

**MIZORAM PUBLIC SERVICE COMMISSION**  
**DEPARTMENTAL EXAMINATIONS FOR**  
**AE/SDO**  
**UNDER PUBLIC HEALTH ENGINEERING DEPARTMENT, JANUARY 2016**

**ENGINEERING PAPER-I**  
**(COMMON FOR ALL BRANCHES OF ENGINEERING)**

Time Allowed : 3 hours

FM : 100 PM : 40

*Marks for each question is indicated against it.*  
*Attempt all questions.*

**Directions (Questions 1–20): Choose the correct answers.**

**(20×1=20)**

1. In slow sand filters, the turbidity of raw water can be removed only up to  
(a) 75 mg/litre (b) 100 gm/litre  
(c) 60 mg/litre (d) 150 mg/litre
2. Surge tanks are used  
(a) as overflow valves (b) for storage water  
(c) to increase the velocity in a pipeline (d) to guard against water hammer
3. As per IS : 1172-1963, water required per head per day for average domestic purposes in cities, is  
(a) 65 litres (b) 105 litres  
(c) 85 litres (d) 135 litres
4. Biochemical Oxygen Demand (B.O.D.) of safe drinking water must be  
(a) 20 (b) 10  
(c) 5 (d) nil
5. If pH value of water is  
(a) 7 water it is said to be alkaline (b) more than 7 it is said to be neutral  
(c) less than 7 it is said to be acidic (d) all are correct
6. Most commonly used pump for lifting water in water supply mains is  
(a) rotary type pump (b) centrifugal pumps  
(c) axialflow pump (d) reciprocating pump
7. Mostly commonly used coagulant is  
(a) chlorine (b) alum  
(c) lime (d) bleaching powder
8. Service connections to consumers houses are generally provided with  
(a) hume pipes (b) galvanised iron pipes  
(c) copper pipes (d) P.V.C. pipes

9. In main pipes, air valves are provided at  
(a) higher points (b) lower points  
(c) junction points (d) anywhere
10. In gravity main pipes, drain valves are provided at  
(a) anywhere (b) junction points  
(c) lower points (d) higher points
11. In pressure supply mains, water hammer pressure is reduced by providing  
(a) pressure relief valves (b) air valves  
(c) sluice valves (d) none of the these
12. The specific retention is least in case of  
(a) Clay (b) Silt  
(c) Coarse gravel (d) Sand
13. In the process of water treatment, sedimentation is done  
(a) before filtration (b) after filtration  
(c) simultaneously with filtration (d) along with chlorination
14. Increase in population of a rapidly growing city may be estimated by  
(a) arithmetical mean method (b) geometrical method  
(c) incremental increase method (d) graphical comparison method
15. The best process of disinfection of public water supply is by  
(a) adding lime (b) boiling  
(c) chlorination (d) adding ozone
16. The MESA should have \_\_\_\_\_ Office Bearers as per MES Constitution(Amended 2014)  
(a) 5 (b) 7  
(c) 10 (d) 11
17. The lower age limit for direct recruitment to AE/SDO  
(a) 18 (b) 21  
(c) 22 (d) 24
18. In general meeting of MESA, quorum will be  
(a) 1/8th (b) 1/6th  
(c) 1/4th (d) 1/3rd
19. Which one is not the standard diameter (in mm) of commercial GI Pipe?  
(a) 32 (b) 45  
(c) 80 (d) 100
20. Concrete cover to reinforcement of RCC column should not be less than  
(a) 20 mm (b) 30 mm  
(c) 40 mm (d) 50 mm
21. Fill in the blanks (*answer 5 out of 7*) (5×2=10)  
(a) The motto of the MESA shall be “\_\_\_\_\_”.  
(b) At present, Rs \_\_\_\_\_ only per kilolitre shall be charged if water is purchased from PHED  
(c) pH is \_\_\_\_\_ property of water.

- (d) Electric current is flow of \_\_\_\_\_.
- (e) Sanctioning Authority for providing house water connection is the \_\_\_\_\_.
- (f) Cavitation occurs when local pressure is equal or \_\_\_\_\_ than vapor pressure.
- (g) Dental carrier is due to absence of \_\_\_\_\_ in water.
- 22.** What do these abbreviations stand for? (*select any five*) **(5×2=10)**
- (a) NLCPR (b) NRDWP  
(c) LPCD (d) JNNURM  
(e) JICA (f) UASB  
(g) NGP
- 23.** Give units of *any 5(five)* of the following: **(5×2=10)**
- (a) Current (b) Pressure in SI system  
(c) Energy in MKS (d) Power  
(e) Heat energy (f) Conductivity  
(g) Turbidity
- 24.** Give simple definitions (*answer any 5*) in one or two sentence(s) **(5×3=15)**
- (a) Casual water connection (b) T-cluster  
(c) Residual chlorine (d) Peak flow  
(e) Water-table (f) Static head  
(g) Sullage
- 25.** You are now at construction site. Being engineer, how will you prove (at least by four tests) the new arrival of Cement is good? **(5)**
- 26.** You are engaged to provide house water connection to individual household, please list out at least 6 different GI Specials commonly used for providing connection with GI pipes. **(6)**
- 27.** In a rooftop rainwater harvesting in individual household, what are the various essential components to make the system functional properly? **(5)**
- 28.** GOI's norm is 40 lpcd for Rural Areas. How is it derived? **(5)**
- 29.** Write down in order 6 grades in Mizoram Engineering Service. **(5)**
- 30.** Write the formula to work out volume of the following containers **(3×3=9)**
- (a) Cylindrical (b) Triangular  
(c) Rectangular
- 31.** Match the following **(5×1=5)**
- (a) M30 mix (a) Water borne disease  
(b) Bacteria (b) Motor starter  
(c) Dysentery (c) Water treatment plant  
(d) Aerator (d) Water retaining structure  
(e) Delta (e) Chlorination