**QUESTION BANK OF TSC**

Q. A tractor operated single acting trailing type disc harrow has 8 discs on each gang. The gang angle of both the gangs is maintained at 35o. The horizontal component of resultant soil reaction force on each disc is 600 N and it makes an angle of 30o with the gang axis. If the speed of operation is 6 km h1, the required drawbar power in kW to operate the harrow will be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Q. A two-wheel drive tractor pulls an implement that has a draft force of 11.5 kN. The total motion resistance of the tractor is 2.5 kN. Under these circumstances, the slip of the drive wheels is 20%. If the power loss in transmission is 20%, the percentage of power lost in converting engine power into drawbar power is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Q. A two-wheel drive tractor weighing 21 kN has a wheel base of 2.1 m. The CG of the tractor is 0.7 m ahead of rear axle centre. The tractor is pulling a single-axle trailer with gross trailer weight of 50 kN on a levelled concrete road while maintaining the line of pull parallel to the ground surface. The tractor hitch point is 42 cm behind the rear axle centre and 52.5 cm above the ground surface. During operation, 20% of the gross trailer weight is transferred to the tractor hitch point. If the coefficient of rolling resistance for each of the tractor and trailer wheels is taken as 0.04, and their ground reactions are assumed to pass through their respective wheel centres,

Q. the dynamic ground reaction against the tractor rear wheels in kN is

(A) 14.0 (B) 24.0 (C) 24.5 (D) 26.4

Q. the gross traction ratio developed by the tractor is

(A) 0.061 (B) 0.082 (C) 0.108 (D) 0.123

|  |
| --- |
| Q. A four-wheel-drive tractor has a static weight of 50 kN with 40% weight on rear axle and 60% on front axle. The wheel base is 2 m. The tractor is pulling a disc harrow that exerts a level drawbar pull at a hitch height of 0.5 m from the ground. During the operation, when the dynamic reaction on each axle is same, the dynamic traction ratio developed by the tractor is  |
| (A) 0.2  | (B) 0.4  | (C) 0.5  | (D) 0.8  |

21. The speed range of medium speed engine is

1. 350 rpm
2. Less than 350 rpm
3. More than 350 rpm
4. More than 1000 rpm

22. The speed of high speed engine

1. Less than 350 rpm
2. Between 350 rpm and 1000 rpm
3. Less than 1000 rpm
4. More than 1000 rpm

23. The single cylinder engine generally used in

1. Tractor
2. Stationary engine
3. Motor cars
4. Power tiller engine

24. The steam engine is

1. Single stroke engine
2. Two stroke engine
3. Four stoke engine
4. None of these

25. The two-stroke engine is

1. Diesel engine
2. Steam engine
3. Petrol engine
4. None of these

26. The diesel engine used on tractors are

1. One stroke engine
2. Two stroke engine
3. Four stroke engine
4. None of these

27. The carburettor is main part of

1. Diesel engine
2. Steam engine
3. Petrol engine
4. Gas engine

28. Diesel engine works on principle of

1. Diesel cycle
2. Otto cycle
3. Carnot cycle
4. None of these

29. The injector and fuel pump are the heart of

1. Diesel engine
2. Steam engine
3. Petrol engine
4. Gas engine

30. In two stroke cycle engine, one power stroke is obtained after every

1. Half revolution of crank shaft
2. One revolution of crank shaft
3. Two revolution of crank shaft
4. Three revolution of crank shaft

31.In four stroke cycle engine,one power stroke is obtained after every

(A)Half revolution of crank shaft (B)One revolution of crank shaft

(C)Two revolution of crank shaft (D)Three revolution of crank shaft

Ans:-(C)

32.The carburettor of an engine is used to mix fuel with

(A)Air (B)Water

(C)Oil (D)None of these

Ans-(A)

33.The finger order of 4 stroke 4 cylinder engine is

(A)1-3-2-4 (B)1-3-4-2

(C)1-4-3-2 (D)1-2-3-4

Ans:-(B)

34.The firing order of 4 stroke 6 cylinder engine is

(A)1-5-3-6-2-4 (B)1-3-4-2-6-5

(B)1-3-2-5-4-6 (D)1-3-5-6-4-2

Ans:-(A)

