TOPIC	QUESTIONS	KNOWLEDGE **(essential in bold)**	NOTES
Question 1 LOA: 1	1.What leukocytes types are characteristic of acute inflammation? (Prompt for 2) 2. How do leucocytes get to an area of acute inflammation? 3. Why do neutrophils predominate in the inflammatory response in the first 6-24 hours?	**1. Neutrophils first 6-24 hours** Monocytes 24-48 hours Neutrophils may last longer (4 days) in pseudomonas Lymphocytes in viral Eosinophils in hypersensitivity 2. **Margination** of WCC in vessels, rolling and **Adhesion** to endothelium (pavementing) (Selectins) **Migration and diapedesis** across endothelium (PECAM1, CD31, Integrins) **Migration towards chemotactic** stimulus in tissue (bacterial products, cytokines, IL8, C5A) 3. More numerous in the blood Respond more rapidly to chemokines May attach more firmly to adhesion molecules Neutrophils are short lived - disappear after 24-48 hrs (monocytes live longer)	**Bold + 1 other** **3 bold** **1/4**
Question 2 LOA: 1	What diseases are caused by Type 4 hypersensitivity? Describe the tuberculin reaction (Prompt for cellular response and timecourse?)	Type 1 Diabetes Insulin, Glutamic acid decarboxylase Rheumatoid arthritis Joint synovium Multiple sclerosis Myelin basic protein, proteolipid protein, Crohn's disease ? commensal bacteria Periph neropathy (?GBS) protein Ag of periph nerve myelin Contact dermatitis environmental, e.g. poison ivy Responses of differentiated effector T cells TH1 -> cytokines, IFNγ, stim and **activate macrophages** _> inflamm TH17 ->Chemokines, cytokines, IL-17, 22, **recruit neutophils & mono, CD4 cells** **Tuberculin reaction** start **8-12 hr**, peak **21-72** hr **Perivasc cuffing**, endothelial hypertrophy, **epithelioid** cells, **granuloma**	**3** examples to pass Bold, 3/6 (time delayed as in hours)
Question 3 LOA: 1	1. What type of organisms are the Clostridia? 2. Name the organisms and the diseases they cause in humans? 3. How does botulism toxin cause disease?	**1. Gm+ve, bacilli, anaerobic, spore-forming** **2. Gas Gangrene (Perfringens), Tetanus (tetani), Botulism (botulinum), Diarrhoea (difficile)** 3.. Normally ingested. In the cytoplasm, the "A" fragment cleaves the protein "synactobrevin". Synactobrevin is needed for fusion of neurotransmitter vesicles. Results in **flaccid paralysis**	**1.** needs 3 of 4 **2.** needs 3 of 4 3. must have some idea of this plus bold

Question 4 LOA: 2	1 What conditions cause urinary tract obstruction?	Extrinsic and intrinsic causes **Intrinsic** – Congenital abnormalities: posterior uretheral valves, urethral strictures, etc, **Calculi** Tumours Inflammation: prostatitis, ureteritis, urethritis Blood clots Sloughed papillae **Extrinsic** Tumours BPH Retroperitoneal fibrosis Pregnancy Uterine prolapse and cystocoele Functional disorders: neurogenic bladder	6 causes including calculi to pass (must demonstrate knowledge of intrinsic and extrinsic causes but needn't use words)
	2. Describe the progression of effects of unrelieved obstruction of a ureter.	Reduced GFR Progressive **dilation** of the proximal ureter, renal pelvis and calyces (hydronephrosis) Renal **parenchymal atrophy** Blunting apices of the pyramids Interstitial inflammation leading to interstitial fibrosis Enlargement of kidney Eventual result is a large (15-20cm) thin walled **non-functional** cystic structure.	Dilation, parenchymal atrophy and loss of function to pass.
Question 5 Gout LOA: 2	Describe the morphological features of gout (Prompt pathological features)	**Acute arthritis-crystallisation of urates within or around joint** An event possibly trauma initiates the release of crystals into the synovial fluid. **Chronic arthritis** with repeated attacks- formation **tophi** in the inflamed synovial membrane and periarticular tissue **Nephropathy**- deposit urate crystals in kidney and formation **uric acid stones**	3 Bold to pass including arthritis
	What are the causes of gout?	**Hyperuricaemia** **Primary** (90%)-enzyme defects unknown (85-90%), known enzyme defect eg. HGPRT deficiency-rare overproduction of uric acid, under excretion or increased excretion **Secondary-**increased nucleic acid turnover eg. leukaemia(overproduction and excretion), CRF (reduced excretion with normal production), inborn errors of metabolism (over production and excretion)	Need hyperuricaemia plus 1 primary and 1 secondary cause to pass

