**UTILIZATION OF ELECTRICAL ENERGY**

**1. Which of the following is an advantage of electric traction over other methods of traction?** (a) Faster acceleration (b) No pollution problems   
 (c) Better braking action (d) All of the above  
 **Ans**: **A**  
**2. Which of the following is the voltage for single phase A.C. system ?** (a) 22 V (b)440 V

(c) 5 Kv (d)15 kV  
 **Ans**: **A**  
**3. Long distance railways use which of the following ?** (a) 200 V D.C. (b) 25 kV single phase A.C.   
 (c) 25 kV two phase A.C. (d) 25 kV three phase A.C.  
 **Ans**: **B**  
**4. Specific energy consumption is least in \_\_\_\_\_\_\_ service**.  
 (a) main line (b) urban

(c)suburban (d) none  
 **Ans**: **A**  
**5. Main traction systems used in India are, those using** (a) electric locomotives (b) diesel engine locomotives  
 (c) steam engine locomotives (d) diesel electric locomotives  
 (e) all of the above

**Ans**: **E**  
**6. in India diesel locomotives are manufactured at** (a) Ajmer (b) Varanasi

(c) Bangalore (d) Jabalpur  
 **Ans**: **B**  
**7. For diesel locomotives the range of horsepower is**  
 (a) 50 to 200 (b) 500 to 1000  
 (c) 1500 to 2500     (d) 3000 to 5000  
 **Ans**: **C**  
**8. \_\_\_\_\_\_\_ locomotive has the highest operational availability.**  
 (a) Electric (b) Diesel

(c) Steam (d)None  
 **Ans**: **A**  
**9. The horsepower of steam locomotives is** (a) up to 1500 (b) 1500 to 2000  
 (c) 2000 to 3000     (d) 3000 to 4000  
 **Ans**: **A**  
**10. The overall efficiency of steam locomotive is around** (a) 5 to 10 percent (b) 15 to 20 percent  
 (c) 25 to 35 percent (d) 35 to 45 percent  
 **Ans**: **A**

**11. In tramways which of the following motors is used ?**  
 (a) D.C. shunt motor (b) D.C. series motor  
 (c) A.C. three phase motor (d) AC. single phase capacitor start motor  
 **Ans**: **B**  
**12. In a steam locomotive electric power is provided through** (a) overhead wire (b) battery system  
 (c) small turbo-generator (d) diesel engine generator  
 **Ans**: **C**  
**13. Which of the following drives is suitable for mines where explosive gas exists ?** (a) Steam engine   (b)Diesel engine  
 (c) Battery locomotive (d) Any of the above  
 **Ans**: **C**  
**14. In case of locomotives the tractive power is provided by** (a) single cylinder double acting steam engine  
 (b)double cylinder, single acting steam engine  
 (c) double cylinder, double acting steam engine  
 (d) single stage steam turbine  
 **Ans**: **C**  
**15. Overload capacity of diesel engines is usually restricted to** (a) 2 percent (b) 10 percent  
 (c) 20 percent (d) 40 percent  
 **Ans**: **A**  
**16. In case of steam engines the steam pressure is** (a) 1 to 4 kgf/cm2   (b) 5 to 8 kgf/cm2  
 (c) 10 to 15 kgf/cm2 (d) 25 to 35 kgf/cm2  
 **Ans**: **C**  
**17.The steam engine provided on steam locomotives is** (a) single acting condensing type (b) single acting non-condensing type  
 (c) double acting condensing type (d) double acting non-condensing type  
 **Ans**: **B**  
**18. Electric locomotives in India are manufactured at** (a) Jamalpur (b) Bangalore

(c) Chittranjan       (d) Gorakhpur  
 **Ans**: **C**  
**19. The wheels of a train, engine as well as bogies, are slightly tapered to**  
 (a) reduce friction (b) increase friction  
 (c) facilitate braking (d) facilitate in taking turns  
 **Ans**: **D**  
**20. Automatic signaling is used for which of the following trains ?** (a) Mail and express trains (b) Superfast train

(c) Suburban and Urban electric trains (d) All trains  
 **Ans**: **B**  
**21. The efficiency of diesel locomotives is nearly**  
 (a) 20 to 25 percent (b) 30 to 40 percent  
 (c) 45 to 55 percent (d) 60 to 70 percent **Ans**: **A**

**22. The speed of a superfast train is** (a) 60 kmph (b) 75 kmph

(c) 100 kmph (d) more than 100 kmph  
 **Ans**: **D**  
**23. The number of passenger coaches that can be attached to a diesel engine locomotive on broad gauge is usually restricted to** (a) 5 (b) 10

(c) 14 (d) 17  
 **Ans**: **B**  
**24. Which of the following state capitals is not on broad gauge track ?** (a) Luck now (b) Bhopal