35.The firing interval of 2-stroke two-cylinder engine is

(A)180° (B) 360°

(C) 120° (D)720°

Ans:-(B)

36.The firing interval of 4-stroke four-cylinder engine is

(A) 90° (B) 180°

(C) 360° (D) 720°

Ans:-(B)

37.The compression ratio of diesel engine is

(A)4 to 8:1 (B)14 to 20:1

(C)8 to 15:1 (D)14 to 22:1

Ans:-(B)

38.The compression ratio of petrol engine is

(A)4 to 8:1 (B)4 to 10:1

(C)8 to 15:1 (D)14 to 20:1

Ans:-(A)

39.The air fuel ratio of diesel engine is

(A)8:1 (B)15:1

(C)20:1 (D)Npne of these

Ans:-(A)

40.The air fuel ratio of petrol engine is

(A)10:1 (B)15:1

(C)20:1 (D)None of these

Ans:-(B)

71. Oil pump is driven by

a. Camshaft b. Timing gear

c. Crankshaft d. All are correct

***Ans. b. Timing gear***

72. The compression pressure of diesel engine varies from

a. 8-10 kg/sq.cm b. 10-40 kg/sq.cm

c. 35-45 kg/sq.cm d. 45-50 kg/sq.cm

***Ans. c. 35-45 kg/sq.cm***

73. Fly wheel is made of

a. Cast iron b. Aluminium alloy

c. High carbon steel d. All are correct

***Ans. a. Cast iron***

74. The stroke: bore ratio of tractor engine varies from

a. 1.0 to 1.5 b. 1.0 to 1.25

c. 1.0 to 1.35 d. 1.0 to 1.45

***Ans. d. 1.0 to 1.45***

75. The inlet value of four-stroke engine opens at

a. 5 degree before TDC b. 10 degree before TDC

c. 15 degree before TDC d. 20 degree before TDC

***Ans.a. 5 degree before TDC***

76. Working temperature of diesel engine ranges from

a. 71-82 degree C b. 82-88 degree C

c. 75-80 degree C d. None of these

***Ans.a. 71-82 degree C***

77. Working temperature of petrol engine ranges from

a. 71-82 degree C b. 82-88 degree C

c. 75-80 degree C d. None of these

***Ans. b. 82-88 degree C***

78. White smoke indicates

a. Presence of water in fuel b. Burning of lubricant in cylinder

c. Presence of water in lubricant d. Rich air and fuel mixture

***Ans. a. Presence of water in fuel***

79. Blue smoke indicates

a. Presence of water in fuel b. Burning of lubricant in cylinder

c. Engine is overloaded d. Rich air and fuel mixture

***Ans. b. Burning of lubricant in cylinder***

80. The specific fuel consumption of diesel engine is

a. more than petrol engine b. less than petrol engine

c. equal to petrol engine d. Noe of these

***Ans. b. less than petrol engine***

121.Distance travelled by piston from TDC to BDC is:

 a.Stroke b. Bore

c. Piston displacement d. Piston speed

***Ans- a. Stroke***

122. The diesel engine does not have:

 a. Carburettor b. Spark plug

 c. Ignition coil d. All are correct

***Ans- d. All are correct***

123.As the 'cc' of engine increases, the power of engine will:

 a. Decrease b. increase

 c. Remains same d. Non of these

***Ans- b. increase***

124. Ratio of brake horsepower to indicated horsepower is:

 a. Thermal efficiency b. Volumetric efficiency

 c. Mechanical efficiency d. Brake efficiency

***Ans- c. Mechanical efficiency***

125. A gear used in timing gear is:

 a. Spur gear b. Bevel gear

 c. Helical gear d. Warm gear

***Ans- a. Spur gear***

126. Gaskets are made of:

 a. Copper b.Asbestos

 c. Fiber d. Both (a) & (b)

