Atal Bihari Vajpayee Indian Institute of Information Technology & Management, Gwalior

IT401: Cloud Computing

Minor Examination (Session 2024–25)

Maximum Time: 1 Hour 15 Minutes **Max Marks: 28**

Note: Attempt all questions. Use bullet points where appropriate. Calculators allowed.

1. **MCQs (1 mark each)** (a) Google App Engine is primarily: (i) IaaS (ii) PaaS (iii) SaaS (iv) FaaS (b) Cloud bursting typically involves: (i) Private → Public (ii) Public → Private (iii) P2P (iv) Edge only (c) In serverless, billing is mainly: (i) Per-VM-hour (ii) Per-function invocation/time (iii) Per-core reserved (iv) Flat monthly (d) A hypervisor of Type-I runs: (i) On bare metal (ii) Inside a VM (iii) Only on laptops (iv) In the browser (4)

2. **True/False with justification (2 marks each)** (a) Multi-tenancy means each tenant has a physically separate server. (b) Object storage is typically strongly consistent across regions by default. (c) Vertical scaling adds more instances to share load. (6)

3. Compare **containers vs. serverless** for microservices deployment. Mention *at least* two pros/cons for each. (4)

4. With a neat block diagram, explain a **cloud reference architecture** (users, API gateway, autoscaler, compute, storage, monitoring). (5)

5. **Numerical (Cost Estimation)** A batch job needs 64 vCPUs for 90 minutes/day. Provider charges 2.5 per vCPU-hour. (a) Compute the monthly compute bill (30-day month). (b) If spot pricing is 40% cheaper and can be used for half the runtime, recompute the bill. (5)

6. Short note (any **one**): (a) Edge computing in IoT (b) Cloud bursting—benefits and risks (4)