(c) Jaipur (d) Chandigarh  
 **Ans**: **C**  
**25. Which of the following is the advantage of electric braking ?** (a)It avoids wear of track (b)Motor continues to remain loaded during braking  
 (c)It is instantaneous (d)More heat is generated during braking   
 **Ans**: **A**  
**26. Which of the following braking systems on the locomotives is costly ?** (a) Regenerative braking on electric locomotives  
 (b) Vacuum braking on diesel locomotives  
 (c) Vacuum breaking on steam locomotives  
 (d) All braking systems are equally costly  **Ans**: **A**  
**27. Tractive effort is required to** (a)overcome the gravity component of train mass (b) accelerate the train mass  
 (c)overcome friction, wind age and curve resistance (d) do all of the above  
 **Ans**: **D**  
**28. For given maximum axle load tractive efforts of AC. locomotive will be** (a) less than that of D.C. locomotive (b) more than that of D.C. locomotive  
 (c) equal to that of D.C. locomotive (d) none of the above  
 **Ans**: **B**  
**29. Co-efficient of adhesion reduces due to the presence of which of the following ?** (a) Sand on rails   (b) Dew on rails  
 (c) Oil on the rails (d) both (b) and (c)  
 **Ans**: **D**  
**30. Due to which of the following co-efficient of adhesion improves ?** (a) Rust on the rails (b) Dust on the rails  
 (c) Sand on the rails (d) All of the above  
 **Ans**: **D**  
**31. Quadrilateral speed-time curve pertains to which of the following services ?** (a) Main line service (b) Urban service  
 (c) Sub-urban service (d) Urban and sub-urban service  
 **Ans**: **D**

**32. Which of the following is the disadvantage of electric traction over other systems of traction?** (a) Corrosion problems in the under-ground pipe work  
 (b)  Short time power failure interrupts traffic for hours  
 (c) High capital outlay in fixed installations beside route limitation  
 (d) Interference with communication lines  
 **Ans**: **C**  
**33. Co-efficient of adhesion is**  
 (a) high in case of D.C. traction than in the case of AC. traction  
 (b) low in case of D.C. traction than in the case of AC. traction  
 (c) equal in both AC. and D.C. traction  
 (d) any of the above  
 **Ans**: **B**  
**34. Speed-time curve of main line service differs from those of urban and suburban services on following account**  
 (a) it has longer free running period (b) it has longer coasting period  
 (c) accelerating and braking periods are comparatively smaller

(d) all of the above  
 **Ans**: **D**  
**35. The rate of acceleration on suburban or urban services is restricted by the consideration of** (a) Engine power (b) Track curves  
 (c) Passenger Discomfort (d) Track size  
 **Ans**: **C**  
**36. The specific energy consumption of a train depends on which of the following ?** (a) Acceleration and retardation (b) Gradient  
 (c) Distance covered (d) All of the above  
 **Ans**: **D**  
**37. The friction at the track is proportional to** (a) 1/speed (b) l/(speed)2  
 (c) speed (d)  none of the above  
 **Ans**: **C**   
**38.**  **\_\_\_\_\_\_\_ frequency is not common in low frequency traction system**  
 (a) 40 Hz (b)25 Hz  
 (c)16 Hz (d)36Hz  
 **Ans: A**  
**39. The normal value of adhesion friction is**  
 (a) 0.12 (b) 0.25

(c) 0.40 (d) 0.75  
 **Ans**: **B**  
**40. The pulsating torque exerted by steam locomotives causes which of the following?** (a) Jolting and skidding (b) Hammer blow  
 (c) Pitching (d) All of the above  
 **Ans**: **A**

**41. Which of the following braking systems is used on steam locomotives ?** (a) Hydraulic system (b) Pneumatic system  
 (c) Vacuum system (d) None of the above  
 **Ans**: **C**  
**42. Vacuum is created by which of the following?**  
 (a) Vacuum pump (b) Ejector  
 (c) Any of the above (d) None of the above  
 **Ans**: **C**  
**43. The resistance encountered by a train in motion is on account of** (a) resistance offered by air (b) friction at the track  
 (c) friction at various parts of the rolling stock (d) all of the above  
 **Ans**: **D**  
**44.   Battery operated trucks are used in** (a) steel mills (b) power stations  
 (c) narrow gauge traction (d) factories for material transportation  
 **Ans**: **D**  
**45. method can bring the locomotive to dead stop.** (a) Plugging braking (b) Rheostat braking  
 (c) Regenerative braking (d) None of the above  
 **Ans**: **A**  
**46. The value of co-efficient of adhesion will be high when rails are** (a) greased (b) wet  
 (c) sprayed with oil (d) cleaned with sand  
 **Ans**: **D**  
**47. The voltage used for suburban trains in D.C. system is usually** (a) 12 V (b) 24 V

(c) 220 V (d) 600 to 750 V  
 **Ans**: **D**  
**48. For three-phase induction motors which of the following is the least efficient method of speed control ?** (a) Cascade control (b) Pole changing  
 (c) Rheostat control (d) Combination of cascade and pole changing  
 **Ans**: **C**  
**49. Specific energy consumption becomes**  
 (a) more on steeper gradient  
 (b) more with high train resistance  
 (c) less if distance between stops is more  
 (d) all of the above  
 **Ans**: **D**  
**50. In main line service as compared to urban and suburban service** (a) distance between the stops is more  
 (b) maximum speed reached is high  
 (c) acceleration and retardation rates are low  
 (d) all of the above  
 **Ans**: **D**