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Question 1 LOA: 1	1. What are the characteristics of chronic inflammation?	1.Inflammation for a **prolonged period** (week or more) Characterised by **macrophage** With simultaneous - active inflammation - **tissue destruction** - **attempts at repair**	**Bold**
	2. What are the causes of chronic inflammation? *Prompt: Can you give an example of each of these?*	2.**Persistent infection** TB, syphilis, PUD **Prolonged exposure toxic agents** exogenous = silica / FB endogenous = lipid - atherosclerosis **Autoimmune** RA; lupus	**2/3 Bold with one example**
	3. Why does macrophage accumulation persist in chronic inflammation?	**Continued recruitment** of monocytes (continued expression of adhesion molecules and chemotactic factors) Local proliferation of macrophages Immobilisation of macrophages	**Bold**
Question 2 LOA: 1	1 What is hypovolaemic shock?	**Systemic hypoperfusion due to reduced effective circulating volume,** cellular hypoxia	Bold
	2 Describe the stages of hypovolaemic shock.	**Non Progressive phase**. Reflex compensation, vital organ perfusion. Baroreceptors, catechol, renin/angiotensin, ADH, sympathy stim.(↑HR, periph vasocons, ↓ urine) **Progressive Phase** Anaerobic glycolysis, lactic acidosis, ↓ vasomotor response, → periph pooling, hypoxic injury, DIC, vital organ failure **Irreversible Phase** lysosomal enz release., NO→ ↓ myocardial contractility, ATN, bacteraemic shock from isch gut.	3 phases to pass with details 4/9 3/7 2/4
Question 3 LOA: 2	1. Describe the structure of the influenza virus.	1. **Single stranded RNA** (8 helices) Spherical capsule	1. Bold to pass
	2. What are the types and subtypes Prompt:- What do H and N stand for?	2. **ABC** (determined by a nucleoprotein) **Haemagglutinin and neuraminidase** (determined by proteins on the bilipid envelope	2. Bold
	3. What is the pathological basis of pandemics and epidemics?	3 **Antigenic shift** for pandemics **Antigenic drift** for epidemics Both H and N are changed by recombination of RNA from animal viruses	Bold to pass

Question 4 LOA: 2	1.Describe the potential effects on the liver of long-term excessive alcohol ingestion. PROMPT: Ask for morphological features if just list names of conditions 2 Are any of these conditions reversible with abstinence from alcohol? 3 What are the sequelae of liver cirrhosis?	1. **Steatosis**: fatty change, perivascular fibrosis 2. **Hepatitis**: liver cell necrosis, inflammatory response, Mallory bodies, fatty change, fibrosis 3. **Cirrhosis**: extensive fibrosis, hyperplastic nodules 4. (Hepatocellular carcinoma) 2 Steatosis and Hepatitis are reversible. **Cirrhosis irreversible.** **3 Portal hypertension, GIT bleeding, hepatocellular carcinoma, hepatorenal syndrome, coagulopathy Encephalopathy, infection**	Bold with some pathological features of each to pass. . Bold Must know that cirrhosis is irreversible injury. Portal hypertension and 2 Bold
Question 5 Thermal injury LOA: 2	How are thermal burns classified? (Prompt as to morphological depth classification?) What are the complications of a thermal burn? (Prompt for late)	**Superficial-**confined to epidermis **Partial thickness-**involves dermis **Full thickness-**extend to the subcutaneous tissue **Early vs late** **Early-hypovolaemic shock** with >20% BSA, pain, inhalational lung injury + airway oedema **Late- sepsis** (pseudomonas), MSOF, acute lung injury, scarring, cosmetic deformity, psychological	Bold Need 2 early & 2 late complication to pass

