Register Number.....

B.E. DEGREE EXAMINATIONS: APRIL / MAY 2009

Fourth Semester

CIVIL ENGINEERING

U07CE405 Railways, Docks & Harbours and Airports

Time: Three Hours **Maximum Marks: 100**

Answer ALL the Questions:-

PART A (20 x 1 = 20 Marks)

1. Pick up the incorrect statement from the following

   Required tilt of 1 in 20 is provided

   a) to top of rails
   b) at rail seats in bearing plates
   c) at rail seats in chairs
   d) at rail seats in metal sleepers

2. Pick up the incorrect statement from the following

   a) Sleepers transfer loads of moving locomotive to the girders of the bridges
   b) Sleepers act as a non-elastic medium between rails and ballast
   c) Sleepers hold rails to prevent creep
   d) Sleepers hold rails loose on curves

3. The stretch of a track along which an additional engine is required to negotiate the gradient

   a) Momentum gradient
   b) Pusher gradient
   c) Ruling gradient
   d) Steep gradient

4. If S is super-elevation in mm and V is maximum permissible speed, then, minimum length of transition curve is

   a) S.V/134
   b) S.V/198
   c) S.V/127
   d) S.V/168

5. If α is switch angle and R is radius of curve at turnout, then, length of tong rail is

   a) R sin α
   b) R tan α
   c) R sin (α/2)
   d) R tan (α/2)

6. On Indian Railways, the number of crossing is defined as

   a) Sine of angle of crossing
   b) Cosine of angle of crossing
   c) Tangent of angle of crossing
   d) Cotengent of Angle of crossing

7. In Indian Railways plate laying is usually done by

   a) Side method
   b) Telescopic method
   c) American method
   d) British method

8. the place where a railway line and a road cross each other at the same level, is know

a) cross over
b) railway junction
c) road junction
d) level crossing

9. Tidal flow is

a) The movement of the water surface vertically above the MSL
b) The movement of the water actually experienced in a given area
c) The movement of the water in the linear direction perpendicular to the coast
d) The movement of the water in the linear direction parallel to the coastal line

10. Pick up the incorrect statement from the following

The section of the wall and the construction of the Vertical Wall Breakwater are to chosen that

a) The wall or any part of its length may not overturn
b) The bottom uplift may be ignored
c) No horizontal course is uplifted and dislocated
d) No portion is sheared off

11. A fender is a

a) A cushion provided in the jetty/wharf face
b) A guide provided at the entry of the harbour
c) A provision to tie up the ships
d) A provision in the ship to position the ships the harbour complex

12. Frequent removal of sea bed material is called

a) Capital dredging
b) Maintenance dredging
c) Scooping
d) Bucketing

13. ICAO means

a) International Code of Aviation Ordinance
b) International Civil Aviation Organisation
c) International Council of Aviation Organisation
d) International Civil Airway Organisation

14. Buffer Zone provided between end of runway and nearby residential area in an Airp to provide

a) Barrier for noise
b) Safety for aircraft
c) Safety for airport
d) Barrier for speed

15. The inner most portion of approach zone which is the most critical portion obstruction view point is known as

a) Approach zone
b) Transitional zone
c) Clear zone
d) Take off climb zone

16. The maximum runway length for an airport of Type B (according to ICAO)

a) 2499 m
c) 1490 m
b) 899 m
d) 2099 m

17. The number of gate position can be obtained from the following relationship

a) (Capacity of runway x 60 x 2) / average gate occupancy time
b) (Average gate occupancy time x 60 x 2) / Capacity of runway
c) (Average gate occupancy time x Capacity of runway) / (60 x 2)
d) Average gate occupancy time / (60 x 2 x Capacity of runway)

18. ILS means

a) International Landing System
b) Instrument & Local System
c) Instrumental Landing System
d) International & Local System

19.The threshold wing bars are placed

a) 30 m ahead of the runway
b) 60 m ahead of the runway
c) 40 m ahead of the runway
d) 20 m ahead of the runway

20.Hangers are

a) To park the air crafts before take off
b) To repair the air crafts
c) To warm up the air craft
d) To board the passengers

PART B (5 x 16 = 80 Marks)

21.a) A five degree curve diverges from a main curve of four degree in an opposite direction in the layout of a B.G yard. If the speed on the main curve is restricted to 54.53 kmph, determine the speed restriction on the branch line. Assume permissible cant deficiency as 7.5 cm.

(OR)

b) i) Explain the factors controlling alignment of railway track (8)

ii) Enumerate the engineering surveys for railway location (8)

22.a) Explain the operations involved in plate laying by telescopic method

(OR)

b) On a BG track, a turnout takes off at an angle of 6° 42' 35".

Angle of switch = 1° 34' 27"
Length of switch rail = 4.73 m
Heel divergence =11.43 cm
Length of straight arm = 0.85 m

Determine the radius and the cross lead.

23.a) i) How harbours are classified? Quote Indian harbours for each classification (8)

ii) Briefly explain the function of fixed and floating signals. (8

(OR)

b) Write a detailed note on break waters

24.a) Explain the factors influencing the selection of site for an airport

(OR)

b) i) What wind rose diagram and its uses? (4

ii) The wind data obtained from an airport site over a period of 5 years are given b Draw the wind rose diagram to a suitable scale on a graph sheet. Determine cal period, the best orientation of runways and the total wind coverage (1

Wind direction	Average duration of wind percentage with wind velocity in KMPH		
	6-25	25-40	40-60
N	2.5	0.9	0.5
NNE	1.2	0.4	0.2
NE	0.8	0.2	0.0
ENE	0.3	0.1	0.0
E	4.2	2.5	0.4
ESE	5.2	3.2	0.1
SE	9.6	4.8	0.2
SSE	6.5	3.0	0.5
S	3.2	1.8	0.4
SSW	1.1	0.4	0.1
SW	0.3	0.1	0.0
WSW	0.2	0.1	0.0
W	5.0	1.8	0.1
WNW	3.9	1.3	0.3
NW	7.1	2.8	0.3
NNW	5.6	2.2	0.4

25.a) Explain with a neat sketch about the working principle of ILS.

(OR)

b) Write brief notes on the following

i) Terminal Facilities ii) Airport Markings (8

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