320456 (20)

BE (4th Semester)

Examination, Nov.-Dec., 2021

Branch : Civil

TRANSPORTATION ENGINEERING - I (NEW)

Time Allowed : Three Hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : Part (a) of each question is compulsory. Attempt

any two parts from (b), (c) and (d) from each

question. Draw neat sketch wherever necessary.

Q. 1.   (a) What are National Highways.   2

(b) Describe the factors controlling the highway

alignment.   7

(c) What are the basic requirements of an ideal

alignment.   7

(d) Design the super elevation required at a

horizontal curve of radius 200 m for speed of

60 kmph. Assume suitable data.   7

Q. 2.   (a) Define traffic engineering.   2

(b) Explain the following :   7

(i)   Traffic capacity

(ii). Basic capacity

(iii) Possible capacity

(iv) Practical capacity

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(c) With neat sketches show various types of traffic signs, classify them in proper groups. 7

(d) Explain the various measures that may be taken to prevent accidents. 7

Q. 3. (a) Define radius of relative stiffness. 2

(b) Calculate the stresses by Westerguard's formula at corner and edge of a concrete slab : 7

(i) Wheel load = 4800 kg

(ii) Modulus of elasticity of concrete = 2 × 10^5 kg/cm^2

(iii) Pavement thickness = 20 cm

(iv) Poisson's ratio = 0.15

(v) Modulus of sub grade reaction = 2 kg/cm^3

(vi) Radius of contact area = 20 cm

(c) Enumerate the IRC recommendations of

design of rigid pavement. 7

(d) Explain the following terms : 7

(i) Modulus of subgrade reaction

(ii) Radius of resisting section

Q. 4. (a) Define surface dressing. 2

(b) Describe the various steps in construction of

cement concrete road. 7

(c) Explain the various typical flexible pavement

failures. 7

(d) Write short notes on : 7

    (i)   Seal coat

    (ii)   Mastic asphalt

Q. 5.   (a) Define cross wind component.   2

(b) Enumerate the various factors which you would keep in view while selecting a suitable site for an airport.   7

(c) The length of run way under standard conditions is 1620 m. The air port site has an elevation of 270 m. Its reference temperature is 32.94°C. If the run way is to be constructed with an effective gradient of 0.20 percent. Determine the corrected run way length.   7

(d) Explain the following : 7

    (i)   Basic runway length

    (ii) Runway configuration

    (iii) Optimum location of exit taxiway