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Question 1: LOA: 1	1) What is the pathogenesis of oedema?	**1.Hydrostatic pressure** and **osmotic pressure** normally balance to ensure that net fluid into and out of capillaries remains relatively equal with the little over removed by **lymphatics. Increased HP or diminished OP or overload of the lymphatics** will result in oedema**.**	Bold to pass
	2) How is oedema categorised and provide some examples?	**2.Increased hydrostatic pressure** - impaired venous return, eg. CCF, constrictive pericarditis, ascites, venous obstruction (internal or external + immobility); arteriolar dilatation eg. heat, neurohumeral dysregulation **Reduced plasma osmotic pressure (hypoproteinaemia)** - nephrotic syndrome, ascites, malnutrition, protein losing gastroenteropathy **Lymphatic obstruction** - inflammatory, neoplastic, postsurgical, postirradiation **Sodium retention** - excessive salt with renal insufficiency, increased tubular reabsorption of sodium (renal hypoperfusion, increased renin-angiotensin-aldosterone secretion) **Inflammation** - acute, chronic, angiogenesis	3 of 5 bold to pass with one example each category quoted
Question 2 LOA: 1	1**.Describe the pathogenesis of Fibrosis?**	Fibrosis = excess deposition of collagen & ECM in chronic disease **Frustrated healing/chronic inflam >** **Persistent stimulus** (infections, autoimmune , trauma) Macrophage/Lcyte stimulation > **Growth factors** PDGF, FGF, TGF -> **prolif fibroblasts**, endothelial cells, spec fibrogenic cells	4/7 including macrophages highlighted features with > production v less bkdown mentioned (may be prompted)
	(Prompt, What cells are activated in fibrosis?)	**Macrophage** -**alternative pathway activation**, by IL-4, IL-13, cytokines from TH2 , Mast, eosinophils **TGF-β** almost always involved Actions: Monocyte attractant (L/Mac) Fibroblast activation/proliferation Increased collagen fibronectin synthesis/secretion Inhibition of metalloproteinases	**Macrophages** 2/4 actions
	2 Please provide some examples	Cirrhosis, chronic pancreatitis, pulm fibrosis Pneumoconiosis, constrictive pericarditis, Glomerulonephritis	3 to pass

Question 3 LOA: 1	1. What type of bacterium is Salmonella? 2. Describe the pathogenesis of typhoid fever? 3. What are the clinical features	1. **Gram-ve bacillus** (Enterobacteriaceae family) 2. Caused by **Salmonella typhi** (endemic) and **paratyphi** (travellers). Endemic in India, Mexico, Phillipines, Pakistan, El Salvador, Haiti. Taken up by mononuclear cells in the underlying lymphoid tissue in **gut invades** M cells Reactive hyperplasia in lymph tissue. **Disseminates by blood** 3. Causes fever, anorexia, vomiting and bloody diarrhoea. BC +ve in 90% with fevers Subsequent bacteraemia with fever and flu-like symptoms	1. Bold 2. Bold 3. Reasonable response with prompting
Question 4 LOA: 2	1.What is the pathogenesis of Type 2 Diabetes Mellitus? 2.What are the of the principal complications of Type 2 Diabetes Mellitus ?") (Prompt what is the common underlying pathological process?)	**1.Insulin resistance** - decreased ability of the peripheral tissues to respond to the secreted insulin - secondary to either genetic predisposition or obesity/lifestyle factors Quantitative and qualitative **beta cell dysfunction** **-** manifests as inadequate insulin secretion in the face of insulin resistance and hyperglycaemia - initial beta cell hyperplasia maintains normoglycaemia with increased levels of insulin secretion - early and subsequently late failure manifests as impaired glucose tolerance and diabetes - genetic predisposition to B-cell failure. **2.Vascular** **Diabetic macrovascular disease-** Accelerated atherosclerosis, CAD, PVD, Renal arteriosclerosis. **Hyaline arteriosclerosis-** Hypertension 1& 2 leading to CVA **Diabetic microangiopathy-** diffuse thickening of the basement membrane- (increased concentric hyaline material type 4 collagen) + increased permeability of the of the diabetic capillaries to plasma proteins- diabetic nephropathy, retinopathy and neuropathy. **Renal** **Diabetic nephropathy**- glomerular lesions- BM thickening, diffuse mesangial sclerosis and nodular glomerulosclerosis- **nephrotic syndrome**, Renal atherosclerosis and arteriolosclerosis Pyelonephritis/necrotising papillitis **Ocular**	Bold to pass **microangiopathy vascular, renal and 1 other** complications

		Diabetic Retinopathy- Proliferative and non proliferative- micronaneurysms, haemorrhages, soft and hard exudates, retinal venous dilatation and oedema, neovascularisation, fibrosis- vitreous haemorrhage and retinal detachment Cataracts Glaucoma **Neuropathy**	
Question 5 Rheumatoid Arthritis LOA: 2	1.What is the pathogenesis of Rheumatoid arthritis?	Triggered by exposure of genetically susceptible host to an arthritogenic antigen resulting in chronic inflammatory change. Continuing autoimmune reaction with activation CD4 helper T cells and inflammatory mediators and cytokines that destroy the joint **Genetic susceptibility**- associations with HLA-DRB1 alleles **Environmental arthritogens-** unclear what-various microbial agents implicated- none proven **Autoimmunity-**once inflammatory synovitis initiated- autoimmune reaction T cells result in chronic destruction**.**	Auto immune plus one other
	2.What are the extra articular manifestations of rheumatoid arthritis	**2 Rheumatoid nodules –**elbows forearms, lumbar **Fibrinoid necrosis** of lymphocytes **Vasculitis –** purpuric, nail bed, neuropathy, ulcers	At least 3
	3 What are the long term complications of RA?	3 Joint destruction, renal failure,	Any details