Occupational Health — Detailed Answers

Total marks: 10
Parts: a) 3 marks, b) 4 marks, c) 3 marks

Q1(a) Define occupational health and its importance. (3 marks)

Answer (exam-style):

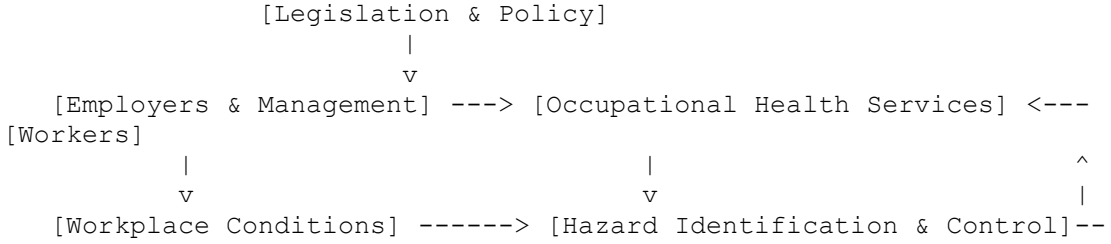
Definition (concise): Occupational health is the discipline concerned with the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention among workers of departures from health caused by their working conditions; and the protection of workers from risks arising from factors adverse to health.

Importance (key points — elaborated):

- **Protection of worker health and safety:** Ensures that work does not cause disease or injury and preserves workers' capacity to work.
- **Economic and productivity benefits:** Healthy workers are more productive, have fewer sick-days and incur lower direct and indirect costs to employers and society (medical costs, compensation, lost output).
- **Legal, ethical and social responsibility:** Compliance with occupational safety legislation and ethical duty to provide safe workplaces.
- **Public and family health spillover:** Reduced occupational disease lowers household poverty and community health burdens (e.g., fewer infections transmitted from work to family).
- **Sustainable development:** Integrating occupational health advances workplace sustainability, workplace morale and long-term workforce retention.

Exam tip: For 3 marks, give one clear definition (1–2 sentences) and two brief but distinct points on importance.

Diagram 1 — Occupational health system (schematic)



(Arrows show interaction: policy & management influence workplace; OHS links workers with controls, surveillance and training.)

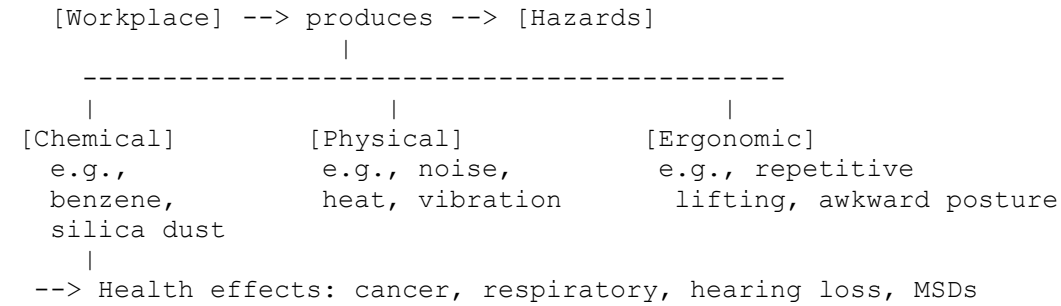
Q1(b) Describe three common occupational hazards with examples. (4 marks)

Answer (structured): *Brief heading + definition + example + typical health effects + short control pointer.*

1. **Chemical hazards**
   - **Definition:** Exposure to gases, vapours, mists, dusts, fumes or liquids that can cause acute or chronic health effects.
   - **Examples:** Solvents (e.g., benzene, toluene), heavy metals (lead, mercury), silica dust, pesticides.
   - **Health effects:** Respiratory disease (silicosis), neurotoxicity (lead, organic solvents), cancers (benzene—leukaemia), dermatitis.
   - **Control pointer:** Substitute less hazardous chemicals, use local exhaust ventilation, provide RPE when needed, monitoring and medical surveillance.
2. **Physical hazards**
   - **Definition:** Agents in the environment that can cause harm without necessarily involving a chemical exposure.
   - **Examples:** Noise, heat, cold, ionising and non-ionising radiation, vibration, mechanical hazards (moving machinery).
   - **Health effects:** Hearing loss (chronic noise), heat stress, radiation burns, vibration white finger, traumatic injuries from machines.
   - **Control pointer:** Engineering guards on machines, noise control and hearing conservation programmes, thermal stress management, safe machine design.
3. **Ergonomic hazards (workplace design & biomechanical stressors)**
   - **Definition:** Physical factors that can result in musculoskeletal disorders due to poor design of tasks, tools, or workstations.
   - **Examples:** Repetitive movements (assembly lines), awkward postures (prolonged bending), manual material handling (lifting heavy loads), prolonged computer work without breaks.
   - **Health effects:** Back pain, tendonitis, carpal tunnel syndrome, cumulative trauma disorders.
   - **Control pointer:** Ergonomic redesign (workstation height, job rotation), mechanical aids for lifting, regular breaks and worker training.

Exam tip: For 4 marks, briefly describe three hazards (about 2–3 lines each), give one concrete example and one health effect for each.

Diagram 2 — Hazard categories and examples (schematic)



Q1(c) Suggest preventive measures for occupational diseases. (3 marks)

Answer (concise but comprehensive):

1. **Primary prevention — Hierarchy of controls (most effective to least):**
    - **Elimination/substitution:** Remove the hazardous agent or replace it with a safer alternative (e.g., water-based paints instead of solvent-based).
    - **Engineering controls:** Isolate people from hazard (local exhaust ventilation, machine guards, sound dampening).
    - **Administrative controls:** Work organisation changes (job rotation, shorter shifts, training, safe work procedures).
    - **Personal protective equipment (PPE):** Respirators, gloves, hearing protection used as a last line of defence and when other controls are insufficient.
2. **Secondary prevention — Early detection & surveillance:**
    - Regular health surveillance (audiometry, spirometry, blood lead levels) and workplace exposure monitoring to detect early effects and intervene.
3. **Tertiary prevention — Treatment, rehabilitation & compensation:**
    - Prompt medical care, rehabilitation programmes to return workers to work safely and compensation schemes where applicable.
4. **Supportive system-level measures:**
    - Workplace risk assessment and management, safety training, enforcement of legislation, safety culture and worker participation, emergency preparedness, record-keeping and epidemiological analysis to guide interventions.

Exam tip: For 3 marks, describe the hierarchy of controls briefly (elimination to PPE) and add one line about health surveillance or training.

Diagram 3 — Prevention: Hierarchy of controls (schematic)

```
  [Most effective]
   -----------------
   | Elimination     |
   -----------------
   | Substitution    |
   -----------------
   | Engineering     |
   -----------------
   | Administrative  |
   -----------------
   | PPE (least)     |
   -----------------
  [Least effective]

  (Complement: Health surveillance, training, rehabilitation and policy
across all levels)
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Short concluding summary (useful for exam wrap-up)

- Occupational health is multidisciplinary and requires an integrated approach combining hazard control, health surveillance, worker education and policy enforcement.
- In an answer paper, aim to be structured: give a clear definition, list and explain 2–4 importance points, describe hazards separately with examples, and finish with the hierarchy of controls and surveillance — this covers both prevention and practical implementation.