***Ans- d. Both (a) & (b)***

127.The gaskets are used to:

 a. Prevent leakage b. Prevent dust

 c. Prevent wear d. All of above

***Ans- a. Prevent leakage***

128. The total number of rings on piston may vary from:

a.2-4 b.3-5

c.3-7 d.2-7

***Ans- c.3-7***

129. A connecting rod of four-stroke engines is subjected to:

 a. Compression and tension b. Compression and side thrust

 c. Side thrust only d. Compression and twisting

***Ans- a. Compression and tension***

130. The arrangements of valves used in the engine may be:

 a. I-Head type b. T-head type

 c. L-head type d. All are correct

***Ans- d. All are correct***

161. The temperature of cloud point is

 a. 50 above the pour point

 b. 100 above the pour point

 c. 150 above the pour point

 d. All are correct

***Ans – a. 50 above the pour point***

162. Bomb calorimeter is used for determining

 a. Calorific value of fuel

 b. Gravity of fuel

 c. Cetane number of fuel

 d. SAE number of fuel

***Ans – a. Calorific value of fuel***

163. Junker’s calorimeter is used for determining the calorific value of

 a. Liquid fuels

 b. Solid fuels

 c. Gaseous fuels

 d. None of these

***Ans – c. Gaseous fuels***

164. The boiling range of petrol is

 a. 300 to 1800C

 b. 300 to 2000C

 c.300 to 2300C

 d. 300 to 2500C

***Ans – b. 300 to 2000C***

165. General formula of paraffin’s is

 a. Cn G2n+2

 b. Cn Gn+2

 c.Cn G3n+1

 d. None of these

***Ans –a. Cn G2n+2***

166. General formula of Naphthenes is

 a. CnH2n

 b. CnH3n

 c.CnH2n+1

 d. CnH2n-1

***Ans –a. Cn H2n***

167. General formula of aromatics is

 a. Cn H2n-2

 b. Cn H2n-6

 c.Cn H2n+2

 d. Cn H2n-4

***Ans – b. Cn H2n-6***

168. General formula of olefins is

 a. Cn H2n

 b. CnHn

 c.Cn H2n+2

 d. Cn H2n-2

***Ans – a. Cn H2n***

171.For lndian high-speed diesel,minimum cetane number is

1. 42 b. 45

c. 50 d. 55 **(b.45)**

172. The API gravity of light diesel oil is

1. 22 b. 25

c. 40 d. 50 **(a.22)**

173. The API gravity of petrol is

1. 61 b. 65

c. 70 d. 80 (**a.61)**

174. The API of High-speed diesel is

1. 25 b. 31

c. 40 d. 50 **(b.31)**

175. The quality of fuel is judged by

1. Colour b. Volatility

c. both (a) & (b) d. None of these **(b. Volatility)**

176. The volatility of fuel effects

1. Efficiency of engine b. Power of engine

c speed of engine d. All are correct **(c.speed of engine)**

177. The vaporizing temperature of petrol fuel is

1. Higher than diesel fuel b. Lower than diesel fuel

c equal to diesel fuel d. None of these **(a.higher than diesel fuel)**

178. Molecular formula of diesel is

1. C11H15 b. C11H16

c . C12H15 d. C11H14 **(c.C12H15)**

179. High speed diesel is used in

1. High speed diesel engine b. Low speed diesel engine

c. petrol engine d. Aircraft engine **(a. High speed diesel engine)**

180. The specific gravity of fuel is measured by

1. Hygrometer b.thermometer

c. hydrometer d.all are correct **(c.hydrometer)**

1. **Chemically correct air fuel mixture ratio for otto cycle engine is:**
2. **12:1**
3. **14:1**
4. **15:1ans> c. 15:1**
5. **20:1**
6. **In leanest mixture, the air fuel ratio is about:**
7. **12:1**
8. **14:1**
9. **15:1ans> d. 20:1**
10. **20:1**
11. **In richest mixture, the air fuel ratio is about:**
12. **4:1**
13. **8:1**
14. **15:1ans> b. 8:1**
15. **16:1**
16. **A primary fuel filter is made of:**
17. **Cloth**
18. **Paperans> a. cloth**
19. **Both (a) and (b)**
20. **None of these**
21. **Secondary fuel filter is made of:**
22. **Paper**
23. **Thin wire**
24. **Woodenans> a. paper**
25. **All are correct**
26. **Primary fuel filter is used to remove the particles of size:**
27. **5 micron**
28. **8 micron**
29. **10 micronans> a. 5 micron**
30. **12 micron**
31. **Secondary fuel filter is used to remove the particles of size:**
32. **1 micron**
