
- 4) Total pancreatectomy

5) Transduodenal resection of the papilla of Vater

(D) Pancreas miscellaneous-

- 1) Pancreatic chemo and radiation therapy in Adjuvants, Neo-adjuvants and Palliative settings.
- 2) Palliative management of peri ampullary and pancreatic tumors

Unit-IV Liver

(A) Congenital and Acquired Non-neoplastic Liver Disease

- 1) Hepatic steatosis, steatohepatitis and chemotherapy related liver injury
- 2) Liver abscess epidemiology, clinical aspects, diagnosis and management
- 3) Hepatic parasitic infection epidemiology, clinical aspects, diagnosis and management
- 4) Hydatid disease of liver epidemiology, clinical aspects, diagnosis and management
- 5) Poly cystic liver disease and simple cyst- clinical aspects, diagnosis and surgical & non surgical management.
- 6) Benign liver lesions clinical aspects, diagnosis and management

(B) liver failure including acute, ACLF and chronic liver disease with portal hypertension-

- 1) Pathological aspects of liver cirrhosis and portal hypertension
- 2) Molecular and Cellular Basics of Liver failure
- 3) Clinical implication of non hepatic surgeries in cirrhotic patient
- 4) Management of acute, hyper acute and subacute liver failure and support of failing liver including standard medical therapy (SMT), Nonbiological and biological liver support
- 5) Management of complication of cirrhosis and portal hypertension- Ascites, bleeding varices (primary and secondary prophylaxis and acute management), HRS.
- 6) Portopulmonary Hypertension and Hepatopulmonary Syndrome
- 7) Surgical management of portal hypertensive bleeding Devascularisation and place of portosystemic shunts.
- 8) Techniques of portosystemic shunts
- 9) TIPS (trans jugular intrahepatic portosystemic shunt)-Indications, technique and complications.
- 10) Budd-Chiari syndrome and veno-occlusive disease

(C) Neoplastic Liver Disease-

- 1) Pathological aspects of liver tumors
- 2) Cystic neoplasm of liver risk factors, clinical aspects, diagnosis and management.

- 3) Hepatocellular carcinoma epidemiology, clinical aspect, diagnosis and treatment strategy.
- 4) Management of liver metastasis from colorectal, neuroendocrine and non neuroendocrine & non colorectal cancers.
- 5) Childhood liver malignancy.

(D) Non-surgical management of liver tumors:

- 1) Hepatic artery embolization, chemoembolization, radio-embolisation.
- 2) External beam radiotherapy
- 3) Cryotherapy
- 4) Ethanol injection
- 5) Ablative treatment- RFA (radio frequency ablation), Microwave ablation irreversible electroporation
- 6) Regional chemotherapy for liver tumors
- 7) Systemic therapy in hepatocellular carcinoma

(E) Liver Surgery-

- 1) Liver resection for benign and liver & biliary tumors-general considerations, Type and techniques.
- 2) Techniques of standard and extends resection for perihilar cholangiocarcinoma.
- 3) Liver resection in cirrhotics patients.
- 4) Minimally invasive techniques in liver resection.
- 5) Vascular isolation techniques in liver resection.
- 6) Vascular reconstruction techniques in liver resection.
- 7) Parenchymal preservation in liver resectional surgery: indication, rationale and surgical techniques.
- 8) Segment oriented anatomical liver resections.
- 9) Pre operative portal vein embolisation: indication, contraindication, techniques, complication, implication and results.
- 10) Associating liver partition and portal vein ligation for staged hepatectomy (ALPPS).
- 11) Ex vivo and in situ hypothermic liver resection: indication, contraindication, surgical procedure, complication and current role.
- 12) Navigation of hepatobiliary surgeries with Intraoperative USG guidance

Unit- V Trauma-

- 1) The pathophysiology of blunt and penetrating trauma to the liver, biliary tract and portal structures, pancreas, duodenum and adjacent structures.
- 2) The methods of assessment, grading and diagnosis.
- 3) The principles and techniques available to manage traumatic injuries.
- 4) The management of complications of trauma to the liver, biliary tract, pancreas and duodenum

Unit- VI HPB surgery miscellaneous topics-

- 1) Aneurysm and arteriovenous fistula of the liver and pancreatic vasculature.
- 2) Hemobilia and bilhemia