33. **2 micron**
34. **3 micronans> b. 2 micron**
35. **4 micron**
36. **The fuel injection pressure of ci engine range from:**
37. **10 to 45 kg/cm^2**
38. **50 to 120 kg/cm^2**
39. **120 to 175 kg/cm^2ans> c. 120 to 175 kg/cm^2**
40. **100 to 300 kg/cm^2**
41. **The fuel injected through a nozzle of carburetor is at a pressure of:**
42. **10 to 45 kg/cm^2**
43. **50 to 120 kg/cm^2**
44. **120 to 175 kg/cm^2ans> c. 120 to 175 kg/cm^2**
45. **100 to 300 kg/cm^2**
46. **The specific fuel consumption of diesel engine is:**
47. **Down draft**
48. **Middle draftans> a. down draft**
49. **Up draft**
50. **None of these**

261. American Petroleum Institute adopted the classification of engine oils in the year:

 A.1920 B.1950

 C.1952 D.1960 Answer(c)

 262. ML-light service, MM. medium service and MS- severe service are service classes for the:

 A. SI engines B. IC engines

 C. Steam engines D. All are correct Answer (a)

263. DG-general service, DM-moderately service and DS-very severe services are service classes for the

 A. Petrol engine B. Steam engine

 C. Kerosene engines D. Diesel engines Answer (d)

 264. DG and MS oils have high additive contents, which help in keeping:

 A. Engine cool B. Engine clean

 C. Both (a) & (b) D. None of these Answer (b)

 265. If diesel fuel contains high sulphur content the best class of lubricating oil for use is:

 A.DS lubricating oil B.DM lubricating oil

 C.DG lubricating oil D.MS lubricating oil Answer (a)

 266. Lubrication reduces:

 A. Wear and teat B. Abrasive elements

 C. Noise D. All are correct Answer (D)

 267. Viscosity of oil is measured in terms of

 A. Its resistance to flow B. Its cooling effect

 C Both (a) & (b) D. None of these Answer(A)

 268. Say bolt universal Seconds' is related with the:

 A. Viscosity of oil B. Density of oil

 C. Gravity of oil D .All are correct Answer (a)

269. Viscosity of oil expressed at two temperatures is:

 A.18°C and 99°C B.20°C and 100°C

 C.20°C and 120°C D.18°C and 150°C Answer (a)

 270. Viscosity measured in:

 A. Centistokes B. Centipoises

 C. Redwood seconds D .All are correct Answer (D)

1. Smaller change in viscosity of oil with temperature indicates

 (A) High viscosity index number

(B) Low viscosity index number

 (C) Both (A) & (B) **ANS**:- A

(D) None of these

1. The variation in viscosity of oil with change in temperature is measured by

 (A) High viscosity number

(B) Viscosity index

 (C) Both (A) & (B) **ANS**:- B

(D) None of these

1. The density and specific gravity of lubricating oil is determined with the help of

 (A) Hydrometer

 (B) Specific gravity bottle

 (C) Both (A) & (B)**ANS**:- C

(D) None of these

274. Viscosity of lubrication oil is measured by

 (A) Hygrometer

(B) Thermometer

 (C)Viscometer**ANS**:- C

(D) All are correct

275. For engine bearings, a type of lubrication system adopted is

 (A) Gravity feed lubrication

 (B) Wick lubrication

(C) Ring lubrication**ANS**:- D

(D)All are correct

276. For engine parts, a type of lubrication system adopted is

 (A) Splash lubrication

(B) Pressure lubrication

 (C) Petrol lubrication **ANS**:- D

(D) All are correct

277. Wick lubrication is also called

(A) Siphon lubricator

 (B) Hydrostatic lubricator

(C) Mechanical lubricator **ANS**:- A

(D) None of these

278. Ring lubrication system is generally used for lubrication of

 (A) Vertical bearings

(B) Horizontal bearings

 (C) Inclined bearings**ANS**:- B

(D) None of these

279. Petrol lubrication system generally used in

 (A) Two stroke engines

(B) Four stroke engines

 (C) Tractor and vehicles**ANS**:- A

(D) Aircrafts

280. A type of lubricator used in steam engines is

 (A) Siphon type

(B) Hydrostatic type

 (C) Mechanically operator lubricator**ANS**:- D

(D) Both (B) and (C)