Unit- VII Transplantation

- (A) Immunobiology for liver and pancreatic transplantation
(B) ABO, Tissue Typing, and Crossmatching Incompatibility

Unit-VIII Liver Transplantation

- 1) History of Liver Transplantation
- 2) Indication, contraindication, listing, Delisting Criteria, Timing for Transplantation and general consideration.
- 3) Organ Allocation: The US Model / The European Models.
- 4) Donation After Cardiac or Brain Death: Regulatory and Ethical Principles.
- 5) Pre transplantation liver recipient evaluation - Cardiac, Renal and pulmonary.
- 6) Psychiatric Assessment of Liver Transplant Candidates.
- 7) Role of the Clinical Nurse Coordinator in liver transplantation.
- 8) Radiological Evaluation in liver Transplantation.
- 9) Nutritional Aspects of Transplantation in Adults & Children.
- 10) Donor Selection, donor Management and Extended Criteria for Donors.
- 11) Donating After Cardiac Death.
- 12) The Donor Operation technique after Brian dead donation and DCD.
- 13) Principles of organ Preservation, machine perfusion and Extracorporeal Perfusion for Resuscitation of Marginal Grafts.
- 14) Technique of Recipient Hepatectomy and Grafting.
- 15) Anesthesia for Liver Transplantation.
- 16) Postoperative Care: Postoperative Intensive Care Management in Adults / children and Postoperative Management Beyond the Intensive Care Unit: Adults / children.
- 17) Ethics of Living Donor Transplantation and live related donor work up.
- 18) Outcomes of Living Donor Transplantation: The Western and Eastern Perspective.
- 19) Living Donor Transplantation: Evaluation and Selection in Adult and children.
- 20) Techniques of donor hepatectomy in live donor liver transplantation -
 - (A) Adult Living Donor Right Hepatectomy and Recipient Operation.
 - (B) Adult Living Donor Left Hepatectomy and Recipient Operation
 - (C) Split Liver Transplantation for Pediatric and Adult Recipients.
 - (D) Split Liver Transplantation for Two Adult Recipients.
 - (E) Seg II/III and left lateral hepatectomy
- 21) Biliary and Vascular Reconstruction in Living Donor Transplantation.

- 22) Post liver transplant complication-
- a. Ischemia-Reperfusion Injury in Liver Transplantation
 - b. Graft Failure: Etiology, Recognition, and Treatment
 - c. Technical Problems: Biliary complication
 - d. Arterial Complications after Transplantation and Arterial Reconstruction Pitfalls
 - e. Portal vein thrombosis and outflow complication after liver transplantation.
 - f. Infections After Transplantation.
 - g. Small-for-Size Syndrome.
 - h. Neurological, Neuropsychiatric, cardiac, renal, pulmonary Complications after transplantation.
 - i. Transplant-Related Malignancies.
 - j. Rejection After Transplantation: types, pathophysiology and Treatment of Acute and Chronic Rejection.
 - k. Role of the Post transplantation Clinical Nurse Coordinator.
 - l. Graft-Versus-Host Disease
- 23) Immunosuppression
- a. Induction and Maintenance of Immunosuppression
 - b. Special Considerations for Immunosuppression In Children
 - c. Novel Immunosuppression of Patients with Hepatic Malignancies
 - d. Novel Immunosuppressive Drugs
 - e. Immunosuppressive Biologic Agents
 - f. Long-term Toxicity of Immunosuppressive Therapy
- 24) Cell Migration, Chimerism, and Graft Acceptance, with Particular Reference to the Liver.
- 25) Dual Grafts, Auxiliary, Domino and Swap liver transplantation.
- 26) Late Complications and Recurrence of Disease After Transplantation
- 27) Liver transplantation in fulminant hepatic liver failure: (Hyper acute /acute liver and subacute liver failure).
- 28) Liver transplantation for HCC and Non hepatocellular malignant liver disease.
- 29) Liver Retransplantation
- 30) Results & outcome predictors liver transplantation.
- 31) Future developments in liver transplantation.

Unit-IX Whole Organ pancreas and pancreatic islet transplantation-

Pattern of Question Papers:

1. **Objective Type Paper**
2. **Maximum Marks: 150**
3. **Number of Questions: 150**
4. **Duration of Paper: 2.30 Hours**
5. **All Questions carry equal marks**
6. **There will be Negative Marking**
(For every wrong answer one-third of the marks prescribed for that Particular question shall be deducted.)