301. The pressure of radiator cap is about

 a. 0.34 to 0.4 kg/cm2

b. 0.4 to 0.5 kg/cm2

 a. 0.4 to 0.6 kg/cm2

 a. 0.4 to 1.0 kg/cm2

***Ans – a. 0.34 to 0.4 kg/cm2***

302. The boiling temperature of water in the radiator is raised to about

 a. 900C

b. 1000C

c. 1100C

d. 1200C

***Ans – c. 1100C***

303. The energy removed by cooling is about

 a. 10 %

 b. 20 %

 c. 30 %

 d. 40 %

***Ans – c. 30 %***

304. Heat losses by exhaust gases is about

 a. 25 %

 b. 30 %

 c. 33 %

 d. 38 %

***Ans – c. 33 %***

305. Heat obtained to IHP of total heat generated is

 a. 32 %

 b. 36 %

 c. 40 %

 d. 46 %

***Ans – b. 36 %***

306. Heat obtained to BHP of total heat is about

 a. 20 %

 b. 26 %

 c. 32 %

 d. 38 %

***Ans – b. 26 %***

307. Heat losses by friction and compression etc. is about

 a. 5 %

 b. 10 %

 c. 12 %

 d. 15 %

***Ans – b. 10 %***

308. The main drawback of thermo syphon cooling is that

 a. Cooling depends on only temperature and independent of engine speed

 b. Cooling depends on engine speed and independent of temperature

 c. Both a & b

 d. None of these

***Ans – a. Cooling depends on only temperature and independent of engine speed***

309. Cooling is independent of temperature is main drawback of

 a. Thermo Syphon cooling

 b. Forced pump system

 c. Thermostat

 d. Air cooling system

***Ans – b. Forced pump system***

310. In which cooling system, the engine warm-up quickly after starting

 a. Thermo Syphon cooling

 b. Forced pump system

 c. Thermostat

 d. Air cooling system

***Ans – c. Thermostat***

311.In pressurized water cooling the boiling point of coolant can be increasing its;

a) temperature b)pressure

c)both(A)and(b) d)none of these

ans:- (b)

312. In pressurized water cooling the boiling point of coolarit can be increased by increasing its;

a) for 2 bar it is 121⁰c b)For 5 bar it is 153⁰c

c) for 10 bar it is 1180⁰c d)All are correct

ans:-(d)

313. In pressurized water cooling ,the water pressure is kept between

a)1.5 to 2 bars b)1.5 to 3 bars

c)1.5 to 5 bars d)1.5 to 10 bars

ans:- (a)

314. Evaporating cooling system is used for cooling of

a)steam engines b) aircraft engines

c)railway engines d)industrial engines

ans:- (d)

315. Evaporating cooling is also called;

a)steam of vapour cooling b)water cooling

c)air cooling d)none of these

ans;(a)

316. In evaporating cooling the temperature of cooling water is allowed to reach a temperature of

a)50⁰c b)100⁰c

c)110⁰c d)130⁰c

ans(b)

317. In case of air cooled engines the reduction of weight of engines is about

a)10 per cent b) 20 per cent

c) 25 per cent d)30 per cent

ans(b)

318.Volumetic efficiency of air cooled engines in comparison to water cooled engines is

a)higher b)lower

c)equal d)none of these

ans(b)

319. A cooling system requires more maintenance in

a)steam of vapour cooling b)water cooling

c)air cooling d)none of these

ans(b)

320. The engine performance become more sensitive to climate conditions in case of

a)evaporation cooled engine b)water cooled engine

c)air cooled engine d)all are correct

ans (b)

321. In tractor engine ,a commonly used thermostat valve is

A. bimetallic type B. bellows type

C. both A & B type D. none of these (ANS-C)

322. In forced circulation system, a thermostat valve is placed at

A. forward end of cylinder head B. backward end of cylinder head

C. between cylinder and radiator D. none of these (ANS-A)

323. In thermo siphon system, fan is operated by

A. crankshaft B. camshaft

C. flywheel D. all are correct (ANS-A)

324. In IC engines, a commonly used cooling system is

A. splash B. thermo siphon

C. force feed system D. hopper system (ANS-B)

325. Melting point of cast iron is about

A. 100˚C B. 200˚C

C. 500˚C D. 1100˚C (ANS-D)

326. Melting point of aluminium is about

A. 100˚C B. 500˚C

C. 660˚C D. 800˚C (ANS-C)

327. A metal having highest melting point is

A. Aluminium B. cast iron

C. copper D. steel (ANS-D)

328. A metal having lowest melting point is

A. aluminium B. copper

C. high carbon steel D. nickel (ANS-A)

329. In air cooled engine, purpose of fins is to

A. increase contact area B. cooling the engine

C. both A & B D. none of these (ANS-C)

330. In water cooling system, the cold water flows at the radiation from the

A. top B. bottom

C. middle D. all are correct (ANS-B)

381. Ignition temperature of IC engine varies from

a. 300-500$℃$ b. 500-700$℃$

c. 500-900$℃$ d. 700-1000$℃$

Ans: c

382. In battery ignition system, the ignition fails due to

a. High speed of engine

b. Heavy use

c. Not proper setting of breaker point

d. None of these

Ans: c

383. The common type of battery used in IC engines is

a. Dry battery b. Lead acid battery

c. Both (a) & (b) d. None of these

Ans: b

384.Lead acid battery is generally used in

a. Tractors b. Aircrafts

c. Light motors d. None of these

Ans: a

385. Charge of battery is measured in terms of

a. Density of electrolyte

b. Weight of electrolyte

c. Specific gravity of electrolyte

d. All are correct

Ans: c

386. In lead acid battery, % of sulphuric acid is about

a. 35% b. 50%

c. 65% d. 75%

Ans: a

387. Capacity of battery is expressed in terms of

a. Ampere b. Voltage

c. Amp-hour d. None of these

Ans: c

388. Ignition timing depends on

a. Engine speed b. Compression ratio

c. Valve timing d. All are correct

Ans: d

389. The period between start of injection & ignition is called

a. Ignition period b. Injection time

c. Ignition delay d. All are correct

Ans: c

390. Ignition delay of high-speed engine should be about

a. 0.01 second b. 0.001 second

c. 0.0001 second d. None of these

Ans: b

391.Ignition delay of low speed engine should be about

 a. 0.01 second b. 0.002 second

 c. 0.003 second d. 0.004 second

 Ans: b

392.Starting motor consist of

 a. Alternate currentb.Directcurren

c.Both(A)&(B) d.None of these

 Ans: c

393. starting motor is engaged with ring gear of engine with the help of

a.Bevel gear b.Helical gear

c.Pinion geard.Sliding pinion gear

Ans:-D

394. Alternator of an tractor engine is driven by

a.Gear system b.V-belt system

c.Flat belt d.Chain sprocket

Ans:-B

395. Speed of alternator with respect to engine speed is

a.One-half b.Equal

c.Twiced.Thrice

 Ans:-C

396. Main function of fuel injection system is

a.To measure the correct amount of fuel as required by engine speed and load

b.Tomaintain correct timing for beginning and end of injection

 c. To atomize the fuel in the cylinder

 d. All are correct

Ans:-D

397. Air injection system is mostly used in

 a. Tracter enginesb.Petrol engines

 c. Heavy duty stationary enginesd.None of these

Ans:-C

398. In solid injection system , fuel pump is used to

 a. Measure the quantity of fuel b. Forcing fuel into combustion chamber

 c. Metered the fueld.All are correct

Ans:-B

399. In comman rail system, fuel is supplied by

a.One pressure line to all injectors b. Separate pressure to all injectors

 c. Both (A)&(B) d. None of these

Ans:-A

400. In line system of injection , the pump used is

 a. Constant stroke type b. Lapped - plunger type

 c. Both (A)&(B) d. None of these

Ans:- C